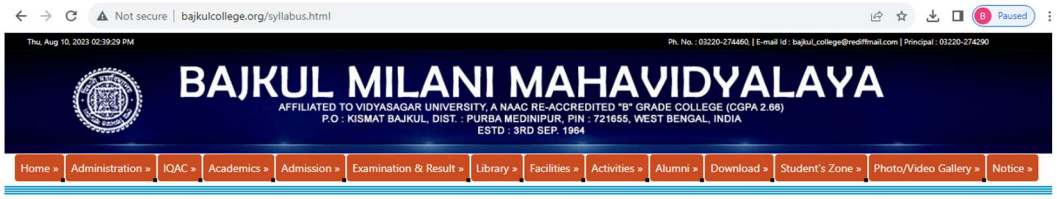
Courses Offered: UG, PG & Major Courses:



Syllabus >>

	Subject List	Hons. Syllabus	General Syllabus
UG Arts Group	Bengali		
	Education		
	English		
	History		
	Music		
	Philosophy		
	Political Science		
	Sanskrit		
	Sociology		
	Physical Education		
	Human Rights Education		
	NCC		
	NSS		
UG Science Group	Botany		
	Chemistry		
	Economics		
	Geography		
	Mathematics		
	Nutrition		
	Physics		
	Physiology		
	Zoology		
	Computer Science		
	NCC		
	NSS		
Major Course	Automobile Maintenance		
PG Courses	Bengali		
	Geography		
	History		
	Philosophy		
	Sanskrit		

Vidyasagar University
Midnapore-721102

The SYLLABUS (DRAFT) for
POST GRADUATE Course
In
BENGALI

Under Choice Based Credit System (CBCS)
(Semester Programme)

[w.e.f. 2022-23 session]

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

Department of Bengali
Programme Outcome

- The course prepares students for teaching and for Creative Bengali Writing.
- The course serves as a basis for further higher studies and research in this field.
- Students will demonstrate proficiency in literary history, literary theory.
- Students will demonstrate critical and analytical skills in the interpretation and evaluation of literary texts.
- Students will demonstrate a command of written academic Bengali.
- Students will demonstrate mastery to write under time constraints.
- Students will acquire a good knowledge on the nature of language and of the place o0f language study on society.
- The students will acquire general linguistic theory and fundamental understanding of core areas of language analysis including phonology, morphology, syntax and pragmatics.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

Full Marks, 50 = END SEMESTER EXAMINATION (40) + INTERNAL ASSESSMENT (10)

BNG 205 & BNG 305 =PROJECT PAPER (40) + SEMINAR (10) & PROJECT PAPER (40) + VIVA-VOICE (10)

In case choice of the Special Paper, student shall be choiced any one of the paper according to the series of BNG-305 and again the student shall be maintained same series on BNG-405 regarding choice of the Special Paper at BNG-405 series. (As for example, if he/she choice BNG-305A at BNG-305 series, then he/she should be choice BNG-405A at BNG-405 series).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিদ্যাসাগর বিশ্ববিদ্যালয়

স্নাতকোত্তর পাঠক্রম

বাংলা

BNG-101

ভাষার ইতিহাস ও পরিচয়

Credit:-5 **Marks-50 = (40+10)**

Course Outcome

❖ ভাষার উৎস, বিকাশ ও বিবর্তন সম্পর্কে জ্ঞান বৃদ্ধি।

Syllabus

১. ইন্দো-ইউরোপীয় ভাষাবংশের পরিচয়, প্রাচীন ভারতীয় আর্যভাষা সমূহ ১০

২. মধ্যভারতীয় আর্যভাষা সমূহ ১০

৩. নব্যভারতীয় আর্যভাষার বর্গীকরণ, মাগধী প্রাকৃত উদ্ভূত ভাষা সমূহের সংক্ষিপ্ত পরিচয়। ১০

৪. লিপির উদ্ভব ও বিকাশ, বাংলা লিপি ১০

BNG-102

প্রাচীন ও মধ্যযুগের বাংলা সাহিত্য ও সমাজ সংস্কৃতির পরিচয়

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ প্রাচীন ও মধ্যযুগের বাংলা সাহিত্য, সংস্কৃতি, ইতিহাস ও ধর্ম-দর্শন সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. নবম দশম থেকে অষ্টাদশ শতাব্দী পর্যন্ত বাংলা সাহিত্যের রাষ্ট্রনৈতিক, আর্থ-সামাজিক, সাংস্কৃতিক ও ধর্মীয় প্রেক্ষাপট। ১০

২. চৈতন্য-পূর্ববর্তী কালের বাংলা সাহিত্য - চর্যাগীতি, শ্রীকৃষ্ণকীর্তন, মঙ্গলকাব্য, অনুসারী সাহিত্য, বৈষ্ণব পদাবলী। ১০

৩. চৈতন্য-পরবর্তীকালের বাংলা সাহিত্য – মঙ্গলকাব্য, অনুসারী সাহিত্য, জীবনী সাহিত্য, বৈষ্ণব পদাবলী ও বৈষ্ণব সাহিত্য। ১০

৪. নাথ সাহিত্য, আরাকান রাজসভার সাহিত্য, শাক্ত পদাবলী, মৈমনসিংহ গীতিকা। ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

BNG-103

প্রাচীন ও মধ্যযুগের বাংলা সাহিত্য পাঠ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ প্রাচীন ও মধ্যযুগের বাংলা সাহিত্য সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. প্রাক্-চর্যাগীতি যুগের সাহিত্য পাঠ— ১০

(ক) 'গীতগোবিন্দম্'— জয়দেব (নির্বাচিত সর্গ ২টি-- ৫ম সর্গ- 'সাকাঙ্ক্ষ পুণ্ডরীকাক্ষ', ১০ম সর্গ- 'মুগ্ধমাধব')

(খ) 'প্রাকৃত পৈঙ্গল'— (নির্বাচিত পাঁচটি পদ)

১. ওগ্গর ভত্তা রম্ভকপত্তা

২. সোমহ কন্তা/দূর দিগন্তা

৩. তরুণ তরণি তবই ধরণি

৪. অরে রে বাহিহি কাহ্ন

৫. গজ্জই মেহ কি অম্বর

২. চর্যাগীতি ('হাজার বছরের পুরাণ বাঙ্গালা ভাষায় রচিত বৌদ্ধ গান ও দোঁহা'— হরপ্রসাদ শাস্ত্রী সম্পাদিত, বঙ্গীয় সাহিত্য পরিষৎ প্রকাশিত) পাঠ্য পদ— ১০

১. কাআ তরুবর পঞ্চ বি ডাল।

২. দুলি দুহি পিটা ধরণ না জাই।

৩- এক সে সুণ্ডিনি দুই ঘরে সান্ধঅ।

৫. ভবণই গহণ গম্ভীর বেগেঁ বাহী।

৬. কাহেরি ঘিণি মেলি অচ্ছহু কীস।

৮. সোনে ভরিতী করুণা নাবী।

১০. নগর বাহিরেঁ ডোম্বি তোহোরি কুড়িআ।

২৮. উঁচা উঁচা পাবত তঁহি বসই সবরী বালী।

৩৩. টালত মোর ঘর নাহি পড়বেষী।

৪০. জো মণগোঅর আলাজালা।

৩. শ্রীকৃষ্ণকীর্তন- বড়ু চণ্ডীদাস (বসন্তরঞ্জন রায় বিদ্বদ্বল্লভ সম্পাদিত, সাহিত্য সংসদ প্রকাশিত) ১০

পাঠ্য অংশ— জন্ম খণ্ড, তাম্বুল খণ্ড, দান খণ্ড, বংশী খণ্ড, রাধা বিরহ।

৪. রামায়ণ - কৃত্তিবাস ওঝা (হরেকৃষ্ণ মুখোপাধ্যায় সম্পাদিত, সাহিত্য সংসদ প্রকাশিত)- আদি, অরণ্য ও লঙ্কা কাণ্ড। ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

BNG-104
মধ্যযুগের বাংলা সাহিত্য পাঠ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ মধ্যযুগের বাংলা সাহিত্য সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. বৈষ্ণব পদাবলী— অধ্যাপক শ্রী খগেন্দ্রনাথ মিত্র, শ্রী সুকুমার সেন, শ্রী বিশ্বপতি চৌধুরী, শ্রী শ্যামাপদ চক্রবর্তী (কলিকাতা বিশ্ববিদ্যালয় প্রকাশিত): ১০

পাঠ্যপদ :

বিদ্যাপতি—

- যব গোধূলি সময় বেলি
- এ সখি হামারি দুখের নাহি ওর
- পিয়া যব আওব এ মঝু গেহে
- তাতল সৈকত বারি বিন্দু সম
- সখি কি পুছসি অনুভব মোয়

চণ্ডীদাস—

- রাধার কি হৈল অন্তরে ব্যথা
- সই কেমনে ধরিব হিয়া
- বঁধু কি আর বলিব আমি

জ্ঞানদাস—

- রূপ লাগি আঁখি ঝুরে
- মনের মরম কথা
- মানস গঙ্গার জল

গোবিন্দদাস—

- নীরদ নয়নে নীর ঘন সিঞ্চনে
- কণ্টকগাড়ি কমলসম পদতল
- আন্ধল প্রেম পহিলে নহি জানলুঁ

২. চৈতন্যচরিতামৃত— কৃষ্ণদাস কবিরাজ (আদি লীলা- ৪র্থ পরিচ্ছেদ ও মধ্যলীলা- ৮ম পরিচ্ছেদ) ১০

৩. চণ্ডীমঙ্গল (আখেটিক খণ্ড)— মুকুন্দ চক্রবর্তী/ অন্নদামঙ্গল (১ম খণ্ড) ভারতচন্দ্র রায় ১০

৪. পদ্মাবতী— সৈয়দ আলাওল ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

BNG-105

বাংলা গদ্য ও প্রবন্ধ সাহিত্যের ইতিহাস ও পাঠ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ উনিশ-বিশ শতকের বাংলার সমাজ ও গদ্য সাহিত্যের ইতিহাস সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. গদ্য ও প্রবন্ধ সাহিত্যের ধারা—

শ্রীরামপুর মিশন, ফোর্ট উইলিয়াম কলেজ, রামমোহন রায়, ভবানীচরণ বন্দ্যোপাধ্যায়, প্যারীচাঁদ মিত্র, কালীপ্রসন্ন সিংহ, বিদ্যাসাগর, অক্ষয়কুমার দত্ত, বঙ্কিমচন্দ্র, রবীন্দ্রনাথ, বিবেকানন্দ, হরপ্রসাদ শাস্ত্রী, রামেন্দ্রসুন্দর ত্রিবেদী, প্রমথ চৌধুরী, অবনীন্দ্রনাথ ঠাকুর, অন্নদাশঙ্কর রায়, বুদ্ধদেব বসু, আবু সৈয়দ আইয়ুব, শঙ্খ ঘোষ। ১০

২. বিদ্যাসাগর— শকুন্তলা ১০

৩. বঙ্কিমচন্দ্র— কমলাকান্তের দপ্তর (সমগ্র) ১০

৪. বঙ্কিমচন্দ্র— শকুন্তলা, মিরন্দা এবং দেস্‌দিমনা/বাঙ্গালার ইতিহাস ১০

রামেন্দ্রসুন্দর ত্রিবেদী— সুখ না দুঃখ

প্রমথ চৌধুরী— ভারতচন্দ্র

মুজতবা আলী- মোপাসাঁ— চেখভ্ ও রবীন্দ্রনাথ

সুনীতিকুমার চট্টোপাধ্যায়— শিক্ষা ও সংস্কৃতি

বিবেকানন্দ— সমাজতন্ত্র

\

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

BNG-201
সাধারণ ভাষা বিজ্ঞান

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ ভাষার বিভিন্ন তত্ত্ব সম্পর্কে জ্ঞান বৃদ্ধি।

Syllabus

১. ধ্বনিতত্ত্ব: (ফোন, ফোনিম, অ্যালোফোন ও সেই সংক্রান্ত আলোচনা, অবিভাজ্য ধ্বনি, ধ্বনির অবস্থান, ধ্বনির স্ব-লক্ষণ, স্বরধ্বনি, ব্যঞ্জনধ্বনি ও আন্তর্জাতিক ধ্বনিমূলক বর্ণমালা) ১০

২. রূপতত্ত্ব: (মর্ফ, মর্ফিম, অ্যালোমর্ফ ও সেই সংক্রান্ত আলোচনা, বাংলা ভাষার রূপ বৈচিত্র্যের আলোচনা ও বিভক্তি)। ১০

৩. অন্বয়তত্ত্ব: (বাক্য, বাক্যখন্ড, বাংলা বাক্যের গঠন বৈশিষ্ট্য, রূপান্তরমূলক-সঞ্জননী তত্ত্ব) ১০

৪. সমাজভাষা বিজ্ঞান: (সমাজ-ভাষা, সমাজ-উপভাষার সাধারণ আলোচনা, রেজিস্টার, ডাইগ্লসিয়া, ধর্ম-বয়স-পেশা-লিঙ্গ অনুসারে ভাষাপ্রভেদ, ভাষাপরিবর্তন ও ভাষাসংযোগ ও তজ্জনিত ফলাফল, ভাষা পরিকল্পনা) ১০

BNG-202
বাংলা কাব্য কবিতার ইতিহাস ও পাঠ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ কাব্য-কবিতা সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. বাংলা কাব্য সাহিত্যের ধারা— ১০

ঈশ্বরচন্দ্র গুপ্ত, মধুসূদন দত্ত, বিহারীলাল চক্রবর্তী, হেমচন্দ্র বন্দ্যোপাধ্যায়, নবীনচন্দ্র সেন, গিরীন্দ্রমোহিনী দাসী, রবীন্দ্রনাথ ঠাকুর, সত্যেন্দ্রনাথ দত্ত, যতীন্দ্রনাথ সেনগুপ্ত, মোহিতলাল মজুমদার, কালিদাস রায়, নজরুল ইসলাম, জীবনানন্দ দাশ, বিষ্ণু দে, অমিয় চক্রবর্তী, সুধীন্দ্রনাথ দত্ত, অরুণ মিত্র, সমর সেন, সুভাষ মুখোপাধ্যায়, শক্তি চট্টোপাধ্যায়, শঙ্খ ঘোষ, কবিতা সিংহ।

২. মেঘনাদ বধ কাব্য— মধুসূদন দত্ত ১০

৩. উনিশ বিশ শতকের বাংলা কবিতা পাঠ-- ১০

- ঈশ্বরচন্দ্র গুপ্ত - বড়দিন/ তপসে মাছ
- রঙ্গলাল বন্দ্যোপাধ্যায়- স্বাধীনতা সঙ্গীত
- বিহারীলাল চক্রবর্তী- প্রেমের প্রতি

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

- কামিনী রায়- প্রণয়ে বাধা/ মুখ
- অমিয় চক্রবর্তী- চেতন স্যাক্‌রা/ সংগতি
- সুধীন্দ্রনাথ দত্ত- উটপাখি/ শাশ্বতী
- বিষ্ণু দে- ঘোড়সওয়ার/ ক্রেসিডা
- বুদ্ধদেব বসু- বন্দীর বন্দনা/ চিল্কায় সকাল
- সমর সেন- মেঘদূত /মহুয়ার দেশে
- সুভাষ মুখোপাধ্যায়- ফুল ফুটুক না ফুটুক/ মিছিলের মুখ
- শক্তি চট্টোপাধ্যায়- অবনী বাড়ি আছো?/ যেতে পারি কিন্তু কেন যাবো?
- শঙ্খ ঘোষ- শূন্যের ভিতরে ঢেউ/ মূর্খ বড় সামাজিক নয়

৪. জীবনানন্দ দাশ- শ্রেষ্ঠ কবিতা (ভারবি): নির্বাচিত কবিতা— ১০

মৃত্যুর আগে, বোধ, পাখিরা, বনলতা সেন, অন্ধকার, আট বছর আগের একদিন, হাওয়ার রাত, বিড়াল, শিকার, বাংলার মুখ আমি দেখিয়াছি, অদ্ভুত আঁধার এক, ১৯৪৬-৪৭, হায় চিল, রাত্রি, সুচেতনা।

BNG-203
রবীন্দ্র সাহিত্য পাঠ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ রবীন্দ্রনাথের জীবন ও সাহিত্য সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. রবীন্দ্র-কবিতা (নির্বাচিত)— ১০

সুরদাসের প্রার্থনা, সিন্ধুতরঙ্গ (মানসী), সোনার তরী, নিরুদ্দেশ যাত্রা (সোনার তরী), চিত্রা, উর্বশী, জীবন দেবতা, এবার ফিরাও মোরে (চিত্রা), স্বপ্ন, দুঃসময় (কল্পনা), বলাকা (বলাকা), তপোভঙ্গ (পূরবী), রূপ সাগরে ডুব দিয়েছি (গীতাঞ্জলি), সবলা (মহুয়া),বাঁশি (পুনশ্চ), আমি (শ্যামলী), প্রথম দিনের সূর্য (শেষলেখা)।

২. রবীন্দ্র নাটক— রক্তকরবী/রাজা ১০

৩. রবীন্দ্র উপন্যাস— চতুরঙ্গ/ ঘরে বাইরে ১০

৪. রবীন্দ্র ছোটগল্প— পোস্টমাস্টার, একরাত্রি, নিশীথে, বোষ্টমী, স্ত্রীর পত্র, ল্যাবরেটরি ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

CBCS
C-BNG-204
বাংলা ভাষা ও সাহিত্য পাঠ (মধ্যযুগ)

Credit:-4 **Marks-50= (40+10)**

Course Outcome

❖ অন্য বিষয়ের ছাত্র-ছাত্রীদের বাংলা ভাষাতত্ত্ব ও সাহিত্য সম্পর্কে সম্যক জ্ঞান বৃদ্ধি।

Syllabus

১. বাংলা ভাষার উদ্ভব, বিকাশ ও বিবর্তন, স্বরধ্বনি, ব্যঞ্জনধ্বনি এবং IPA ১০

২. বৈষ্ণব পদাবলী ও শাক্ত পদাবলী (নির্বাচিত পদ- ৫টি+ ৫টি, মোট ১০টি) ১০

(ক) বৈষ্ণব পদাবলী- অধ্যাপক খগেন্দ্রনাথ মিত্র, শ্রীসুকুমার সেন, শ্রীবিশ্বপতি চৌধুরী, শ্রীশ্যামাপদ চক্রবর্তী সম্পাদিত, কলিকাতা বিশ্ববিদ্যালয় প্রকাশিত। ১০

পাঠ্যপদ :

বিদ্যাপতি—

- মাধব বহুত মিনতি করি তোয়
- পিয়া যব আওব এ মঝু গেহে

চণ্ডীদাস—

- এমন পিরীতি কভু নাহি দেখি শুনি

জ্ঞানদাস—

- আলো মুঞি জানো না

গোবিন্দদাস—

- মন্দির বাহির কঠিন কপাট

(খ) শাক্ত পদাবলী— শ্রী অমরেন্দ্র রায় সম্পাদিত, কলিকাতা বিশ্ববিদ্যালয় প্রকাশিত

পাঠ্যপদ :

কমলাকান্ত ভট্টাচার্য—

- আমি কি হেরিলাম নিশি স্বপনে (আগমনী)
- কি হলো, নবমী নিশি হৈলো অবসান গো (বিজয়া)

রামপ্রসাদ সেন—

- মায়ের মূর্তি গড়াতে চাই, মনের ভ্রমে মাটি দিয়ে (জগজ্জননী রূপ)
- কালী হলি মা রাসবিহারী (মা কি ও কেমন)
- মা আমায় ঘুরাবি কত (ভক্তের আকুতি)

৩. ঠাকুরমার ঝুলি— দক্ষিণারঞ্জন মিত্র মজুমদার/লোকসাহিত্য – রবীন্দ্রনাথ (ছেলে ভুলানো ছড়া ১, ২) ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

৪. মৈমনসিংহ গীতিকা— চন্দ্রাবতী /মহুয়া ১০

BNG-205
সেমিনার ও গবেষণাধর্মী প্রকল্প রচনা

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ ছাত্রছাত্রীদের গবেষণা বিষয়ে উৎসাহ দান এবং সৃজনশীল রচনায় আগ্রহ সৃষ্টি।

Syllabus

সেমিনার ১০

গবেষণাধর্মী প্রকল্প রচনা ৪০

BNG-301
বাংলা উপন্যাসের ইতিহাস ও পাঠ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ বাংলা উপন্যাস সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. বাংলা উপন্যাসের ধারা- নির্বাচিত ঔপন্যাসিক— ১০

বঙ্কিমচন্দ্র, স্বর্ণকুমারী দেবী, রবীন্দ্রনাথ, শরৎচন্দ্র, বিভূতিভূষণ বন্দ্যোপাধ্যায়, তারাশঙ্কর বন্দ্যোপাধ্যায়, মানিক বন্দ্যোপাধ্যায়, বনফুল, শরদিন্দু বন্দ্যোপাধ্যায়, সতীনাথ ভাদুড়ি, আশাপূর্ণা দেবী, সমরেশ বসু, মহাশ্বেতা দেবী।

২. বঙ্কিমচন্দ্র চট্টোপাধ্যায়— কপালকুণ্ডলা/স্বর্ণকুমারী দেবী—কাহাকে/ত্রৈলোক্যনাথ মুখোপাধ্যায়— কঙ্কাবতী ১০

৩. শরৎচন্দ্র চট্টোপাধ্যায়— চরিত্রহীন/বিভূতিভূষণ বন্দ্যোপাধ্যায়— আরণ্যক ১০

৪. আশাপূর্ণা দেবী— প্রথম প্রতিশ্রুতি/মহাশ্বেতা দেবী— অরণ্যের অধিকার ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

BNG- 302
বাংলা ছোটগল্পের ইতিহাস ও পাঠ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ বাংলা, ভারতীয় ও বিদেশী ছোটগল্প সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. বাংলা ছোটগল্পের ধারা (নির্বাচিত গল্পকার)— ১০

রবীন্দ্রনাথ, প্রভাতকুমার মুখোপাধ্যায়, পরশুরাম, জগদীশ গুপ্ত, বিভূতিভূষণ বন্দ্যোপাধ্যায়, তারাশঙ্কর বন্দ্যোপাধ্যায়, মানিক বন্দ্যোপাধ্যায়, বনফুল, শরদিন্দু বন্দ্যোপাধ্যায়, প্রেমেন্দ্র মিত্র, আশাপূর্ণা দেবী, সুবোধ ঘোষ, জ্যোতিরিন্দ্র নন্দী, নরেন্দ্রনাথ মিত্র, নারায়ণ গঙ্গোপাধ্যায়, বিমল কর, সমরেশ বসু, মহাশ্বেতা দেবী।

২. ছোটগল্প পাঠ— ১ ১০

প্রভাতকুমার মুখোপাধ্যায়— দেবী/বিবাহের বিজ্ঞাপন
পরশুরাম— শ্রী শ্রী সিদ্ধেশ্বরী লিমিটেড/চিকিৎসা সংকট
জগদীশ গুপ্ত— অরূপের রাস/শঙ্কিতা অভয়া
তারাশঙ্কর বন্দ্যোপাধ্যায়— ডাইনি/তারিণী মাঝি
বনফুল— নিমগাছ/দুধের দাম
মানিক বন্দ্যোপাধ্যায়— সরীসৃপ/হারানের নাতজামাই
প্রেমেন্দ্র মিত্র— সংসার সীমান্তে/হয়তো
সুবোধ ঘোষ— ফসিল/পরশুরামের কুঠার
নরেন্দ্রনাথ মিত্র— চোর/রস
আশাপূর্ণা দেবী— অভিনেত্রী/ছিন্নমস্তা

৩. ছোটগল্প পাঠ— ২ ১০

জ্যোতিরিন্দ্র নন্দী— সমুদ্র/গিরগিটি
নারায়ণ গঙ্গোপাধ্যায়— বনজ্যোৎস্না/টোপ
বিমল কর— জননী/ইঁদুর
সমরেশ বসু— আদাব/শানাবাউরির কথকতা
মহাশ্বেতা দেবী— দ্রৌপদি/জাতুধান
মতি নন্দী— আত্মভুক/শবাগার
সন্তোষকুমার ঘোষ— দ্বিজ/কানাকড়ি
লীলা মজুমদার— পদীপিসির বর্মী বাক্স/পেশা বদল

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

শীর্ষেন্দু মুখোপাধ্যায়— স্বপ্নের ভিতর মৃত্যু/ভেলা
সৈয়দ মুস্তাফা সিরাজ— গোম্ন/রানীর ঘাটের বৃত্তান্ত

৪. অনূদিত গল্প— ১০

মোপাসা— দ্য নেকলেস
নিকোলাই গোগল— দ্য ওভারকোট
আন্তন চেকভ— দ্য ডেথ অব এ ক্লার্ক/৬ নং ওয়ার্ড
ও হেনরি— গিফট অফ দ্য মেজাই/দ্য লাস্ট লিফ
প্রেমচন্দ— সদগতি
মহিম বরা— মাছ ও মানুষ
কৃষণ চন্দর— পেশোয়ার এক্সপ্রেস
ইউ আর অনন্ত মূর্তি— ঘটশ্রাদ্ধ
সাজাত হোসেন মান্টো— টোবা টেক সিং

BNG- 303
বাংলা নাট্য সাহিত্যের ইতিহাস ও পাঠ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ বাংলা নাটক ও প্রহসন সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. বাংলা নাটক ও প্রহসনের ধারা (নির্বাচিত নাট্যকার)— ১০

রামনারায়ণ তর্করত্ন, মধুসূদন দত্ত, দীনবন্ধু মিত্র, গিরীশচন্দ্র ঘোষ, জ্যোতিরিন্দ্রনাথ ঠাকুর, রবীন্দ্রনাথ ঠাকুর, দ্বিজেন্দ্রলাল রায়, বিজন ভট্টাচার্য, মন্মথ রায়, উৎপল দত্ত, মনোজ মিত্র, বাদল সরকার

২. মধুসূদন দত্ত— বুড় সালিকের ঘাড়ে রোঁ/ দীনবন্ধু মিত্র- সধবার একাদশী ১০

৩. দ্বিজেন্দ্রলাল রায়— নূরজাহান/গিরীশচন্দ্র ঘোষ- জনা ১০

৪. বিজন ভট্টাচার্য— নবান্ন/বাদল সরকার- বাকী ইতিহাস ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

CBCS
C-BNG- 304
বাংলা ভাষা ও সাহিত্য পাঠ (আধুনিক)

Credit:-4 **Marks-50= (40+10)**

Course Outcome

❖ বাংলা ভাষা ও সাহিত্যের বিবিধ পাঠ সম্পর্কে সম্যক জ্ঞান বৃদ্ধি।

Syllabus

১. আধুনিক কবিতা (পাঠ্য কবি ও কবিতা)— ১০

মধুসূদন দত্ত— আত্মবিলাপ

রবীন্দ্রনাথ ঠাকুর— হঠাৎ দেখা

জীবনানন্দ দাশ— আট বছর আগের একদিন

প্রেমেন্দ্র মিত্র— আমি কবি যত কামারের

অমিয় চক্রবর্তী— সংগতি

সুধীন্দ্রনাথ দত্ত— উটপাখি

বুদ্ধদেব বসু— কঙ্কাবতী

সুভাষ মুখোপধ্যায়— যত দূরেই যাই

শক্তি চট্টোপাধ্যায়— যেতে পারি কিন্তু কেন যাবো?

শঙ্খ ঘোষ— আয় তবে বেঁধে বেঁধে থাকি

২. নাটক— মনোজ মিত্র : সাজানো বাগান ১০

৩. উপন্যাস— শরৎচন্দ্র : শ্রীকান্ত (১ম পর্ব)/শীর্ষেন্দু মুখোপাধ্যায় : গোঁসাই বাগানের ভূত ১০

৪. গল্প— ১০

রবীন্দ্রনাথ ঠাকুর— বোষ্টমী

প্রভাতকুমার মুখোপাধ্যায়— মাতৃহীন

পরশুরাম— উলটপুরাণ

জগদীশ গুপ্ত— দিবসের শেষে

প্রেমেন্দ্র মিত্র— পুন্নাম

সুবোধ ঘোষ— সুন্দরম্

নারায়ণ গঙ্গোপাধ্যায়— টোপ

সমরেশ বসু— শহীদের মা

মহাশ্বেতা দেবী— স্তনদায়িনী

রমাপদ চৌধুরী - ভারতবর্ষ

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র

বিশেষ পত্রের প্রকল্পপত্র উপস্থাপন

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ **BNG- 305A – BNG- 305I** পর্যন্ত সংশ্লিষ্ট বিষয়গুলি সম্পর্কে উন্নত ও আধুনিক জ্ঞান অর্জন এবং প্রায়োগিক জ্ঞান বৃদ্ধি।

Syllabus

বিশেষ পত্র: ১

Credit:-5 **Marks-50= (40+10)**

BNG-305A

ভাষা সমীক্ষা

(ক্ষেত্রীয় সমীক্ষা ও প্রকল্পপত্র উপস্থাপন)

১. প্রকল্পপত্র (রাঢ় অঞ্চলের বাংলা ভাষার ক্ষেত্রীয় অনুসন্ধান নির্ভর প্রতিবেদন) রচনা। ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র: ২

Credit:-5 **Marks-50= (40+10)**

BNG- 305B

মধ্যযুগের পুঁথি চর্চা ও ক্ষেত্রীয় সমীক্ষা

(ক্ষেত্রীয় সমীক্ষা ও প্রকল্প পত্র উপস্থাপন)

১. প্রকল্প পত্র— (পুরনো পুঁথি, দলিল দস্তাবেজ, চিঠিপত্র, প্রাচীন স্থাপত্য ও স্থাপত্যগাত্রের লিখন-লিপি উদ্ধার ইত্যাদি সম্পর্কিত প্রতিবেদন) ৪০

২. পুঁথি চর্চা— পুঁথি পরিচয় ও বৈশিষ্ট্য, পুঁথির উপকরণ, পুঁথি পাঠ, পুঁথির লিপি, পুঁথির চিহ্ন, পুঁথির কালাঙ্ক নির্ণয়, পুঁথি সংরক্ষণ, পুঁথি সম্পাদনা ইত্যাদি (প্রায়োগিক পরীক্ষা হবে) ১০

বিশেষ পত্র: ৩

Credit:-5 **Marks-50= (40+10)**

BNG-305C

রবীন্দ্র জীবন ও সাহিত্য বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র: ৪

Credit:-5 **Marks-50= (40+10)**

BNG-305D

আধুনিক বাংলা কবিতা বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র: ৫

Credit:-5 **Marks-50= (40+10)**

BNG -305E

প্রায়োগিক নাট্য প্রকল্প

১. প্রকল্পপত্র রচনা ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র: ৬

Credit:-5 **Marks-50= (40+10)**

BNG-305F

লোক-উপাদান সংগ্রহ ও সমীক্ষা

(ক্ষেত্রীয় সমীক্ষা ও প্রকল্পপত্র উপস্থাপন)

১. প্রকল্পপত্র রচনা (রাঢ় অঞ্চলের লোকসাহিত্য ও সংস্কৃতির ক্ষেত্রীয় অনুসন্ধান এবং লোক উপাদান সংগ্রহ নির্ভর প্রতিবেদন রচনা) ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র: ৭

Credit:-5 **Marks-50= (40+10)**

BNG- 305G

কথাসাহিত্য বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা। ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা। ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র: ৮

Credit:-5 **Marks-50= (40+10)**

BNG-305H

সাহিত্যতত্ত্ব বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা। ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা। ১০

বিশেষ পত্র: ৯

Credit:-5 **Marks-50= (40+10)**

BNG- 305I

ভারতীয় সাহিত্য বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা। ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা। ১০

BNG- 401

সাহিত্যের কথান্তর, পাঠান্তর, রূপান্তর ও অনুবাদ

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ বাংলা সাহিত্যের অনুবাদ, পাঠান্তর ও রূপান্তর সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. লোকসাহিত্যের কথান্তর ১০

২. পাঠান্তর: রজনী— বঙ্কিমচন্দ্র ১০

৩. রূপান্তর: রাজর্ষি থেকে বিসর্জন— রবীন্দ্রনাথ ১০

৪. অনুবাদ: সংস্কৃত থেকে বাংলা মেঘদূত (পূর্ব মেঘ)— রাজশেখর বসু ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

BNG- 402

প্রাচ্য সাহিত্য তত্ত্ব

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ প্রাচ্য সাহিত্যতত্ত্ব ও সাহিত্যতত্ত্ব বিষয়ে রবীন্দ্রভাবনা সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. **প্রাচ্য সাহিত্য তত্ত্ব—** অলংকারবাদ, রীতিবাদ, বক্রোক্তিবাদ, ঔচিত্যবাদ, ধ্বনিবাদ ও রসবাদ, গুণ ১০

২. **বিশ্বনাথ কবিরাজ— সাহিত্য দর্পণ** (তৃতীয় পরিচ্ছেদ স্থায়িভাবের লক্ষণ- "রতীর্হাসশ্চ শোকশ্চ..." ইত্যাদি থেকে পরবর্তী অংশ এবং অষ্টম পরিচ্ছেদ) ১০

৩. **রূপ গোস্বামী— উজ্জ্বল নীলমণি** (নায়ক ভেদ প্রকরণ, নায়িকা ভেদ প্রকরণ, হরিপ্রিয়া প্রকরণ, শৃঙ্গার ভেদ প্রকরণ) ১০

৪. **রবীন্দ্রনাথের সাহিত্যতত্ত্ব বিষয়ক প্রবন্ধ—** তথ্য ও সত্য, আধুনিক কাব্য (সাহিত্যের পথে), সাহিত্যের বিচারক, সাহিত্যের তাৎপর্য (সাহিত্য), কাব্যের তাৎপর্য (পঞ্চভূত), সাহিত্যের মাত্রা (সাহিত্যের স্বরূপ) ১০

BNG- 403

পাশ্চাত্য সাহিত্য তত্ত্ব

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ পাশ্চাত্য সাহিত্যতত্ত্ব ও অ্যারিস্টটল, কোলরীজ, ওয়ার্ডস্‌ওয়ার্থ, শেলী, ইয়েটস্, টি.এস.এলিয়টের কাব্য সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. **পাশ্চাত্য সাহিত্য তত্ত্ব ও সাহিত্য বিচার পদ্ধতি—** রোমান্টিক মুভমেন্ট, হিস্টোরিক্যাল ক্রিটিসিজম,সাব অল্টার্ন কনসেপ্ট, ফেমিনিজম, সাইকো অ্যানালাইসিস, পোস্ট স্ট্রাকচারালিজম (উত্তর সংগঠনবাদ), ইকোক্রিটিসিজম, রিডার রেসপন্স থিওরি ১০

২. পোয়েটিক্স— অ্যারিস্টটল ১০

৩. বায়োগ্রাফিয়া লিটারেরিয়া— কোলরীজ ১০

৪. ডিফেন্স অব পোয়েট্রি— শেলী

সিম্বলিজম্ ইন পেন্টিং— ইয়েটস্

ট্র্যাডিশন অ্যান্ড দ্য ইন্ডিভিজুয়াল ট্যালেন্ট— টি. এস. এলিয়ট ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

BNG- 404

ভাষা আন্দোলন, বহির্বঙ্গীয় বাংলা সাহিত্য এবং বাংলা ও প্রতিবেশী সাহিত্যের তুলনামূলক চর্চা

Credit:-5 **Marks-50= (40+10)**

Course Outcome

❖ বহির্বঙ্গীয় বাংলা সাহিত্যচর্চা, বাংলা ও প্রতিবেশী সাহিত্যের তুলনামূলক চর্চা এবং বিভিন্ন ভাষা আন্দোলন সম্পর্কে জ্ঞান বৃদ্ধি।

Syllabus

১. বাহান্নর ভাষা আন্দোলন, মানভূমের ভাষা আন্দোলন, বরাকের ভাষা আন্দোলন ১০

২. উত্তর ও উত্তর-পূর্বাঞ্চলের বাংলা সাহিত্য পরিচয় (অখণ্ড বিহার, উত্তরপ্রদেশ, অসম ও ত্রিপুরা) ১০

৩. বাংলা ও প্রতিবেশী সাহিত্যের তুলনামূলক পাঠ— ১০

(ক) রবীন্দ্রনাথ ঠাকুরের ‘সীমার মাঝে অসীম তুমি’ ও মহাদেবী ভার্মার ‘ক্যা পূজন ক্যা অর্চন রে’ (‘নীরজা’ কাব্যগ্রন্থ)

(খ) জ্যোতিরিন্দ্রনাথ ঠাকুরের ‘স্বপ্নময়ী’ ও জ্যোতিপ্রসাদ আগরওয়ালের ‘কারেঙের লিগিরী’ (অসমীয়া নাটক ‘প্রসাদ কন্যা’)

(গ) শরৎচন্দ্রের ‘অভাগীর স্বর্গ’ ও প্রেমচন্দের ‘কফন’ (হিন্দি ছোটোগল্প)

৪. বাংলাদেশের বাংলা সাহিত্যের সংক্ষিপ্ত পরিচয় ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র

Course Outcome

BNG – 405A থেকে BNG – 405I পর্যন্ত সংশ্লিষ্ট বিশেষ পত্রগুলিতে বাংলা ভাষা ও সাহিত্যের বিশেষ বিশেষ দিকগুলিতে সম্যক জ্ঞান অর্জন।

বিশেষ পত্র: ১

Credit:-5 **Marks-50= (40+10)**

BNG – 405A

ভাষা বিজ্ঞান ও ভাষাতত্ত্ব

১. শৈলী বিজ্ঞান: ১০

শৈলীবিজ্ঞান কী, প্রমুখন ও বিচ্যুতি, সমান্তরালতা, শৈলী ও নির্বাচন, ভাষা-শৈলীর ধ্বনিগত-রূপগত-বাক্যগত ও শব্দার্থগত প্রসঙ্গ, কবিতার শৈলী বিশ্লেষণ

২. মনোভাষাবিজ্ঞান : ১০

মস্তিষ্কের ভাষাকেন্দ্র সংক্রান্ত আলোচনা, শিশুর ভাষার্জন, ভাষা আয়ত্তীকরণে জন্মগত দক্ষতা ও সমাজ-পরিবেশের ভূমিকা, প্রয়োগতত্ত্ব

৩. ভাষা চর্চার ইতিহাস ও পদ্ধতি : ১০

প্রাচীন ভারত ও প্রাচীন গ্রীসের ভাষাচর্চার ইতিহাস, ঐতিহাসিক-তুলনামূলক ভাষাচর্চা, এককালিক ভাষাচর্চা ও স্যোস্যুরের অবদান, বর্ণনামূলক ভাষাচর্চা, রূপান্তরমূলক সঞ্জননী ব্যাকরণ [Transformational Generative Grammar]

৪. উপভাষাতত্ত্ব : (উপভাষাতত্ত্ব, উপভাষা-বিভাষা-নিভাষা, উপভাষা জরিপ, উপভাষা মানচিত্র, বাংলা উপভাষা) ১০

বিশেষ পত্র: ২

Credit: 5 **Marks-50=(40+10)**

BNG- 405B

মধ্যযুগের সাহিত্য পাঠ

১. মধ্যযুগের সাহিত্যের রীতি ও আঙ্গিক (পদ, পাঁচালি, নাটগীতি, কড়চা, বারমাস্যা, চৌতিশা, মালসী, গাথা, গীতিকা, টপ্পা, লাচাড়ি, আখড়াই-হাফ আখড়াই ইত্যাদি) ১০

২. শ্রীকৃষ্ণবিজয়— মালাধর বসু (খগেন্দ্রনাথ মিত্র সম্পাদিত) ১০

৩. চৈতন্যভাগবত (আদিখন্ড)— বৃন্দাবন দাস (সুকুমার সেন সম্পাদিত, সাহিত্য অকাদেমি প্রকাশিত) ১০

৪. ধর্মমঙ্গল কাব্য— ঘনরাম চক্রবর্তী (পীযূষকান্তি মহাপাত্র সম্পাদিত, কলিকাতা বিশ্ববিদ্যালয় প্রকাশিত) ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র: ৩

Credit:-5 **Marks-50= (40+10)**

BNG- 405C
রবীন্দ্র-সাহিত্য পাঠ

১. উপন্যাস— গোরা/ যোগাযোগ ১০

২. নাটক— ডাকঘর/ চিত্রাঙ্গদা ১০

৩. কাব্য— গীতাঞ্জলি (নির্বাচিত)/ শেষসপ্তক

'গীতাঞ্জলি'র নির্বাচিত কবিতা— ১০

ক) আমার মাথা নত করে দাও হে তোমার (১)

খ) আমি বহু বাসনায় প্রাণপণে চাই (২)

গ) রূপ সাগরে ডুব দিয়েছি (৪৭)

ঘ) কবে আমি বাহির হলেম তোমারি গান গেয়ে (৬৫)

ঙ) এই করেছ ভালো নিঠুর হে (৯১)

চ) হে মোর দুর্ভাগা দেশ (১০৮)

ছ) সীমার মাঝে অসীম তুমি (১২০)

জ) তাই তোমার আনন্দ আমার পর (১২১)

ঝ) যাবার দিনে এই কথাটি বলে যেন যাই (১৪২)

ঞ) জীবনে যত পূজা হল না সারা (১৪৭)

৪. প্রবন্ধ— ১০

ক) মানবসত্য ('মানুষের ধর্ম')

খ) সভ্যতার সংকট ('কালান্তর')

গ) সামঞ্জস্য (আমরা আর কোনো চরম কথা...) ('শান্তিনিকেতন')

ঘ) ভারতবর্ষের ইতিহাস ('ভারতবর্ষ')

ঙ) শিক্ষার হেরফের ('শিক্ষা')

চ) রূপ ও অরূপ ('সঞ্চয়')

ছ) পুষ্পাঞ্জলি ('বিবিধ প্রবন্ধ')

জ) শকুন্তলা ('প্রাচীন সাহিত্য')

ঝ) বিদ্যাসাগর চরিত ('চারিত্রপূজা')

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র: ৪

Credit:-5 **Marks-50= (40+10)**

BNG – 405D

আধুনিক বাংলা কবিতা পাঠ

১. কবিতার কথা : ১০

ক. কবিতার সংজ্ঞা-স্বরূপ, রূপরীতি, কবিতায় আধুনিকতার লক্ষণ, আধুনিকতা ও বাংলা কবিতা, বিভিন্ন কবিতা আন্দোলন

খ. কবিতা বিচারের নানা পদ্ধতি

২. আধুনিক বাংলা কবিতা : ১০

ক. মধুসূদন দত্ত— বঙ্গভাষা

খ. বিহারীলাল চক্রবর্তী— নিশীথ সঙ্গীত

গ. কামিনী রায়— পাছে লোকে কিছু বলে

ঘ. সত্যেন্দ্রনাথ দত্ত— চম্পা

ঙ. যতীন্দ্রনাথ সেনগুপ্ত— হাট

চ. জীবনানন্দ দাশ— হাজার বছর শুধু খেলা করে

ছ. সুধীন্দ্রনাথ দত্ত— নষ্টনীড়

জ. বুদ্ধদেব বসু— রবীন্দ্রনাথের প্রতি

ঝ. বিষ্ণু দে— প্রচ্ছন্ন স্বদেশ

ঞ. শঙ্খ ঘোষ— পাঁজরে দাঁড়ের শব্দ

ট. শক্তি চট্টোপাধ্যায়— এপিটাফ

ঠ. অলোকরঞ্জন দাশগুপ্ত— তিমিরাভিসার

৩. রবীন্দ্রনাথ ঠাকুর— ‘শ্যামলী’ ১০

৪. অমিয় চক্রবর্তী— ‘পারাপার’ ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র: ৫

Credit:-5 **Marks-50= (40+10)**

BNG – 405E
নাট্যসাহিত্য পাঠ

১. নাটকের সংজ্ঞা, স্বরূপ, শ্রেণিবিভাগ, নাট্য মঞ্চ সম্পর্কিত ধারণা ১০

২. বাদল সরকার— এবং ইন্দ্রজিৎ ১০

৩. মনোজ মিত্র— যা নেই ভারতে ১০

৪. একাঙ্ক নাটক— ক) দিগিন্দ্রচন্দ্র বন্দ্যোপাধ্যায় : সীমান্তের ডাক ১০

খ) সলিল সেন : যান্ত্রিক

গ) মোহিত চট্টোপাধ্যায় : বাজপাখি

ঘ) উজ্জ্বল চট্টোপাধ্যায় : আইনস্টাইন ও ইন্দুবালা

বিশেষ পত্র: ৬

Credit:-5 **Marks-50= (40+10)**

BNG – 405F
লোকসাহিত্য-সংস্কৃতি তত্ত্ব ও পাঠ

১. লোকসাহিত্য ও সংস্কৃতির সাধারণ পরিচয়, কথান্তর ১০

২. লোকসাহিত্য বিচারের নানা প্রয়োগ ও পদ্ধতি (ঐতিহাসিক-ভৌগোলিক, মার্কসীয়, তুলনামূলক ও মনস্তাত্ত্বিক) ১০

৩. টাইপ ও মোটিফ ইনডেক্স (বৈশিষ্ট্য ও প্রয়োগ শিক্ষা) ১০

৪. ঠাকুরমার ঝুলি (দক্ষিণারঞ্জন মিত্র মজুমদার সম্পাদিত) ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র: ৭

Credit:-5 **Marks-50= (40+10)**

BNG- 405G
কথাসাহিত্য পাঠ

১. বাংলা উপন্যাস ও ছোটগল্পের সংজ্ঞা, স্বরূপ, উদ্ভব ও বিকাশ, রূপরীতি, শৈলী এবং গতিপ্রকৃতি। ১০

২. উপন্যাস পাঠ—

তারাশঙ্কর বন্দ্যোপাধ্যায় : রাধা/ শরদিন্দু বন্দ্যোপাধ্যায় : তুঙ্গভদ্রার তীরে ১০

৩. উপন্যাস পাঠ—

কালকূট : শাম্ব/মহাশ্বেতা দেবী : হাজার চুরাশির মা ১০

৪. ছোটগল্প— ১০

ক. স্বর্ণকুমারী দেবী : মিউটিনি/পেনে প্রীতি

খ. পরশুরাম : গামানুষ জাতির কথা/উলট পুরাণ

গ. জগদীশ গুপ্ত : আঠার কলার একটি/চন্দ্র সূর্য যতদিন

ঘ. শরদিন্দু বন্দ্যোপাধ্যায় : চুয়াচন্দন/পথের কাঁটা

ঙ. সৈয়দ মুজতবা আলি : পাদটীকা/নেড়ে

চ. কমলকুমার মজুমদার : নিম অন্নপূর্ণা/মতিলাল পাদরী

ছ. জ্যোতিরিন্দ্র নন্দী : নদী ও নারী/সামনে চামেলী

জ. দীপেন্দ্রনাথ বন্দ্যোপাধ্যায় : অশ্বমেধের ঘোড়া/জটায়ু

ঝ. সাধন চট্টোপাধ্যায় : স্টিলের চঞ্চু/মেহগনি

ঞ. সুচিত্রা ভট্টাচার্য : আমি মাধবী/বাদামী জড়ুল

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র: ৮

Credit:-5 **Marks-50= (40+10)**

BNG – 405H

সাহিত্যতত্ত্ব ও তত্ত্ববিদ

১. পাশ্চাত্য সাহিত্যতত্ত্ববিদ : ১০

হোরেস, লঙ্জাইনাস, প্লেটো, অ্যারিস্টটল, ক্রোচে, ব্রাডলে, স্যান্টিয়ানা, হিউম, শীলার, তেইন, রাসেল।

২ পাশ্চাত্য সাহিত্যতত্ত্ব ও সমালোচনা পদ্ধতি : ১০

ন্যারেটলজি, মডার্নিজম্, পোস্টমডার্নিজম্, এক্সপ্রেশনিজম্, সিম্বলিজম্, ইম্প্রেশনিজম্, এক্সিসটেনসিয়ালিজম্, কলোনিয়ালিজম্, পোস্ট কলোনিয়ালিজম্, স্যুররিয়ালিজম্, হিস্টোরিক্যাল ক্রিটিসিজম্, কম্পারেটিভ ক্রিটিসিজম্, স্যোসালিস্টিক ক্রিটিসিজম্, রিয়ালিস্টিক ক্রিটিসিজম্, মিথ ক্রিটিসিজম্।

৩. প্রাচ্য সাহিত্যতত্ত্ববিদ : ১০

ভারতীয় কাব্যতত্ত্ববিদ-ভরত, দণ্ডী, বামন, ভামহ, অভিনবগুপ্ত, ক্ষেমেন্দ্র, কুন্তক, বঙ্কিমচন্দ্র, রবীন্দ্রনাথ, বুদ্ধদেব

৪. (ক) কবিতার কথা— জীবনানন্দ দাশ (কবিতা প্রসঙ্গে, কবিতার আত্মা ও শরীর)

(খ) সাম্প্রতিক— অমিয় চক্রবর্তী (কাব্যে ধারণাশক্তি, কাব্যের টেকনিক, কাব্যাদর্শ)

(গ) স্বগত— সুধীন্দ্রনাথ দত্ত (কাব্যের মুক্তি)

(ঘ) সাহিত্যের স্বরূপ— শশিভূষণ দাশগুপ্ত (সাহিত্যের প্রাণধর্ম ও তত্ত্ববুদ্ধি, আর্টে প্রয়োজন ও অপ্রয়োজন, সাহিত্যের স্বরূপ, সাহিত্যে আদর্শবাদ বনাম বাস্তবতাবাদ) ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

বিশেষ পত্র: ৯

Credit:-5 **Marks-50= (40+10)**

BNG – 405I
ভারতীয় সাহিত্য পাঠ

১. কাব্য ও আখ্যান : বাল্মীকি— রামায়ণ (আদি কাণ্ড) (ধ্যানেশ নারায়ণ চক্রবর্তী অনূদিত)/বাণভট্ট : কাদম্বরী (তারাশঙ্কর তর্করত্ন অনূদিত) ১০

২. নাটক : গিরিশ কারনাড— হয়বদন/বিজয় তেন্ডুলকর— কন্যাদান ১০

৩. উপন্যাস : মুন্সী প্রেমচন্দ— গোদান/ ফনীশ্বরনাথ রেণু— ময়লা আঁচল ১০

৪. ছোটগল্প ও কবিতা : ১০

- **ছোটগল্প—**

  (ক) কালিন্দীচরণ পাণিগ্রাহী (ওড়িয়া)— বিজয় উৎসব

  (খ) ইন্দিরা গোস্বামী (অসমীয়া)— সংস্কার

  (গ) দন্ডপাণি জয়কান্তন (তামিল)— কুঞ্জবনের ক্ষ্যাপা

  (ঘ) বেঙ্কটেশ মুদ্গলকর (মারাঠি)— ভোজবাজী

- কবিতা— আধুনিক ভারতীয় কবিতা সংগ্রহ : বিপ্লব চক্রবর্তী (সম্পাদিত)
  (নির্বাচিত ৪টি কবিতা)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:44:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Bengali_2022_23.pdf

Vidyasagar University
Midnapore-721102

The SYLLABUS for
POST GRADUATE Courses
in

Bengali

Under Choice Based Credit System (CBCS)
(Semester Programme)

[w.e.f. 2018-19 session]

১

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

Department of Bengali
Programme Outcome

- The course prepares students for teaching and for Creative Bengali Writing.
- The course serves as a basis for further higher studies and research in this field.
- Students will demonstrate proficiency in literary history, literary theory.
- Students will demonstrate critical and analytical skills in the interpretation and evaluation of literary texts.
- Students will demonstrate a command of written academic Bengali.
- Students will demonstrate mastery to write under time constraints.
- Students will acquire a good knowledge on the nature of language and of the place of language study on society.
- The students will acquire general linguistic theory and fundamental understanding of core areas of language analysis including phonology, morphology, syntax and pragmatics.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

COURSE STRUCTURE OF M.A IN BNGALI

SEMESTER	COURSE NO.	COURSE TITLES		Full Marks	Credit
I	BNG 101	BHASAR ITIHAS O PARICHAY		50	6
	BNG 102	MADHYAJUGER SAHITYA DHARA		50	6
	BNG 103	PRACHIN O ADI MADHYAYUGER SAHITYA PATH		50	6
	BNG 104	ANTAMADHYAYUGER SAHITYA PATH		50	6
	BNG 105	UNISH-BISH SHATAKER GADYASAHITYER ITIHAS O GADYASAHITYA PATH		50	6
	TOTAL			250	30
II	BNG 201	SADHARAN BHASHA BIJYAN		50	6
	BNG 202	UNISH-BISH SHATAKER KABYA-KABITA PATH		50	6
	BNG 203	RABINDRA SAHITYA PATH		50	6
	C-BNG 204	BANGLA BHASATATTWA O SAHITYER PATH (CBCS)		50	4
	BNG 205	SEMINAR O GABESANADHARMI PRAKALPA RACHANA		50	6
	TOTAL			250	28
III	BNG 301	UNISH O BISH SHATAKER UPANYASER ITIHAS O PATH		50	6
	BNG 302	UNISH O BISH SHATAKER CHOTOGALPER ITIHAS O PATH		50	6
	BNG 303	BANGLA NATAK O PRAHASAN : UNISH O BISH SHATAK		50	6
	C-BNG 304	PRACHYA SAHITYATATTWA O BANGLA SAHITYER BIBIDHA PATH (CBCS)		50	4
	SPECIAL PAPER (KSHETRIYA SAMIKHSA O PRAKALPAPATRA UPASTHAPAN) (any one corresponding to theory PAPER BNG 303)				
	BNG 305	BNG 305A	BHASHA SAMIKSHA	50	6
		BNG 305B	MADHYAYUGER PUNTHICHARCHA O KSHETRA-SAMIKSHA		
		BNG 305C	RABINDRA JIBAN O SAHITYA BISHAYAK PRAKALPA		
		BNG 305D	PRAYOGIK NATYA PRAKALPA		
		BNG 305E	LOKA-UPADAN SANGRAHA O SAMIKSHA		
		BNG 305F	KATHASAHITYA BISHYAK PRAKALPA		
		BNG 305G	SAHITYATATTWA BISHYAK PRAKALPA		
		BNG 305H	BANGLA O PRATIBESHI SAHITYA BISHYAK PRAKALPA		
	TOTAL			250	28
IV	BNG 401	BANGLA SAHITYER RUPANTAR, PATHANTAR, ANUBAD SAHITYA PRERONA		50	6
	BNG 402	PRACHYA SAHITYATATTWA		50	6
	BNG 403	PASCHATYA SAHITYATATTWA		50	6
	BNG 404	BOHIRBANGIYA BANGLA SAHITYACHARCHA O BHASHA ANDOLON		50	6
	SPECIAL PAPER (Theory) (any one)				
	BNG 405	BNG 405A	BHASHA BIJYAN O BHASHA TATTWA	50	6
		BNG 405B	MADHYAJUGER SAHITYA PATH		
		BNG 405C	RABINDRA SAHITYA PATH		
		BNG 405D	NATYASAHITYA PATH		
		BNG 405E	LOKASAHITYA-SANSKRITI TATTWA O PATH		
		BNG 405F	KATHASAHITYA PATH		
		BNG 405G	SAHITYATATTWA O TATTWABID		
		BNG 405H	BANGLA O PRATIBESHI SAHITYA PATH		
	TOTAL			250	30
	ALL TOTAL			1000	116

Full Marks, 50 = END SEMESTER EXAMINATION (40) + INTERNAL ASSESSMENT (10)

BNG 205 & BNG 305 = PROJECT PAPER (40) + SEMINAR (10) & PROJECT PAPER (40) + VIVA-VOCE (10)

** ***See next page***

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

** In case choice of the Special Paper, student shall be choiced anyone of the paper according to the series of BNG-305 and again the student shall be maintained same series on BNG-405 regarding choice of the Special Paper at BNG-405 series. (As for example, if he/she choice BNG-305A at BNG-305 series, then he/she should be choice BNG-405A at BNG-405 series).

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

স্নাতকোত্তর বাংলা

পাঠক্রম ২০১৮

BNG-101
ভাষার ইতিহাস ও পরিচয়

Credit:-6 **Marks-50= (40+10)**

Course Outcome

❖ ভাষার উৎস, বিকাশ ও বিবর্তন সম্পর্কে জ্ঞান বৃদ্ধি।

Syllabus

১. ইন্দো-ইউরোপীয় ভাষাবংশের পরিচয়, প্রাচীন ভারতীয় আর্যভাষা সমূহ ১০

২. মধ্যভারতীয় আর্যভাষা সমূহ ১০

৩. নব্যভারতীয় আর্যভাষার বর্গীকরণ, মাগধী প্রাকৃত উদ্ভূত ভাষা সমূহের সংক্ষিপ্ত পরিচয় ১০

৪. লিপির উদ্ভব ও বিকাশ, বাংলা লিপি ১০

BNG-102
মধ্যযুগের সাহিত্যধারা

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ মধ্যযুগের বাংলা সাহিত্য, সংস্কৃতি, ইতিহাস ও ধর্ম-দর্শন সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. বাঙালি জাতির ইতিহাস ও ধর্মদর্শন (শাক্ত, সূফী, বাউল) ১০

মধ্যযুগের বিভিন্ন সাহিত্য ধারার পরিচয় ১৫

২. অনুবাদ সাহিত্য, জীবনী সাহিত্য, বৈষ্ণব সাহিত্য

৩. নাথ সাহিত্য, আরাকান রাজসভার সাহিত্য, মঙ্গল সাহিত্য, শাক্ত পদাবলী, কবিগান। ১৫

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

BNG-103
প্রাচীন ও আদি মধ্যযুগের সাহিত্যপাঠ

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ প্রাচীন ও আদি মধ্যযুগের বাংলা সাহিত্য সম্পর্কে জ্ঞান অর্জন।

Syllabus

সাধারণ পরিচয়:

১. বাংলার সৃজ্যমান প্রকীর্ণ শ্লোক (নির্বাচিত) : ১৫

সাধারণ পরিচয় : জয়দেব (গীতগোবিন্দ), প্রাকৃতপৈঙ্গল, সুভাষিত রত্নকোষ, সদুক্তিকর্ণামৃত, আর্যাসপ্তশতী, গাথাসপ্তশতী।

পাঠ্যশ্লোক :

প্রাকৃত পৈঙ্গল :

১. ওগ্গর ভত্তা রম্ভকপত্তা
২. সোমহ কন্তা/দূর দিগন্তা
৩. তরুণ তরণি তবই ধরণি
৪. অরে রে বাহিহি কাহ্ন
৫. গজ্জই মেহ কি অম্বর

গীতগোবিন্দ :

১. ললিত লবঙ্গলতা পরিশীলন কোমলমলয় সমীরে
২. বদসি যদি কিঞ্চিদপি দন্তরুচিকৌমুদী
৩. পততি পতত্রে বিচলিত পত্রে

সরহের দোহাকোষ :

১. ঘরে অচ্ছই বাহিরে পুচ্ছই

২. চর্যাপদ : পাঠ্যপদ - ১৫

কা আ তরুবর – লুইপাদ

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

উঁচা উঁচা পাবত – শবরপাদ
ভবণই গহণ – চাটিল্লপাদ
কাহেরে ঘেণি- ভুসুকুপাদ
নগর বাহিরে – কাহ্নপাদ
টালত মোর ঘর – ঢেণ্ঢনপাদ
সোনে ভরিতী করুণা নাবী – কামলিপাদ
দুলি দুহি পিটা – কুক্কুরীপাদ

৩. শ্রীকৃষ্ণকীর্তন : (দানখন্ড, বংশীখন্ড, রাধাবিরহ) ১০

BNG-104
অন্তমধ্যযুগের সাহিত্যপাঠ

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ অন্তমধ্যযুগের বাংলা সাহিত্য সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. বৈষ্ণব পদাবলী – পাঠ্যপদ – ১০

বিদ্যাপতি – সখি হে আমারি দুখের নাহি ওর
পিয়া যব আওব
তাতল সৈকত বারিবিন্দু সম
চন্ডীদাস – বন্ধু সকলই আমার দোষ
সই কেমনে ধরিব হিয়া
জ্ঞানদাস – রূপ লাগি আঁখি ঝুরে
মনের মরম কথা তোমারে কহিয়ে হেথা
গোবিন্দদাস – মন্দির বাহির কঠিন কপাট
নীরদ নয়নে নীরঘন সিঞ্চনে

২. চৈতন্যচরিতামৃত – (আদি – ৪র্থ, মধ্য - ৮ম) ১৫

৩. শিবায়ন – রামেশ্বর ভট্টাচার্য ১৫

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

BNG-105
উনিশ-বিশ শতকের গদ্যসাহিত্যের ইতিহাস ও গদ্যসাহিত্য পাঠ

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ উনিশ-বিশ শতকের বাংলার সমাজ ও গদ্যসাহিত্যের ইতিহাস সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. **উনিশ-বিশ শতকের প্রবন্ধ সাহিত্যের ধারা**– ১০

ফোর্ট উইলিয়াম, রামমোহন, বিদ্যাসাগর, প্রমথ চৌধুরী, অন্নদাশঙ্কর।

২. **প্রবন্ধ পাঠ** – ১০

বাঙ্গালার ইতিহাস – বঙ্কিমচন্দ্র চট্টোপাধ্যায়

মোপাসাঁ চেখভ্ ও রবীন্দ্রনাথ – মুজতবা আলী

শিক্ষা ও সংস্কৃতি – সুনীতিকুমার চট্টোপাধ্যায়

৩. **কমলাকান্তের দপ্তর** – বঙ্কিমচন্দ্র চট্টোপাধ্যায় ১০

(একা কে গায় ঐ, মনুষ্যফল, আমার মন, বড়বাজার, আমার দুর্গোৎসব, একটি গীত, বিড়াল)

৪. **শকুন্তলা** - বিদ্যাসাগর ১০

BNG-201
সাধারণ ভাষা বিজ্ঞান

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ ভাষার বিভিন্ন তত্ত্ব সম্পর্কে জ্ঞান বৃদ্ধি।

Syllabus

১. ধ্বনিতত্ত্ব: (ফোন, ফোনিম, অ্যালোফোন ও সেই সংক্রান্ত আলোচনা, অবিভাজ্য ধ্বনি, ধ্বনির অবস্থান, ধ্বনির স্ব-লক্ষণ, স্বরধ্বনি, ব্যঞ্জনধ্বনি ও আন্তর্জাতিক ধ্বনিমূলক বর্ণমালা) ১০

২. রূপতত্ত্ব : (মর্ফ, মর্ফিম, অ্যালোমর্ফ ও সেই সংক্রান্ত আলোচনা, বাংলা ভাষার রূপ-বৈচিত্র্যের আলোচনা) ১০

৩. অন্বয়তত্ত্ব : (বাক্য, বাক্যখন্ড, বাংলা বাক্যের গঠন বৈশিষ্ট্য, রূপান্তরমূলক সঞ্জননী তত্ত্ব) ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

৪. সমাজ ভাষাবিজ্ঞান : (সমাজ ভাষা, সমাজ-উপভাষার সাধারণ আলোচনা, রেজিস্টার, ডাইগ্লোসিয়া, ধর্ম-বয়স-পেশা-লিঙ্গ অনুসারে ভাষা-প্রভেদ, ভাষা-পরিবর্তন ও ভাষা-সংযোগ ও তজ্জনিত ফলাফল, ভাষা পরিকল্পনা) ১০

BNG-202
উনিশ-বিশ শতকের কাব্য-কবিতা পাঠ

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ উনিশ-বিশ শতকের কাব্য-কবিতা সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. মেঘনাদবধ কাব্য (প্রথম, চতুর্থ, ষষ্ঠ ও নবম সর্গ) - মাইকেল মধুসূদন দত্ত ১৫

২. বনলতা সেন - জীবনানন্দ দাশ ১০

৩. ক) উটপাখি - সুধীন্দ্রনাথ দত্ত ১৫

খ) সংগতি - অমিয় চক্রবর্তী

গ) ফুল ফুটুক না ফুটুক - সুভাষ মুখোপাধ্যায়

ঘ) স্বর্ণভস্ম - দিনেশ দাস

ঙ) বাবরের প্রার্থনা - শঙ্খ ঘোষ

চ) যেতে পারি কিন্তু কেন যাবো - শক্তি চট্টোপাধ্যায়

ছ) জননী যন্ত্রণা - মঙ্গলাচরণ চট্টোপাধ্যায়

BNG-203
রবীন্দ্র সাহিত্য পাঠ

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ রবীন্দ্রনাথের জীবন ও সাহিত্য সম্পর্কে সম্যক জ্ঞান অর্জন।

Syllabus

১. শ্যামলী ১০

২. রক্তকরবী ১০

৩. চতুরঙ্গ ১০

৪. রবীন্দ্র ছোটগল্প : ১০

পোস্টমাস্টার, কাবুলিওয়ালা, ক্ষুধিত পাষাণ, একরাত্রি, ল্যাবরেটরি

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

CBCS
C- BNG-204
বাংলা ভাষাতত্ত্ব ও সাহিত্যের পাঠ

Credit:-5 **Marks: 50= (40+10)**

Course Outcome

❖ অন্য বিষয়ের ছাত্রছাত্রীদের বাংলা ভাষাতত্ত্ব ও সাহিত্য বিষয়ে সম্যক জ্ঞান বৃদ্ধি।

Syllabus

৪ টি প্রশ্ন প্রতিটি ১০ নম্বরের ৪ × ১০ = ৪০

১. ভাষাতত্ত্ব : ১০

মূলধ্বনি (Phoneme) বিষয়ক আলোচনা

রূপমূল (Morpheme) বিষয়ক আলোচনা

বাংলা রূপতত্ত্ব : (নাম বিভক্তি, ক্রিয়া বিভক্তি)

২. চর্যাপদ : ১০

ক. সাধারণ পরিচয় ও তত্ত্বদর্শন

খ. পদ ৪টি — কা আ তরুবর.....

উঁচা উঁচা পাবত.....

টালত মোর ঘর.....

কাহারে ঘেণি.....

৩. মধ্যযুগ : ১০

ক. গৌড়ীয় বৈষ্ণব দর্শন

খ. পদ ৪টি — চির চন্দন উরে – বিদ্যাপতি

বন্ধু সকলি আমার দোষ – চণ্ডীদাস

রূপ লাগি আঁখি ঝুরে – জ্ঞানদাস

কুলবতী কঠিন কপাট – গোবিন্দদাস

৪. নাম/প্রহসন : ১০

বুড় সালিকের ঘাড়ে রোঁ - মাইকেল মধুসূদন দত্ত

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

BNG-205
সেমিনার ও গবেষণাধর্মী প্রকল্প রচনা

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ ছাত্রছাত্রীদের গবেষণা বিষয়ে উৎসাহ দান এবং সৃজনশীল রচনায় আগ্রহ সৃষ্টি।

Syllabus

সেমিনার ১০

গবেষণাধর্মী প্রকল্প রচনা ৪০

Abstract: 5, Introduction: 5, Background Development: 5, Objective: 5, Discussion: 10, Conclusion: 5, References: 5

BNG-301
উনিশ ও বিশ শতকের উপন্যাসের ইতিহাস ও পাঠ

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ উনিশ ও বিশ শতকের বাংলা উপন্যাস সম্পর্কে জ্ঞান অর্জন।

Syllabus

ক. উনিশ বিশ শতকের উপন্যাসের ধারা (নির্বাচিত লেখক) ১০

স্বর্ণকুমারী দেবী, শরৎচন্দ্র চট্টোপাধ্যায়, তারাশঙ্কর বন্দোপাধ্যায়, বিভূতিভূষণ বন্দ্যোপাধ্যায়, মানিক বন্দ্যোপাধ্যায়, নারায় ণ গঙ্গোপাধ্যায়, বনফুল, শরদিন্দু বন্দ্যোপাধ্যায়, সতীনাথ ভাদুড়ী, মহাশ্বেতা দেবী, সমরেশ বসু, আখতারুজ্জামান ইলিয়াস।

খ. উপন্যাস

১) কৃষ্ণকান্তের উইল - বঙ্কিমচন্দ্র চট্টোপাধ্যায় ১০

২) পথের পাঁচালী - বিভূতিভূষণ বন্দ্যোপাধ্যায় ১০

৩) প্রথম প্রতিশ্রুতি - আশাপূর্ণা দেবী ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

BNG-302

উনিশ ও বিশ শতকের ছোটগল্পের ইতিহাস ও পাঠ

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ উনিশ ও বিশ শতকের বাংলা, ভারতীয় ও বিদেশি ছোটগল্প সম্পর্কে জ্ঞান অর্জন।

Syllabus

ক. উনিশ ও বিশ শতকের ছোটগল্পের ধারা (নির্বাচিত লেখক) ১০

প্রভাতকুমার মুখোপাধ্যায়, তারাশঙ্কর বন্দ্যোপাধ্যায়, মানিক বন্দ্যোপাধ্যায়, জগদীশ গুপ্ত, বিভূতিভূষণ বন্দ্যোপাধ্যায়, নারায়ণ গঙ্গোপাধ্যায়, জ্যোতিরিন্দ্র নন্দী, বিমল কর, প্রেমেন্দ্র মিত্র, আশাপূর্ণা দেবী, পরশুরাম, সতীনাথ ভাদুড়ী, নরেন্দ্রনাথ মিত্র, সুবোধ ঘোষ, সমরেশ বসু, মহাশ্বেতা দেবী, সৈয়দ ওয়ালীউল্লাহ, হাসান আজিজুল হক।

খ. ছোটগল্প : ১৫

চিকিৎসা সংকট – পরশুরাম

ডাইনি - তারাশঙ্কর বন্দ্যোপাধ্যায়

সরীসৃপ - মানিক বন্দ্যোপাধ্যায়

হয়তো - প্রেমেন্দ্র মিত্র

বুধনী - বনফুল

বনজ্যোৎস্না - নারায়ণ গঙ্গোপাধ্যায়

শানাবাউরির কথকতা - সমরেশ বসু

চতুর্থ পানিপথের যুদ্ধ - সুবোধ ঘোষ

জননী - বিমল কর

গ. অনূদিত ছোটগল্প : ১৫

মোপাসাঁ - নেকলেস

ও হেনরি - গিফট অফ দ্য মেজাই (মেজাই-এর উপহার)

চেখভ্ - ডেথ অফ এ ক্লার্ক (কেরাণীর মৃত্যু)

প্রেমচন্দ – সদ্‌গতি (হিন্দি)

কালিন্দীচরণ পানিগ্রাহী - বিজয় উৎসব (ওড়িয়া)

মহিম বরা - মাছ ও মানুষ (অসমীয়া)

ইউ. আর. অনন্তমূর্তি – ঘটশ্রাদ্ধ

কৃষণ চন্দর – পেশোয়ার এক্সপ্রেস

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

BNG-303
বাংলা নাটক ও প্রহসন : উনিশ ও বিশ শতক

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ উনিশ ও বিশ শতকের বাংলা নাটক ও প্রহসন সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. বাংলা নাট্য সাহিত্যের ইতিহাস : সাধারণ পাঠ ১০

(নির্বাচিত নাট্যকার - রামনারায়ণ তর্করত্ন, দীনবন্ধু মিত্র, গিরিশচন্দ্র ঘোষ, জ্যোতিরিন্দ্রনাথ ঠাকুর, দ্বিজেন্দ্রলাল রায়, মন্মথ রায়, মনোজ মিত্র।)

২. বুড় সালিকের ঘাড়ে রোঁ - মাইকেল মধুসূদন দত্ত ১০

৩. জনা - গিরিশচন্দ্র ঘোষ ১০

৪. নবান্ন - বিজন ভট্টাচার্য ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

CBCS

C- BNG-304

প্রাচ্য সাহিত্যতত্ত্ব ও বাংলা সাহিত্যের বিবিধ পাঠ

Credit:-5 **Marks: 50= (40+10)**

Course Outcome

❖ অন্য বিষয়ের ছাত্রছাত্রীদের প্রাচ্য সাহিত্যতত্ত্ব ও বাংলা সাহিত্যের বিবিধ পাঠ সম্পর্কে সম্যক জ্ঞান বৃদ্ধি।

Syllabus

৪ টি প্রশ্ন প্রতিটি ১০ নম্বরের ৪ × ১০ = ৪০

১. প্রাচ্য সাহিত্যতত্ত্ব - ১০

ধ্বনিবাদ, বক্রোক্তিবাদ, ঔচিত্যবাদ

২. উপন্যাস - ১০

আরণ্যক - বিভূতিভূষণ বন্দ্যোপাধ্যায়

৩. প্রবন্ধ - ১০

বিদ্যাপতি ও জয়দেব – বঙ্কিমচন্দ্র চট্টোপাধ্যায়

স্পোর্টসের বিরুদ্ধে – বুদ্ধদেব বসু

ইন্টারভিউ – সৈয়দ মুজতবা আলি

রোমা রোঁলা – অন্নদাশঙ্কর রায়

৪. গল্প ও কবিতা - ১০

গল্প – পোস্টমাস্টার, অভাগীর স্বর্গ, লম্বকর্ণ

কবিতা - নিরুদ্দেশ যাত্রা, গীতাঞ্জলি [যাবার আগে শেষ কথাটি (১৪২ সংখ্যক)]

নিমন্ত্রণ, ক্যামেলিয়া - রবীন্দ্রনাথ ঠাকুর

বৃষ্টি – অমিয় চক্রবর্তী

বোধ - জীবনানন্দ দাশ

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

বিশেষ পত্র

বিশেষপত্রের প্রকল্পপত্র উপস্থাপন

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ BNG-305A—BNG-305H পর্যন্ত সংশ্লিষ্ট বিষয়গুলি সম্পর্কে উন্নত ও আধুনিক জ্ঞান অর্জন এবং প্রায়োগিক জ্ঞান বৃদ্ধি।

Syllabus

বিশেষ পত্র- ১

Credit:-6 **Marks: 50= (40+10)**

BNG-305A

ভাষা সমীক্ষা

(ক্ষেত্রীয় সমীক্ষা ও প্রকল্পপত্র উপস্থাপন)

১. প্রকল্পপত্র (রাঢ় অঞ্চলের বাংলা ভাষার ক্ষেত্রীয় অনুসন্ধান নির্ভর প্রতিবেদন) ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র- ২

Credit:-6 **Marks: 50= (40+10)**

BNG-305B

মধ্যযুগের পুঁথিচর্চা ও ক্ষেত্র সমীক্ষা

(ক্ষেত্রীয় সমীক্ষা ও প্রকল্পপত্র উপস্থাপন)

১. প্রকল্পপত্র [শতাধিক বছরের পুরানো সাহিত্য ও ভাষা-উপাদান সংগ্রহাভিযান (পুঁথি, দলিল-দস্তাবেজ, চিঠিপত্র, প্রাচীন স্থাপত্য গাত্রে লিখন-লিপি উদ্ধার) ও প্রতিবেদন রচনা] ৪০

২. পুঁথি সংগ্রহ, সংরক্ষণ, পুঁথি পাঠ ও সম্পাদনা সম্পর্কে শিক্ষা ও পুঁথি পাঠ (প্রায়োগিক পরীক্ষা হবে) ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

বিশেষ পত্র- ৩

Credit:-6 **Marks: 50= (40+10)**

BNG-305C

রবীন্দ্র জীবন ও সাহিত্য বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র- ৪

Credit:-6 **Marks: 50= (40+10)**

BNG-305D

প্রায়োগিক নাট্য প্রকল্প

১. প্রকল্পপত্র রচনা ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র- ৫

Credit:-6 **Marks: 50= (40+10)**

BNG- 305E

লোক-উপাদান সংগ্রহ ও সমীক্ষা

(ক্ষেত্রীয় সমীক্ষা ও প্রকল্পপত্র উপস্থাপন)

১. প্রকল্পপত্র রচনা (রাঢ় অঞ্চলের লোকসাহিত্য ও সংস্কৃতির ক্ষেত্রীয় অনুসন্ধান এবং লোক উপাদান সংগ্রহ নির্ভর প্রতিবেদন রচনা) ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র- ৬

Credit:-6 **Marks: 50= (40+10)**

BNG- 305F

কথাসাহিত্য বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

বিশেষ পত্র- ৭

Credit:-6 **Marks: 50= (40+10)**

BNG-305G

সাহিত্যতত্ত্ব বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

বিশেষ পত্র- ৮

Credit:-6 **Marks: 50= (40+10)**

BNG- 305H

বাংলা ও প্রতিবেশী সাহিত্য বিষয়ক প্রকল্প

১. প্রকল্পপত্র রচনা ৪০

২. সাক্ষাৎকার ভিত্তিক পরীক্ষা ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

BNG- 401
বাংলা সাহিত্যের রূপান্তর, পাঠান্তর, অনুবাদ সাহিত্য প্রেরণা

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ বাংলা সাহিত্যের অনুবাদ, পাঠান্তর ও রূপান্তর সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. রজনী - বঙ্কিমচন্দ্র (পাঠান্তর) ১৫

২. মধুসূদন, রবীন্দ্রনাথ, জীবনানন্দের উপর প্রাচ্য ও পাশ্চাত্য প্রভাব ১০

৩. মেঘদূত (পূর্বমেঘ) (রাজশেখর বসুর অনুবাদ) ১৫

BNG- 402
প্রাচ্য সাহিত্যতত্ত্ব

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ প্রাচ্য সাহিত্যতত্ত্ব ও সাহিত্যতত্ত্ব বিষয়ে রবীন্দ্র ভাবনা সম্পর্কে জ্ঞান বৃদ্ধি।

Syllabus

১. প্রাচ্য সাহিত্যতত্ত্ব – অলংকার, রীতি, বক্রোক্তি, ঔচিত্যবাদ, ধ্বনি ও রস ১৫

২. সাহিত্যদর্পণ : (তৃতীয় পরিচ্ছেদ স্থায়ী ভাবের লক্ষণ— রতির্হাসশ্চ..... ইত্যাদি থেকে পরবর্তী অংশ এবং অষ্টম পরিচ্ছেদ) ১৫

৩. রবীন্দ্রনাথ ঠাকুরের সাহিত্যতত্ত্ব বিষয়ক নির্বাচিত প্রবন্ধ : ১০
আধুনিক সাহিত্য, চিত্র ও সঙ্গীত, সাহিত্যের বিচার, সাহিত্যের তাৎপর্য, ‘পঞ্চভূত’ গ্রন্থের ‘কাব্যের তাৎপর্য’ প্রবন্ধ

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

BNG-403
পাশ্চাত্য সাহিত্যতত্ত্ব

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ পাশ্চাত্য সাহিত্যতত্ত্ব, অ্যারিস্টটল ও হোরেসের কাব্য সম্পর্কে জ্ঞান অর্জন।

Syllabus

১. পাশ্চাত্য সাহিত্যতত্ত্ব ও সাহিত্য বিচার পদ্ধতি - রোমান্টিক মুভমেন্ট, হিস্টরিক্যাল ক্রিটিসিজম্, সাব-অল্টার্ন কনসেপ্ট, ফেমিনিজম, সাইকোঅ্যানালাইসিস, পোস্ট স্ট্রাকচারলিজম্, (উত্তর সংগঠনবাদ), কম্পারেটিভ ক্রিটিসিজম্ ১৫

২. পোয়েটিকস – অ্যারিস্টটল ১৫

৩. অন দ্য আর্থ অফ পোয়েট্রি – হোরেস ১০

BNG-404
বহির্বঙ্গীয় বাংলা সাহিত্যচর্চা ও ভাষা আন্দোলন

Credit:-6 **Marks: 50= (40+10)**

Course Outcome

❖ বহির্বঙ্গীয় বাংলা সাহিত্যচর্চা ও বিভিন্ন ভাষা আন্দোলন সম্পর্কে জ্ঞান বৃদ্ধি।

Syllabus

১. বিহার ও ঝাড়খণ্ডের বাংলা সাহিত্য চর্চা ১৫

২. আসাম ও ত্রিপুরা বাংলা সাহিত্য চর্চা ১৫

৩. বাংলা ভাষাকেন্দ্রিক আন্দোলন ১০

বহির্বঙ্গীয় বাংলা সাহিত্যচর্চা

ত্রিপুরা :

কবিতা- পীযূষ রাউত, সেলিম মুস্তাফা

গল্প- ভীষ্মদেব ভট্টাচার্য, দেবব্রত দেব, মীনাক্ষী সেন

উপন্যাস - জয়া গোয়ালা, দুলাল ঘোষ, বিমল সিংহ

নাটক - কমল রায়চৌধুরী, চন্দন সেনগুপ্ত

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

প্রবন্ধ - রামপ্রসাদ দত্ত, বিকচ চৌধুরী, মঞ্জরী চৌধুরী

আসাম :

কবিতা - শক্তিপদ ব্রহ্মচারী, অমিতাভ দেবচৌধুরী

গল্প - অরিজিৎ চৌধুরী, বদরুজ্জামান চৌধুরি

উপন্যাস - অঞ্জলি লাহিড়ী, সমর দেব

নাটক - শেখর দেবরায়, প্রদ্যুৎ চক্রবর্তী

প্রবন্ধ - তপোধীর ভট্টাচার্য, ঊষারঞ্জন ভট্টাচার্য

বিহার :

কবিতা - কল্যাণ সেনগুপ্ত, মলয় রায়চৌধুরী

গল্প - সতীনাথ ভাদুড়ী, বিভূতিভূষণ মুখোপাধ্যায়, বনফুল

ভ্রমণ/উপন্যাস - সতীনাথ ভাদুড়ী, বিভূতিভূষণ মুখোপাধ্যায়, সুবিমল বসাক

নাটক - বনফুল, শরদিন্দু বন্দ্যোপাধ্যায়

প্রবন্ধ - নন্দদুলাল রায়, সুধীরকুমার করণ

ঝাড়খন্ড :

কবিতা - স্বদেশ সেন, কাজল সেন

গল্প - অজিত রায়, সুবল দত্ত

উপন্যাস - কমল চক্রবর্তী

প্রবন্ধ - বারীন ঘোষাল, বিনয় মাহাতো

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

বিশেষ পত্র
Course Outcome

❖ **BNG – 405A** থেকে **BNG – 405H** পর্যন্ত সংশ্লিষ্ট বিশেষ পত্রগুলিতে বাংলা ভাষা ও সাহিত্যের বিশেষ বিশেষ দিকগুলিতে সম্যক জ্ঞান অর্জন।

বিশেষ পত্র – ১

Credit:-6 **Marks: 50= (40+10)**

BNG – 405A
ভাষা বিজ্ঞান ও ভাষাতত্ত্ব

১. **শৈলী বিজ্ঞান :** (শৈলী : শৈলীবিজ্ঞান কী, প্রমুখন ও বিচ্যুতি, সমান্তরলতা, শৈলী ও নির্বাচন, ভাষা-শৈলীর ধ্বনিগত-রূপগত-বাক্যগত-শব্দ ও শব্দার্থগত প্রসঙ্গ, কবিতার শৈলী বিশ্লেষণ) ১০

২. **মনোভাষাবিজ্ঞান :** (মস্তিষ্কের ভাষাকেন্দ্র, শিশুর ভাষার্জন, ভাষা আয়ত্তীকরণে জন্মগত দক্ষতা ও সমাজ-পরিবেশের ভূমিকা, প্রয়োগতত্ত্ব) ১০

৩. **ভাষা চর্চার ইতিহাস ও পদ্ধতি :**
(প্রাচীন ভারত ও গ্রীসের ভাষাচর্চার ইতিহাস, ঐতিহাসিক-তুলনামূলক ভাষাচর্চা-বর্ণানামূলক ভাষাচর্চা, রূপান্তরমূলক সঞ্জননী ব্যাকরণ [Transformation Generative Grammar]) ১০

৪. **উপভাষাতত্ত্ব :** (উপভাষাতত্ত্ব, উপভাষা-বিভাষা-নিভাষা, উপভাষা জরিপ, উপভাষা মানচিত্র, বাংলা উপভাষা) ১০

বিশেষ পত্র – ২

Credit:-6 **Marks: 50= (40+10)**

BNG – 405B
মধ্যযুগের সাহিত্য পাঠ

১. রামায়ণ (আদি, অরণ্য ও লঙ্কাকাণ্ড) - কৃত্তিবাস ওঝা (হরেকৃষ্ণ মুখোপাধ্যায় সম্পাদিত) ১০

২. চৈতন্যভাগবত – বৃন্দাবন দাস ১০

৩. লোরচন্দ্রাণী ও সতীময়না – দৌলত কাজী ১০

৪. ঘনরাম চক্রবর্তী – ধর্মমঙ্গল ১০

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

বিশেষ পত্র – ৩

Credit:-6 **Marks: 50= (40+10)**

BNG – 405C
রবীন্দ্র সাহিত্য পাঠ

১. শেষ সপ্তক ১০

২. গোরা ১০

৩. চিত্রাঙ্গদা (কাব্যনাট্য ও নৃত্যনাট্য) ১০

৪. জীবনস্মৃতি ১০

বিশেষ পত্র – ৪

Credit:-6 **Marks: 50= (40+10)**

BNG – 405D
নাট্যসাহিত্য পাঠ

১. নাটকের সংজ্ঞা, স্বরূপ, শ্রেণি বিভাগ, নাট্য মঞ্চ সম্পর্কিত ধারণা ১০

২. এবং ইন্দ্রজিৎ - বাদল সরকার ১০

৩. গল্প হেকিম সাহেব – মনোজ মিত্র ১০

৪. একাঙ্ক নাটক – (নির্বাচিত) ১০

ক) সীমান্তের ডাক – দিগিন্দ্রচন্দ্র বন্দ্যোপাধ্যায়

খ) যান্ত্রিক – সলিল সেন

গ) বাজপাখি – মোহিত চট্টোপাধ্যায়

ঘ) আগন্তুক – ধনঞ্জয় বৈরাগী

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

বিশেষ পত্র – ৫

Credit:-6 **Marks: 50= (40+10)**

BNG - 405E
লোকসাহিত্য-সংস্কৃতি তত্ত্ব ও পাঠ

১. লোকসাহিত্য ও সংস্কৃতির সাধারণ পরিচয়, কথান্তর ১০

২. লোকসাহিত্য বিচারের নানা প্রয়োগ ও পদ্ধতি ১০

(ঐতিহাসিক, ভৌগোলিক, মার্কসীয়, তুলনামূলক ও মনস্তাত্ত্বিক) ১০

৩. টাইপ ও মোটিফ ইনডেক্স (বৈশিষ্ট্য ও প্রয়োগ শিক্ষা)

৪. ঠাকুরমার ঝুলি (দক্ষিনারঞ্জন মিত্র মজুমদার সম্পাদিত) ১০

বিশেষ পত্র – ৬

Credit:-6 **Marks: 50= (40+10)**

BNG – 405F
কথাসাহিত্য পাঠ

উপন্যাস

১. বাংলা উপন্যাস ও ছোটগল্পের সংজ্ঞা, স্বরূপ, উদ্ভব ও বিকাশ, রূপ-রীতি বৈচিত্র্য, শৈলী বিচার এবং গতিপ্রকৃতি। ১০

২. শরৎচন্দ্র – শ্রীকান্ত (২য় পর্ব) ১০

৩. তারাশঙ্কর – হাঁসুলী বাঁকের উপকথা ১০

ছোটগল্প ১০

১. ত্রৈলোক্যনাথ মুখোপাধ্যায় – ডমরু চরিত

২. জগদীশ গুপ্ত – অরূপের রাস

৩. শরদিন্দু বন্দ্যোপাধ্যায় – সীমান্ত হীরা

৪. নরেন্দ্রনাথ মিত্র – অবতরণিকা

৫. রমাপদ চৌধুরী – ভারতবর্ষ

৬. শীর্ষেন্দু মুখোপাধ্যায় – নীলুর দুঃখ

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

বিশেষ পত্র – ৭

Credit:-6 **Marks: 50= (40+10)**

BNG – 405G

সাহিত্যতত্ত্ব ও তত্ত্ববিদ্

১. প্রাচ্য সাহিত্যতত্ত্ব :

- ভারতীয় কাব্যতত্ত্ববিদ্- ১৫

  ভরত, দণ্ডী, বামন, ভামহ, অভিনবগুপ্ত, ক্ষেমেন্দ্র, কুন্তক

  বঙ্কিমচন্দ্র, রবীন্দ্রনাথ, বুদ্ধদেব

২. পাশ্চাত্য সাহিত্যতাত্ত্বিক : ১৫

হোরেস, লঙ্গাইনাস, প্লেটো, অ্যারিস্টটল, ক্রোচে, ব্রাডলে, স্যান্টিয়ানা, হিউম, শীলার, তেইন, রাসেল

৩. পাশ্চাত্য সাহিত্যতত্ত্ব ও আন্দোলন : ১০

ঐতিহাসিক সমালোচনা, তুলনামূলক সমালোচনা, সমাজতাত্ত্বিক বাস্তববাদী সমালোচনা, মিথ ক্রিটিসিজম্, আখ্যানতত্ত্ব, মডার্নিজম্, পোস্টমডার্নিজম্, এক্সপ্রেশনিজম্, অস্তিত্ববাদ, সিম্বলিজম, ইম্প্রেশনিজম্, ঔপনিবেশিকতাবাদ ও উত্তর ঔপনিবেশিকতাবাদ, স্যুররিয়ালিজম্

বিশেষ পত্র – ৮

Credit:-6 **Marks: 50= (40+10)**

BNG – 405H

বাংলা ও প্রতিবেশী সাহিত্য পাঠ

১. প্রেমচন্দের – ‘কফন’ (হিন্দি ছোটগল্প) ও শরৎচন্দ্রের – ‘অভাগীর স্বর্গ’ ১০

২. ফকির মোহন সেনাপতির – ‘ছেমন আট গুণ্ঠা’ (ওড়িয়া উপন্যাস, ‘উনিশ বিঘা দুই কাঠা’) ও বঙ্কিমচন্দ্রের ‘দুর্গেশনন্দিনী’ ১০

৩. জ্যোতিপ্রসাদ আগরওয়ালার – ‘কারেঙর লিগিরী’ (অসমীয়া নাটক, ‘প্রাসাদ কন্যা’) ও জ্যোতিরিন্দ্রনাথ ঠাকুরের – ‘স্বপ্নময়ী’ ১০

৪. রবীন্দ্রনাথ ঠাকুরের – ‘সীমার মাঝে অসীম তুমি’ (‘গীতাঞ্জালি’) ও মহাদেবী ভার্মার – ‘ক্যা পূজন ক্যা অর্চন রে’ (‘নীরজা’ কাব্যগ্রন্থ) ১০

.....

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 13:01:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Bengali_Syllabus_POCO_2018_19.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B. A (HONOURS)
in

Bengali

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

VIDYASAGAR UNIVERSITY

BA (Honours) in Bengali

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: **বাংলা ভাষার উদ্ভব ও পরিচয়**	6	5-1-0	15	60	75
		Core-2		CT2: **বাংলা সাহিত্যের ইতিহাস (প্রাচীন ও মধ্যযুগ)**	6	5-1-0	15	60	75
		GE-1		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: **প্রাচীন ও মধ্যযুগের পদপাঠ**	6	5-1-0	15	60	75
		Core-4		CT4: **চৈতন্য জীবনী ও মঙ্গলকাব্য সাহিত্যপাঠ**	6	5-1-0	15	60	75
		GE-2		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-2 (Elective)		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		CT5: **উনিশ-বিশ শতকের প্রবন্ধ ও কাব্য-সাহিত্যের ইতিহাস এবং আখ্যান সাহিত্য পাঠ**	6	5-1-0	15	60	75
		Core-6		CT6: **ছন্দ-অলংকার ও নির্বাচিত কবিতা পাঠ**	6	5-1-0	15	60	75
		Core-7		CT7: **প্রবন্ধ সাহিত্য পাঠ**	6	5-1-0	15	60	75
		GE-3		TBD	6	5-10/ 4-0-4	15	60	75
		SEC-1		**SEC-1: বাংলা ব্যাকরণ ও অনুবাদতত্ত্ব Or লিখন দক্ষতা বৃদ্ধি**	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		CT8: **উনিশ ও বিশ শতকের নাট্য ও কথাসাহিত্যের ইতিহাস এবং ছোটগল্প পাঠ**	6	5-1-0	15	60	75
		Core-9		CT9: **কাব্যপাঠ**	6	5-1-0	15	60	75
		Core-10		CT10: **উপন্যাস পাঠ**	6	5-1-0	15	60	75
		GE-4		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-2		**SEC-2: বাংলা ভাষা ও সাহিত্য বিষয়ক প্রকল্প রচনা ও প্রকল্পের উপস্থাপনা Or চিত্রনাট্য রচনা ও সাম্প্রতিক ঘটনা-বিশ্লেষণ**	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		CT11: **নাট্য পাঠ**	6	5-1-0	15	60	75
		Core-12		CT12: **কাব্যতত্ত্ব, পাশ্চাত্য সাহিত্য সমালোচনা তত্ত্ব ও সাহিত্যের রূপরীতি**	6	5-1-0	15	60	75
		DSE-1		**DSE-1: প্রাচীন সাহিত্যতত্ত্ব ও সাহিত্যতাত্ত্বিক or বাংলা সাহিত্যে প্রভাব or সাহিত্য আন্দোলন,সমালোচনা ও রূপরীতি**	6	5-1-0	15	60	75
		DSE-2		**DSE-2: জীবনী সাহিত্য ও পত্রসাহিত্য or বাংলা বিতর্কমূলক, সৌন্দর্যতত্ত্বমূলক ও বিজ্ঞান চেতনামূলক গ্রন্থপাঠ or বাংলা ছোটগল্প, ভ্রমণ কাহিনি ও গোয়েন্দা কাহিনি পাঠ or বাংলা রঙ্গমঞ্চ, সাময়িকপত্র ও অনুবাদ সাহিত্যের ইতিহাস**	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: **লোকসাহিত্য**	6	5-1-0	15	60	75
		Core-14		CT14: **সংস্কৃত, ইংরেজি ও প্রতিবেশী সাহিত্যের ইতিহাস**	6	5-1-0	15	60	75
		DSE-3		**DSE-3: গদ্যসাহিত্য পাঠ Or কাব্যসাহিত্য পাঠ Or নাট্যসাহিত্য পাঠ**	6	5-1-0	15	60	75
		DSE-4		**DSE-4: রবীন্দ্র সাহিত্য পাঠ Or উপন্যাস সাহিত্য পাঠ Or প্রকৃতিচেতনামূলক, জাতীয়তামূলক ও বিশ্বমানবতামূলক সাহিত্য পাঠ Or বাংলা সাহিত্য এবং চিত্র, চলচ্চিত্র ও ক্রীড়া**	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

List of Core Course (CC)

CC-1: বাংলা ভাষার উদ্ভব ও পরিচয়
CC-2: বাংলা সাহিত্যের ইতিহাস (প্রাচীন ও মধ্যযুগ)
CC-3: প্রাচীন ও মধ্যযুগের পদপাঠ
CC-4: চৈতন্য জীবনী ও মঙ্গলকাব্য সাহিত্যপাঠ
CC-5: উনিশ-বিশ শতকের প্রবন্ধ ও কাব্য-সাহিত্যের ইতিহাস এবং আখ্যান সাহিত্য পাঠ
CC-6: ছন্দ-অলংকার ও নির্বাচিত কবিতা পাঠ
CC-7: প্রবন্ধ সাহিত্য পাঠ
CC-8: উনিশ ও বিশ শতকের নাট্য ও কথাসাহিত্যের ইতিহাস এবং ছোটগল্প পাঠ
CC-9: কাব্যপাঠ
CC-10: উপন্যাস পাঠ
CC-11: নাট্য পাঠ
CC-12: কাব্যতত্ত্ব, পাশ্চাত্য সাহিত্য সমালোচনা তত্ত্ব ও সাহিত্যের রূপরীতি
CC-13: লোকসাহিত্য
CC-14: সংস্কৃত, ইংরেজি ও প্রতিবেশী সাহিত্যের ইতিহাস

Discipline Specific Electives (DSE)

DSE-1: প্রাচীন সাহিত্যতত্ত্ব ও সাহিত্যতাত্ত্বিক
অথবা
DSE-1: বাংলা সাহিত্যে প্রভাব
অথবা
DSE-1: সাহিত্য আন্দোলন, সমালোচনা ও রূপরীতি
DSE-2: জীবনী সাহিত্য ও পত্রসাহিত্য
অথবা
DSE-2: বাংলা বিতর্কমূলক, সৌন্দর্যতত্ত্বমূলক ও বিজ্ঞান চেতনামূলক গ্রন্থপাঠ
অথবা
DSE-2: বাংলা ছোটগল্প, ভ্রমণ কাহিনি ও গোয়েন্দা কাহিনি পাঠ
অথবা
DSE-2: বাংলা রঙ্গমঞ্চ, সাময়িকপত্র ও অনুবাদ সাহিত্যের ইতিহাস
DSE-3: গদ্যসাহিত্য পাঠ
অথবা
DSE-3: কাব্যসাহিত্য পাঠ
অথবা
DSE-3: নাট্যসাহিত্য পাঠ
DSE-4: রবীন্দ্র সাহিত্য পাঠ
অথবা
DSE-4: উপন্যাস সাহিত্য পাঠ
অথবা
DSE-4: প্রকৃতিচেতনামূলক, জাতীয়তামূলক ও বিশ্বমানবতামূলক সাহিত্য পাঠ
অথবা

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

DSE-4: বাংলা সাহিত্য এবং চিত্র, চলচ্চিত্র ও ক্রীড়া

Skill Enhancement Course (SEC)

SEC-1: বাংলা ব্যাকরণ ও অনুবাদতত্ত্ব

অথবা

SEC-1: লিখন দক্ষতা বৃদ্ধি

SEC-2: বাংলা ভাষা ও সাহিত্য বিষয়ক প্রকল্প রচনা ও প্রকল্পের উপস্থাপনা

অথবা

SEC-2: চিত্রনাট্য রচনা ও সাম্প্রতিক ঘটনা-বিশ্লেষণ

Generic Electives (GE)

[Interdisciplinary for other Department]

GE-1: বাংলার ভূ-খণ্ড ও জাতির উৎপত্তি, ধর্ম ও সংস্কৃতির ইতিহাস এবং লোকসাহিত্য

অথবা

GE-1: বাংলা ভাষার বিভিন্ন স্তর ও বাংলা ভাষাচর্চা

GE-2: কাব্যসাহিত্যের ধারা ও বৈষ্ণব পদাবলী পাঠ

অথবা

GE-2: নাট্যসাহিত্যের ধারা এবং কাব্য ও নাটক পাঠ

GE-3: বাংলা প্রবন্ধ ও কথাসাহিত্যের ধারা এবং প্রবন্ধ পাঠ

অথবা

GE-3: উপন্যাস ও ছোটগল্প পাঠ

GE-4: বাংলা গীতি সাহিত্য, শিশুসাহিত্য ও রম্যরচনার ধারা

অথবা

GE-4: বাংলা সাহিত্য এবং দার্শনিক, রাজনৈতিক ও সামাজিক চিন্তা

AECC-Elective (MIL-Bengali)

MIL (Bengali): বাংলা ভাষা-প্রসঙ্গ, অনুবাদ ও কথন-দক্ষতা

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

কোর কোর্স (CC)

CC-1: বাংলা ভাষার উদ্ভব ও পরিচয় Credits 06

C1T: বাংলা ভাষার উদ্ভব ও পরিচয়

Course Contents:

বাংলা ভাষার উদ্ভব, বাংলা ভাষার বিভিন্ন স্তর, বাংলা শব্দভাণ্ডার, শব্দার্থতত্ত্ব, ধ্বনি পরিবর্তনের কারণ ও সূত্র, বাংলা পদ, বাংলা কারক ও বিভক্তি, বাংলা লোকভাষা ও বাংলা উপভাষা।

Suggested Readings:

১. Origin and Development of the Bengali Language- Suniti Kumar Chatterjee
২. বাংলা ভাষাতত্ত্বের ভূমিকা -সুনীতিকুমার চট্টোপাধ্যায়
৩. বাংলা ভাষা -পার্বতীচরণ ভট্টাচার্য
৪. Middle Indo Aryan Grammar-S.K. Chatterjee and S.Sen
৫. সাধারণ ভাষাবিজ্ঞান ও বাংলা ভাষা- রামেশ্বর ‘শ
৬. বাংলা ভাষার ইতিবৃত্ত -ড. মুহম্মদ শহীদুল্লাহ
৭. ভাষার ইতিবৃত্ত – ড. সুকুমার সেন
৮. ভাষাবিদ্যা পরিচয় -পরেশচন্দ্র ভট্টাচার্য
৯. আধুনিক ভারতীয় ভাষা-প্রসঙ্গে- পরেশচন্দ্র ভট্টাচার্য
১০. আধুনিক ভাষাতত্ত্ব -অতীন্দ্র মজুমদার
১১. আধুনিক ভাষাতত্ত্ব -আবুল কালাম মনজুর মুরশেদ
১২. ভাষা বিজ্ঞানের কথা – মহম্মদ দানীউল হক
১৩. ভাষা প্রকাশ বাংলা ব্যাকরণ- ড. সুনীতিকুমার চট্টোপাধ্যায়
১৪. বাংলা ভাষা পরিক্রমা (১ ও ২ খণ্ড)- পরেশচন্দ্র মজুমদার
১৫. ভাষাতত্ত্ব ও বাংলা ভাষা- বাণীরঞ্জন দে
১৬. বাংলা ভাষাতত্ত্ব – মিহির চৌধুরী কামিল্যা
১৭. ভাষাতত্ত্ব – অতীন্দ্র মজুমদার
১৮. লোকভাষা-লোকসংস্কৃতি ও অবিভক্ত মেদিনীপুর – ছন্দা ঘোষাল
১৯. ভাষাবিজ্ঞান ও বাংলা ভাষা- অনিমেষকান্তি পাল
২০. ঝাড়খণ্ডী বাংলার ঝাড়গাঁয়ী রূপ – ছন্দা ঘোষাল

CC-2: বাংলা সাহিত্যের ইতিহাস (প্রাচীন ও মধ্যযুগ) Credits 06

C2T: বাংলা সাহিত্যের ইতিহাস (প্রাচীন ও মধ্যযুগ)

Course Contents:

সৃজ্যমান বাংলার প্রকীর্ণ নিদর্শন, চর্যাপদ, শ্রীকৃষ্ণকীর্তন, চৈতন্যচরিত সাহিত্য, অনুবাদ সাহিত্য, বৈষ্ণব পদাবলী সাহিত্য, মঙ্গলকাব্য ধারা, আরাকান রাজসভার সাহিত্য, শাক্ত পদাবলী, নাথসাহিত্য, বাউলগীতি

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

১. বাংলা সাহিত্যের ইতিবৃত্ত - ড. অসিতকুমার বন্দ্যোপাধ্যায়
২. বাংলা সাহিত্যের ইতিকথা - ড. ভূদেব চৌধুরী
৩. বাঙ্গালা সাহিত্যের ইতিহাস - ড. সুকুমার সেন
৪. সমগ্র বাংলা সাহিত্যের পরিচয় - ড. পরেশচন্দ্র ভট্টাচার্য
৫. বাঙলা সাহিত্যের রূপরেখা - গোপাল হালদার
৬. সমগ্র বাংলা সাহিত্যের ইতিহাস - ক্ষেত্র গুপ্ত
৭. বাংলা সাহিত্যর সম্পূর্ণ ইতিবৃত্ত - অসিতকুমার বন্দ্যোপাধ্যায়
৮. মঙ্গলকাব্যের ইতিহাস - আশুতোষ ভট্টাচার্য
৯. মধ্যযুগের কবি ও কাব্য - শঙ্করীপ্রসাদ বসু
১০. বাংলা সাহিত্যে বিকাশের ধারা – শ্রীকুমার বন্দ্যোপাধ্যায়
১১. বাংলা সাহিত্যের প্রাচীন কবিদের পরিচয় ও সময় – সুখময় মুখোপাধ্যায়

CC-3: প্রাচীন ও মধ্যযুগের পদপাঠ Credits 06

C3T: প্রাচীন ও মধ্যযুগের পদপাঠ

Course Contents:

ক. চর্যাপদ (পাঠ্যপদ - ১,২,৫,৭,৮,১০,১৪,২৪,২৮)
খ. বৈষ্ণব পদাবলী (নির্বাচিত ৮টি পদ)
বিদ্যাপতি - এ সখি হামারি দুখের নাহি ওর;
আজু রজনী হাম ভাগে পোহায়লুঁ
চন্ডীদাস - যত নিবারিয়ে তায় নিবার না যায় রে;
রাধার কি হইল অন্তরে ব্যথা
জ্ঞানদাস – রূপ লাগি আঁখি ঝুরে গুনে মন ভোর
গোবিন্দদাস – গগনহি নিমগন দিনমণি কাঁতি;
কন্টক গাড়ি কমল-সম পদতল
বলরামদাস - শ্রীদাম সুদাম দাম শুন ওরে বলরাম
গ. শাক্ত পদাবলী (নির্বাচিত ৮টি পদ)
রামপ্রসাদ সেন - ওহে প্রাণনাথ গিরিবর;
গিরি, এবার আমার উমা;
মা আমায় ঘুরাবি কত;
কেবল আসার আশা
কমলাকান্ত ভট্টাচার্য -ওরে নবমী নিশি;
ওহে গিরিরাজ, গৌরী অভিমান;
কি হলো নবমী নিশি;
বারে বারে কহ রাণি

Suggested Readings:

১. চর্যাগীতির ভূমিকা - জাহ্নবীকুমার চক্রবর্তী
২. চর্যাগীতি পরিচয় - সত্যব্রত দে

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

৩. চর্যাগীতি পরিক্রমা - নির্মল দাশ
৪. চর্যাগীতিকোষ - সৌমেন্দ্রনাথ সরকার
৫. চর্যাগীতি - মনীন্দ্রমোহন বসু
৬. পাঁচশত বৎসরের পদাবলী - বিমানবিহারী মজুমদার (সম্পাদনা)
৭. মধ্যযুগের কবি ও কাব্য - শঙ্করীপ্রসাদ বসু
৮. বৈষ্ণব সাহিত্য – ত্রিপুরা শঙ্কর সেন শাস্ত্রী
৯. বাংলা সাহিত্যে কৃষ্ণকথার ক্রমবিকাশ - সত্যবতী গিরি
১০. বৈষ্ণব পদাবলী পরিচয় - জীবেন্দু রায়
১১. বৈষ্ণব রসপ্রকাশ - ক্ষুদিরাম দাস
১২. পদাবলী পরিচয় - হরেকৃষ্ণ মুখোপাধ্যায়
১৩. বৈষ্ণব কবি প্রসঙ্গে - দেবনাথ বন্দ্যোপাধ্যায়
১৪. প্রসঙ্গ : বৈষ্ণব সাহিত্য - লায়েক আলি খান
১৫. বৈষ্ণব পদাবলী - সত্য গিরি
১৬. ভারতের শক্তিসাধনা ও শাক্তসাহিত্য - শশিভূষণ দাশগুপ্ত
১৭. শাক্তপদাবলী ও শক্তিসাধনা - জাহ্নবীকুমার চক্রবর্তী
১৮. শাক্তপদাবলী - অমরেন্দ্রনাথ রায় (সম্পাদনা)
১৯. শাক্তপদাবলী - ধ্রুবকুমার মুখোপাধ্যায় (সম্পাদনা)
২০. শাক্তগীতি পদাবলী - অরুণকুমার বসু
২১. শাক্তপদাবলী – ত্রিপুরাশঙ্কর সেনশাস্ত্রী

CC-4: চৈতন্যজীবনী ও মঙ্গলকাব্য সাহিত্যপাঠ — Credits 06

C4T: চৈতন্যজীবনী ও মঙ্গলকাব্য সাহিত্যপাঠ

Course Contents:

ক. চৈতন্যভাগবত (আদিখণ্ড) - বৃন্দাবন দাস
খ. চণ্ডীমঙ্গল (আখেটিকখণ্ড) - মুকুন্দ চক্রবর্তী
গ. অন্নদামঙ্গল - ভারতচন্দ্র

Suggested Readings:

১. চৈতন্যভাগবত - সুকুমার সেন (সম্পাদিত)
২. চৈতন্যভাগবত - রাধাগোবিন্দ নাথ (সম্পাদিত)
৩. শ্রী শ্রী চৈতন্য চরিতের উপাদান - বিমানবিহারী মজুমদার
৪. অমিয় নিমাই চরিত - শিশিরকুমার ঘোষ
৫. শ্রীচৈতন্য প্রদক্ষিণ - বিষ্ণুপদ পাণ্ডা
৬. চৈতন্য ভাগবত - রবিরঞ্জন চট্টোপাধ্যায় (সম্পাদিত)
৭. গৌড়ীয় বৈষ্ণব অভিধান - হরিদাস দাস
৮. গৌড়ীয় বৈষ্ণব দর্শন - রাধাগোবিন্দ নাথ
৯. শ্রীচৈতন্যের দিব্যজীবন ও অজ্ঞাত অন্তর্ধান পর্ব - মাধব পট্টনায়েক
১০. কবিকঙ্কণ চণ্ডী - দেবকুমার ঘোষ
১১. চন্ডীমঙ্গল পরিক্রমা - সুখময় মুখোপাধ্যায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

১২. কবিকঙ্কণ চণ্ডী - ক্ষুদিরাম দাস
১৩. ভারতচন্দ্র ও অন্নদামঙ্গল - ভবেশ মজুমদার
১৪. কবি ভারতচন্দ্র - শঙ্করীপ্রসাদ বসু
১৫. ভারতচন্দ্র রায় গুণাকরের অন্নদামঙ্গল - দেবকুমার ঘোষ
১৬. ভারতচন্দ্রের অন্নদামঙ্গল - কার্তিক ভদ্র
১৭. ভারতচন্দ্রের অন্নদামঙ্গল - নির্মলেন্দু মুখোপাধ্যায়
১৮. ভারতচন্দ্রের অন্নদামঙ্গল - মদনমোহন গোস্বামী
১৯. চণ্ডীমঙ্গল – (সম্পা.) সন্দীপ মণ্ডল
২০. কবিকঙ্কণ মুকুন্দের চণ্ডীমঙ্গল : বীক্ষা ও সমীক্ষা – (সম্পা.) বিশ্বনাথ রায়
২১. চৈতন্য ভাগবত (সম্পা.) - দুর্গাপদ গঙ্গোপাধ্যায়

CC-5: উনিশ-বিশ শতকের প্রবন্ধ ও কাব্য সাহিত্যের ইতিহাস এবং আখ্যান সাহিত্য পাঠ

Credits 06

C5T: উনিশ-বিশ শতকের প্রবন্ধ ও কাব্য সাহিত্যের ইতিহাস এবং আখ্যান সাহিত্য পাঠ

Course Contents:

ক. উনিশ ও বিশ শতকের প্রবন্ধ সাহিত্যের ইতিহাস

শ্রীরামপুর মিশন, ফোর্ট উইলিয়াম কলেজ, রাজা রামমোহন রায়, ঈশ্বরচন্দ্র বিদ্যাসাগর, অক্ষয়কুমার দত্ত, ভূদেব মুখোপাধ্যায়, কালীপ্রসন্ন সিংহ, প্যারীচাঁদ মিত্র, বঙ্কিমচন্দ্র চট্টোপাধ্যায়, স্বামী বিবেকানন্দ, রবীন্দ্রনাথ ঠাকুর, হরপ্রসাদ শাস্ত্রী, রামেন্দ্রসুন্দর ত্রিবেদী, অমূল্যচরণ বিদ্যাভূষণ, প্রমথ চৌধুরী, অন্নদাশঙ্কর রায়, সুনীতিকুমার চট্টোপাধ্যায়, সৈয়দ মুজতবা আলী, যোগেশচন্দ্র রায় বিদ্যানিধি, বুদ্ধদেব বসু।

খ. উনিশ ও বিশ শতকের কাব্য সাহিত্যের ইতিহাস -

ঈশ্বর গুপ্ত, মধুসূদন দত্ত, রঙ্গলাল বন্দ্যোপাধ্যায়, হেমচন্দ্র বন্দ্যোপাধ্যায়, নবীনচন্দ্র সেন, বিহারীলাল চক্রবর্তী, রবীন্দ্রনাথ ঠাকুর, সত্যেন্দ্রনাথ দত্ত, মোহিতলাল মজুমদার, নজরুল ইসলাম, প্রেমেন্দ্র মিত্র, সুধীন্দ্রনাথ দত্ত, বিষ্ণু দে, বুদ্ধদেব বসু, জীবনানন্দ দাশ, অমিয় চক্রবর্তী, সুভাষ মুখোপাধ্যায়, শক্তি চট্টোপাধ্যায়, শঙ্খ ঘোষ।

গ. আখ্যান সাহিত্যপাঠ -

শকুন্তলা - বিদ্যাসাগর

Suggested Readings:

১. বাংলা সাহিত্যে গদ্য - সুকুমার সেন
২. আধুনিক বাংলা প্রবন্ধ সাহিত্যের ধারা - অধীর দে
৩. বাংলা গদ্য রীতির ইতিহাস - অরুণকুমার মুখোপাধ্যায়
৪. বাংলা গদ্যের ক্রমবিকাশ - হীরেন্দ্রনাথ দত্ত
৫. গদ্যচর্চার ইতিহাস ও প্রমথ চৌধুরী - লায়েক আলি খান ও প্রশান্তকুমার দাস
৬. বাংলা গদ্যের ক্রমবিকাশ - হীরেন্দ্রনাথ দত্ত
৭. বাঙ্গালা সাহিত্যের ইতিহাস - সুকুমার সেন

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

৮. বাংলা সাহিত্যের ইতিবৃত্ত - অসিতকুমার বন্দ্যোপাধ্যায়
৯. বাংলা সাহিত্যের ইতিকথা - ভূদেব চৌধুরী
১০. আধুনিক বাংলা কাব্য - তারাপদ রায়
১১. বাংলা কবিতার কালান্তর - সরোজ বন্দ্যোপাধ্যায়
১২. ঊনবিংশ শতাব্দীর বাংলা গীতিকাব্য - অরুণকুমার মুখোপাধ্যায়
১৩. রবীন্দ্রানুসারী কবি সমাজ - অরুণকুমার মুখোপাধ্যায়
১৪. রবীন্দ্র কবিতার বিপরীত স্রোত - কাননবিহারী ঘোষ
১৫. আধুনিক বাংলা কবিতার রূপরেখা – বাসন্তীকুমার মুখোপাধ্যায়
১৬. আধুনিক কবিতার মানচিত্র – জীবেন্দ্র সিংহ রায়
১৭. আধুনিক বাংলা কাব্য পরিচয় – দীপ্তি ত্রিপাঠী
১৮. আমার কালের কয়েকজন কবি – জগদীশ চট্টাচার্য
১৯. বাংলা কবিতার কালান্তর – সরোজ বন্দ্যোপাধ্যায়
২০. আধুনিক কবিতার দিগ্‌বলয় – অশ্রুকুমার সিকদার
২১. বাংলা কবিতার মেজাজ ও মনোবীজ – জহর সেন মজুমদার
২২. স্বাধীনতা পরবর্তী বাংলা কবিত: উৎস ও বিবর্তন – গৈরিক ঘোষ
২৩. আধুনিক কবিতার ইতিহাস – অলোকরঞ্জন দাশগুপ্ত
২৪. বাংলা সাহিত্যে বিদ্যাসাগর - অসিতকুমার বন্দ্যোপাধ্যায়
২৫. শকুন্তলা ও সীতার বনবাস : বিদ্যাসাগর – নরেশচন্দ্র জানা
২৬. ঈশ্বরচন্দ্র বিদ্যাসাগর প্রণীত শকুন্তলা – (সম্পা.) উজ্জ্বলকুমার মজুমদার

CC-6: ছন্দ-অলঙ্কার ও নির্বাচিত কবিতা পাঠ Credits 06

C6T: ছন্দ-অলঙ্কার ও নির্বাচিত কবিতা পাঠ

Course Contents:

ছন্দ ও অলঙ্কার

ক. ছন্দ

দলবৃত্ত, মিশ্রকলাবৃত্ত, কলাবৃত্ত, পয়ার, ত্রিপদী, চৌপদী, সনেট, অমিত্রাক্ষর, গদ্যছন্দ, পর্ব- পর্বাঙ্গ, যতি, লয়, মাত্রা, ছেদ, ছন্দ নির্ণয়।

খ. অলঙ্কার

অনুপ্রাস, শ্লেষ, যমক, রূপক, উপমা, উৎপ্রেক্ষা, ব্যাজস্তুতি, সমাসোক্তি, অতিশয়োক্তি, সন্দেহ, অপহ্নুতি, বিরোধাভাস, বিষম, অলঙ্কার নির্ণয়।

গ. নির্বাচিত কবিতাপাঠ –

আমরা – সত্যেন্দ্রনাথ দত্ত
সাম্যবাদী – নজরুল
দুঃখবাদী – যতীন্দ্রনাথ সেনগুপ্ত
ফ্রাইব্রুর্গের পথে – অমিয় চক্রবর্তী
আট বছর আগের একদিন – জীবনানন্দ দাশ
শাশ্বতী – সুধীন্দ্রনাথ দত্ত

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

অবনী বাড়ী আছো – শক্তি চট্টোপাধ্যায়

Suggested Readings:

১. বাংলা ছন্দশিল্প ও ছন্দচিন্তার অগ্রগতি - প্রবোধচন্দ্র সেন
২. নূতন ছন্দ পরিক্রমা - প্রবোধচন্দ্র সেন
৩. বাংলা ছন্দের মূলসূত্র - অমূল্যধন মুখোপাধ্যায়
৪. বাংলা ছন্দশিল্প ও ছন্দচিন্তা - নীলরতন সেন
৫. বাংলা ছন্দ বিবর্তনের ধারা - নীলরতন সেন
৬. ছন্দের বারান্দা - শঙ্খ ঘোষ
৭. বাংলা ছন্দ – জীবেন্দ্র সিংহ রায়
৮. নব ছন্দশৈলী – সুধাংশুশেখর শাসমল
৯. ছন্দ পরিচয় - রামবহাল তেওয়ারী
১০. বাংলা ছন্দ : রূপ ও রীতি- মিহির চৌধুরী কামিল্যা
১১. বাংলা ছন্দশিল্প : প্রসঙ্গ অনুসঙ্গ - অপূর্ব কোলে
১২. অলঙ্কার চন্দ্রিকা - শ্যামাপদ চক্রবর্তী
১৩. বাংলা অলংকার বিচার - পঞ্চানন মালাকার
১৪. বাংলা অলংকার মঞ্জরী - অশোককুমার মিশ্র
১৫. বাংলা অলংকার : রূপ ও স্বরূপ - মিহির চৌধুরী কামিল্যা
১৬. প্রসঙ্গ অলঙ্কার – শুদ্ধসত্ত্ব বসু
১৭. সত্যেন্দ্রনাথ দত্তের কবিতা ও কাব্যরূপ – হরপ্রসাদ মিত্র
১৮. বাংলা সাহিত্যে নজরুল – আজহারউদ্দীন খান
১৯. নজরুল মানস – সুশীল গুপ্ত
২০. নজরুল প্রতিভা – লায়েক আলি খান
২১. একটি নক্ষত্র আসে – অম্বুজ বসু
২২. জীবনানন্দ – বীতশোক ভট্টাচার্য
২৩. যতীন্দ্রনাথের কবি মানস ও কাব্য শিল্প – অমরেন্দ্র গণাই
২৪. কবি শক্তি – সমীর সেনগুপ্ত
২৫. কবি জীবনানন্দ – সঞ্জয় ভট্টাচার্য
২৬. সুধীন্দ্রনাথ পাঠের ভূমিকা – দেবীপ্রসাদ বন্দ্যোপাধ্যায়
২৭. সুধীন্দ্রনাথ দত্ত – অমিয় দেব
২৮. সুধীন্দ্রনাথ দত্ত : ভাববিশ্ব ও কাব্যবীক্ষা – তপোধীর ভট্টাচার্য
২৯. উনবিংশ শতাব্দীর বাংলা গীতিকাব্য - অরুণকুমার মুখোপাধ্যায়
৩০. বাংলা কবিতার কালান্তর - সরোজ বন্দ্যোপাধ্যায়
৩১. আধুনিক কবিতা ভাবনা ও অনুভাবনা – শ্রুতিনাথ চক্রবর্তী
৩২. প্রাচীন ভারতীয় সাহিত্য অনুপ্রাণনায় পাঁচজন আধুনিক কবি - বাণীরঞ্জন দে
৩৩. বিশ্ব নাগরিক অমিয় চক্রবর্তী : স্রষ্টা ও সৃষ্টি – সুমিতা চক্রবর্তী
৩৪. আধুনিক কবিতার ইতিহাস – অলোকরঞ্জন দাশগুপ্ত ও দেবীপ্রসাদ বন্দ্যোপাধ্যায়
৩৫. আধুনিক কবিতার মানচিত্র – জীবেন্দ্র সিংহ রায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

CC-7: প্রবন্ধ সাহিত্য পাঠ Credits 06

C7T: প্রবন্ধ সাহিত্য পাঠ

Course Contents:

ক. বিবিধ প্রবন্ধ – বঙ্কিমচন্দ্র চট্টোপাধ্যায়
শকুন্তলা, মিরন্দা ও দেস্‌দিমোনা; গীতিকাব্য; বিদ্যাপতি ও জয়দেব; অনুকরণ; বাঙ্গালার ইতিহাস; বঙ্গদেশের কৃষক।
খ. নির্বাচিত প্রবন্ধ পাঠ –

১. কৌতুকহাস্যের মাত্রা (পঞ্চভূত) – রবীন্দ্রনাথ ঠাকুর
২. জাত্যভাষা এক স্থানীয় ভাষা (কি লিখি) – যোগেশচন্দ্র রায় বিদ্যানিধি
৩. ভারতীয় সংস্কৃতির গোড়ার কথা – অমূল্যচরণ বিদ্যাভূষণ
৪. বইপড়া – প্রমথ চৌধুরী
৫. অপবিজ্ঞান – রাজশেখর বসু
৬. দেশপ্রেম বনাম জাতিপ্রেম – অন্নদাশঙ্কর রায়
৭. রবীন্দ্রনাথ ও উত্তরসাধক – বদ্ধুদেব বসু

গ. চরিতকথা – রামেন্দ্রসুন্দর ত্রিবেদী
ঈশ্বরচন্দ্র বিদ্যাসাগর, বলেন্দ্রনাথ ঠাকুর, বঙ্কিমচন্দ্র চট্টোপাধ্যায়, অধ্যাপক মক্ষমূলার, হর্ম্মান হেলম হোল্যৎজ

Suggested Readings:

১. আধুনিক বাংলা প্রবন্ধ সাহিত্যের ধারা – অধীর দে
২. বাংলা গদ্যরীতির ইতিহাস – অরুণকুমার মুখোপাধ্যায়
৩. বঙ্কিমচন্দ্র : সৃজন ও বীক্ষণ – ভবতোষ চট্টোপাধ্যায়
৪. বঙ্কিমচন্দ্রের বিবিধ প্রবন্ধ – নাড়ুগোপাল দে
৫. প্রমথ চৌধুরী – জীবেন্দ্র সিংহ রায়
৬. রাজশেখর বসু : জীবন ও সাহিত্য – কল্যাণী ঘোষ
৭. রামেন্দ্রসুন্দরের চরিতকথা – বুদ্ধদেব ভট্টাচার্য
৮. চিন্তানায়ক বঙ্কিমচন্দ্র – ভবতোষ দত্ত
৯. আধুনিক বাংলা প্রবন্ধ সাহিত্যের ধারা(১ম ও ২য়) –অধীর দে
১০. বাংলা গদ্যের পদাঙ্ক – বিজিত দত্ত
১১. যোগেশচন্দ্র বিদ্যানিধি – শৈলেন দাস ও নমিতা মণ্ডল
১২. বুদ্ধদেব বসু : মননে অন্বেষণে – তরুণ মুখোপাধ্যায়
১৩. বাংলা প্রবন্ধ : উনিশ ও বিশ – সুজয় কুমার মাইতি
১৪. রামেন্দ্রসুন্দর ও বাংলা সাহিত্য – প্রদ্যোত সেনগুপ্ত
১৫. যোগেশচন্দ্র বিদ্যানিধি : জীবন ও সাহিত্য- মধুমিতা মহাপাত্র
১৬. গদ্যচর্চার ইতিহাস ও প্রমথ চৈধুরী- সম্পা. লায়েক আলি খান ও প্রশান্তকুমার দাস
১৭. বঙ্কিম-মনীষা – অলোক রায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

CC-8: উনিশ ও বিশ শতকের নাট্য ও কথাসাহিত্যের ইতিহাস এবং ছোটগল্প পাঠ

Credits 06

C8T: উনিশ ও বিশ শতকের নাট্য ও কথাসাহিত্যের ইতিহাস এবং ছোটগল্প পাঠ

Course Contents:

ক. উনিশ ও বিশ শতকের নাট্য সাহিত্যের ইতিহাস

ক. রামনারায়ণ তর্করত্ন, মধুসূদন দত্ত, দীনবন্ধু মিত্র, অমৃতলাল বসু, গিরিশচন্দ্র ঘোষ, জ্যোতিরিন্দ্রনাথ ঠাকুর, ক্ষীরোদপ্রসাদ বিদ্যাবিনোদ, রবীন্দ্রনাথ ঠাকুর, দ্বিজেন্দ্রলাল রায়, মন্মথ রায়, বিজন ভট্টাচার্য, তুলসী লাহিড়ী, বাদল সরকার, মনোজ মিত্র।

খ. **উনিশ ও বিশ শতকের উপন্যাস ও ছোটগল্পের ইতিহাস**

১. উপন্যাস –

বঙ্কিমচন্দ্র চট্টোপাধ্যায়, রবীন্দ্রনাথ ঠাকুর, শরৎচন্দ্র চট্টোপাধ্যায়, বিভূতিভূষণ বন্দ্যোপাধ্যায়, তারাশঙ্কর বন্দ্যোপাধ্যায়, মানিক বন্দ্যোপাধ্যায়, বনফুল, শরদিন্দু বন্দ্যোপাধ্যায়, মহাশ্বেতা দেবী

২. ছোটগল্প -

রবীন্দ্রনাথ ঠাকুর, প্রভাতকুমার মুখোপাধ্যায়, পরশুরাম, জগদীশ গুপ্ত, প্রেমেন্দ্র মিত্র, বনফুল, সুবোধ ঘোষ, নরেন্দ্রনাথ মিত্র, , সমরেশ বসু, নারায়ণ গঙ্গোপাধ্যায়, জ্যোতিরিন্দ্র নন্দী, শরদিন্দু বন্দ্যোপাধ্যায়, বিমল কর, আশাপূর্ণা দেবী ।

গ. ছোটগল্প পাঠ –

অতিথি – রবীন্দ্রনাথ ঠাকুর
সমাপ্তি –রবীন্দ্রনাথ ঠাকুর,
উমারানী – বিভূতিভূষণ বন্দ্যোপাধ্যায়
তারিনী মাঝি – তারাশঙ্কর বন্দ্যোপাধ্যায়
কচি সংসদ – রাজশেখর বসু
ফসিল – সুবোধ ঘোষ
তেলেনাপোতা আবিষ্কার – প্রেমেন্দ্র মিত্র

Suggested Readings:

১. বাঙ্গালা সাহিত্যের ইতিহাস – সুকুমার সেন
২. বাংলা সাহিত্যের ইতিবৃত্ত – অসিতকুমার বন্দ্যোপাধ্যায়
৩. বাংলা সাহিত্যের ইতিকথা – ভূদেব চৌধুরী
৪. বাংলা নাট্য সাহিত্যের ইতিহাস – শ্রী আশুতোষ ভট্টাচার্য
৫. বাংলা নাটকের ইতিহাস – অজিতকুমার ঘোষ
৬. নাট্য সাহিত্যের আলোচনা ও নাটক বিচার – সাধনকুমার ভট্টাচার্য
৭. নাট্য সাহিত্যের ভূমিকা – বিভাস রায়চৌধুরী
৮. বঙ্গসাহিত্যের উপন্যাসের ধারা – শ্রীকুমার বন্দ্যোপাধ্যায়
৯. বাংলা উপন্যাসের ইতিহাস – ক্ষেত্রগুপ্ত
১০. বাংলা উপন্যাসের কালান্তর – সরোজ বন্দ্যোপাধ্যায়
১১. বাংলা উপন্যাস ও তার আধুনিকতা – সত্যেন্দ্রনাথ রায়
১২. আমার কালের কয়েকজন কথাশিল্পী – জগদীশ ভট্টাচার্য
১৩. মধ্যাহ্ন থেকে সায়াহ্নে – অরুণকুমার মুখোপাধ্যায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

১৪. কালের প্রতিমা - অরুণকুমার মুখোপাধ্যায়
১৫. কালের পুত্তলিকা - অরুণকুমার মুখোপাধ্যায়
১৬. বাংলা সাহিত্যের ছোটগল্প ও গল্পকার – ভূদেব চৌধুরী
১৭. দুই বিশ্বযুদ্ধ মধ্যবর্তী বাংলা কথা সাহিত্য – গোপীকানাথ রায়চৌধুরী
১৮. বাংলা ছোটগল্প : প্রসঙ্গ ও প্রকরণ – বীরেন্দ্র দত্ত
১৯. গল্পচর্চা – উজ্জ্বলকুমার মজুমদার
২০. রবীন্দ্র ছোটগল্পের শিল্পরূপ – তপোব্রত ঘোষ
২১. রবীন্দ্রনাথের নির্বাচিত ছোটগল্প – অসিতকুমার মুখোপাধ্যায়
২২. রবীন্দ্রনাথের গল্প : বিশ্লেষণীপাঠ – সমরেশ মজুমদার
২৩. রবীন্দ্রনাথের ছোটগল্প – প্রমথনাথ বিশী
২৪. বাংলা ছোটগল্প : মননে দর্পণে – শীতল চৌধুরী
২৫. বাংলা ছোটগল্পের সূচনা ও প্রেমেন্দ্র মিত্র – সুরজিৎ দাশগুপ্ত
২৬. বাংলা সাহিত্যে ছোটগল্প – নারায়ণ গঙ্গোপাধ্যায়
২৭. প্রেমেন্দ্র মিত্রের বিচিত্র জগৎ - রামরঞ্জন রায়
২৮. ছোটগল্পের রূপশিল্পী - রামরঞ্জন রায়
২৯. সুবোধ ঘোষ কথাসাহিত্য - অরিন্দম গোস্বামী
৩০. পরশুরামের গল্প : জীবনের ধূপছায়া - গীতিকা পণ্ডা

CC-9: কাব্য পাঠ — Credits 06

C9T: কাব্য পাঠ

Course Contents:

ক. বীরাঙ্গনা – মাইকেল মধুসূদন দত্ত
(দ্বারকানাথের প্রতি রুক্মিনী, লক্ষ্মণের প্রতি সূর্পনখা, দশরথের প্রতি কৈকয়ী, সোমের প্রতি তারা, দুষ্মন্তের প্রতি শকুন্তলা, নীলধ্বজের প্রতি জনা)
খ. বলাকা- রবীন্দ্রনাথ ঠাকুর (পাঠ্য পদ)
(১, ৪, ৫,৬, ৭, ৮, ৩৬, ৩৭, ৪৫ সংখ্যক কবিতা)
গ. বনলতা সেন – জীবনানন্দ দাশ

Suggested Readings:

১। বীরাঙ্গনা কাব্য – হীরেন চট্টোপাধ্যায়
২। মধুসূদন ব্যক্তি ও সৃষ্টি – সুকুমার রায়
৩। বলাকা কাব্য পরিক্রমা – শ্রী ক্ষিতিমোহন সেন
৪। মধুসূদনের কবিতা ও কাব্য শিল্প – ক্ষেত্রগুপ্ত
৫। কবি শ্রী মধুসূদন - মোহিতলাল মজুমদার
৬। মধুসূদন কবি ও নাট্যকার - সুবোধ চন্দ্র সেনগুপ্ত
৭। কবি জীবনানন্দ দাশ - সঞ্জয় ভট্টাচার্য
৮। জীবনানন্দের কবিতায় জিজ্ঞাসায় বিশ্লেষণ - গোকুলানন্দ মিশ্র
৯। জীবনানন্দ - বীতশোক ভট্টাচার্য
১০। রবীন্দ্র সাহিত্যের ভূমিকা - নীহাররঞ্জন রায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

১১। রবীন্দ্র কাব্য পরিক্রমা - উপেন্দ্রনাথ ভট্টাচার্য
১২। রবিরশ্মি - চারুচন্দ্র বন্দ্যোপাধ্যায়
১৩। কবি মধুসূদনের বীরাঙ্গনা – সত্যবতী গিরি (সম্পা.)
১৪। বীরাঙ্গনা কাব্য – অমরেন্দ্র গণাই
১৫। বীরাঙ্গনা কাব্যচর্চা - উজ্জ্বলকুমার মজুমদার
১৬। বনলতা সেন : কালে ও কালোত্তরে – (সম্পা.) লক্ষ্মণ কর্মকার
১৭। বীরাঙ্গনা কাব্য – নির্মলেন্দু ভৌমিক

CC-10: উপন্যাস পাঠ — Credits 06

C10T: উপন্যাস পাঠ

Course Contents:

ক. কপালকুণ্ডলা – বঙ্কিমচন্দ্র চট্টোপাধ্যায়
খ. শেষের কবিতা – রবীন্দ্রনাথ ঠাকুর
গ. কবি – তারাশঙ্কর বন্দ্যোপাধ্যায়

Suggested Readings:

১. বঙ্কিম উপন্যাসের শিল্পরূপ – ক্ষেত্র গুপ্ত
২. উপন্যাস সাহিত্যে বঙ্কিম – প্রফুল্লকুমার দাশগুপ্ত
৩. বঙ্কিম মানস – অরবিন্দ পোদ্দার
৪. বঙ্কিম সরণী – প্রমথনাথ বিশী
৫. বঙ্কিম কণিকা – সমীর সেনগুপ্ত
৬. বঙ্কিম ভাবনালোক – ভবতোষ দত্ত
৭. বঙ্কিমচন্দ্র: সৃজন ও বীক্ষণ – ভবতোষ চট্টোপাধ্যায়
৮. উপন্যাসতত্ত্ব ও বঙ্কিমচন্দ্র - সুধীন্দ্রনাথ ভট্টাচার্য
৯. তারাশঙ্করের কবি – অচিন্ত্য বিশ্বাস
১০. বঙ্কিমচন্দ্রের উপন্যাস – প্রফুল্ল দাশগুপ্ত
১১. ঔপন্যাসিক রবীন্দ্রনাথ – বীরেন্দ্র দেবনাথ
১২. রবীন্দ্র উপন্যাসের নির্মাণ শিল্প – গোপিকানাথ রায়চৌধুরী
১৩. রবীন্দ্র উপন্যাস : ইতিহাসের প্রেক্ষিতে – ভূদেব চৌধুরী
১৪. রবীন্দ্র উপন্যাস পরিক্রমা – অর্চনা মজুমদার
১৫. শেষের কবিতা : শিল্পিত জীবন – হীরেন চট্টোপাধ্যায়
১৬. রবীন্দ্রনাথের শেষের কবিতা- ধ্রুবকুমার মুখোপাধ্যায়
১৭. বাংলা উপন্যাসের কালান্তর- সরোজ বন্দ্যোপাধ্যায়
১৮. তারাশঙ্করের শিল্প মানস – নিতাই বসু
১৯. তারাশঙ্কর অনুসন্ধান – ক্ষেত্র গুপ্ত
২০. তারাশঙ্কর অন্বেষা – সরোজ বন্দ্যোপাধ্যায়
২১ তারাশঙ্কর : দেশ-কাল – অলোক রায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

২২. তারাশঙ্কর ও রাঢ় বাংলা – রঞ্জিতকুমার মুখোপাধ্যায়
২৩. তারাশঙ্কর : সময় ও সমাজ – আদিত্য মুখোপাধ্যায়
২৪. তারাশঙ্করের উপন্যাসে সমাজ চিন্তা – শেখর দাশ

CC-11: নাট্য পাঠ Credits 06

C11T: নাট্য পাঠ

Course Contents:

ক. সধবার একাদশী – দীনবন্ধু মিত্র
খ. সাজাহান – দ্বিজেন্দ্রলাল রায়
গ. ডাকঘর – রবীন্দ্রনাথ ঠাকুর

Suggested Readings:

১. দীনবন্ধু মিত্রের সধবার একাদশী – নির্মলেন্দু ভৌমিক
২. দ্বিজেন্দ্রলাল- দেব কুমার রায়চৌধুরী
৩. দ্বিজেন্দ্রলাল রায়ের স্বদেশ কথা- রথীন্দ্রনাথ রায়
৪. দ্বিজেন্দ্রলাল : কবি ও নাট্যকার- রথীন্দ্রনাথ রায়
৫. দ্বিজেন্দ্রলাল রায় : জীবন ও সাহিত্য- দুর্গাশঙ্কর মুখোপাধ্যায়
৬. সাজাহান- জগন্নাথ ঘোষ (সম্পাদিত)
৭. সাজাহান- নির্মলেন্দু ভৌমিক (সম্পাদিত)
৮. রবীন্দ্রনাথ নাট্যপরিক্রমা - উপেন্দ্রনাথ বন্দ্যোপাধ্যায়
৯. রবীন্দ্র নাট্যপ্রবাহ- প্রমথনাথ বিশী
১০. নাট্য মুক্তি ও রবীন্দ্রনাথ - শেখর সমাদ্দার
১১. রবীন্দ্রনাথের ট্র্যাজেডি চেতনা - জীবনকুমার মুখোপাধ্যায়
১২. রবীন্দ্র নাটক : আলোকিত উদ্ভাবন - কুমার রায়
১৩. রবীন্দ্র নাট্য সাহিত্যের ভূমিকা - সাধনকুমার ভট্টাচার্য
১৪. দীনবন্ধু মিত্রের সধবার একাদশী- সম্পা. অজিতকুমার ঘোষ
১৫. ডাকঘর - সৌমিত্র বসু (সম্পাদিত)
১৬. রবীন্দ্রনাট্যে কবি রবীন্দ্রনাথ – শ্রুতিনাথ চক্রবর্তী
১৭. রবীন্দ্রনাথ ও কাব্য পরিক্রমা – অজিত চক্রবর্তী
১৮. দ্বিজেন্দ্রলাল রায়ের সাহিত্য ও শিল্পী মানস - দুর্গাশঙ্কর মুখোপাধ্যায়
১৯. দীনবন্ধু মিত্র : কবি ও নাট্যকার- মিহিরকুমার দাশ
২০. দীনবন্ধু মিত্র- সুশীলকুমার দে

CC-12: কাব্যতত্ত্ব, পাশ্চাত্য সাহিত্য সমালোচনা-তত্ত্ব ও সাহিত্যের রূপরীতি

Credits 06

C12T: কাব্যতত্ত্ব, পাশ্চাত্য সাহিত্য সমালোচনা-তত্ত্ব ও সাহিত্যের রূপরীতি

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

ক. কাব্য জিজ্ঞাসা (রস ও ধ্বনি) - অতুলচন্দ্র গুপ্ত
খ. ক্লাসিসিজম্, রোমান্টিসিজিম্, সুররিয়ালিজম্, রিয়ালিজম্, সিম্বলিজম্
গ. মহাকাব্য, ট্র্যাজেডি, কমেডি, ফার্স(প্রহসন), লিরিক, এলিজি, ওড, আঞ্চলিক উপন্যাস, মনস্তাত্ত্বিক উপন্যাস, ঐতিহাসিক উপন্যাস।

Suggested Readings:

১. সাহিত্য বিবেক - বিমলকুমার মুখোপাধ্যায়
২. কাব্যতত্ত্ব বিচার - দুর্গাশংকর মুখোপাধ্যায়
৩. প্রাচ্য ও পাশ্চাত্য সাহিত্যতত্ত্ব ও সাহিত্য রূপের অভিধান — আকরাম হোসেন
৪. ভারতীয় কাব্যতত্ত্ব — অবন্তীকুমার সান্যাল
৫. নন্দনের আলোকরেখা: কাব্যজিজ্ঞাসা — রামজীবন আচার্য
৬. কাব্যপ্রকাশ – সুরেন্দ্রনাথ দাশগুপ্ত
৭. সাহিত্য বিচার: তত্ত্ব ও প্রয়োগ— বিমলকুমার মুখোপাধ্যায়
৮. পাশ্চাত্য সাহিত্যতত্ত্ব ও সাহিত্য ভাবনা — নবেন্দু সেন
৯. প্রতীচ্যের সাহিত্যতত্ত্ব — তপোধীর ভট্টাচার্য
১০. সাহিত্যতত্ত্ব, সাহিত্য প্রসঙ্গ ও সমালোচনা বিচিত্রা— দুর্গাশঙ্কর মুখোপাধ্যায়
১১. সাহিত্য সংজ্ঞা অভিধান— বদিউর রহমান
১২. ভারতীয় নন্দনতত্ত্ব – তপোধীর ভট্টাচার্য
১৩. সাহিত্য ও সমালোচনার রূপরীতি - উজ্জ্বলকুমার মজুমদার
১৪. সাহিত্য প্রকরণ - হীরেন চট্টোপাধ্যায়
১৫. সাহিত্যের রূপ ও রীতি - দিলীপকুমার রায়
১৬. সাহিত্যের রূপভেদ ও রূপরীতি- সত্যচরণ চট্টোপাধ্যায়
১৭. সাহিত্যের রূপরীতি - কুন্তল চট্টোপাধ্যায়
১৮. সাহিত্যের রূপভেদ ও রূপরীতি নির্ণয়- সুধাংশুশেখর মন্ডল
১৯. কাব্যালোক – সুধীর দাশগুপ্ত
২০. রসসমীক্ষা – রমারঞ্জন মুখোপাধ্যায়
২১. A Glossary of Literary Terms – M.K. Abrams
২২. A History of Literary Critisicm – Rafey Habib
২৩. A short history of literary criticism – Vernon Hall
২৪. Literary Criticism: A short history – William Kurtz Wimsatt

CC-13: লোকসাহিত্য — Credits 06

C13T: লোকসাহিত্য

Course Contents:

ক. লোকসাহিত্যের সংজ্ঞা, স্বরূপ, বৈশিষ্ট্য।
ছড়া, ধাঁধা, প্রবাদ, লোককথা, লোকগীতি, লোকনাটক সম্পর্কিত আলোচনা
খ. মহুয়া পালা(মৈমনসিংহ গীতিকা)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

গ. বাংলার ব্রত – অবনীন্দ্রনাথ ঠাকুর

Suggested Readings:

১. বাংলা লোকসাহিত্য - আশুতোষ ভট্টাচার্য
২. রবীন্দ্রনাথের লোকসাহিত্য – সনৎ কুমার মিত্র
৩. লোকসংস্কৃতির তত্ত্বরূপ ও স্বরূপ সন্ধান – তুষার চট্টোপাধ্যায়
৪. লোকসংস্কৃতির সীমানা ও স্বরূপ – পল্লব সেনগুপ্ত
৫. বঙ্গীয় লোকসংস্কৃতি কোষ – ড. বরুণকুমার চক্রবর্তী (সম্পাদিত)
৬. লোকসংস্কৃতি - অনিমেষকান্তি পাল
৭. লোকসাহিত্য পাঠ - মানস মজুমদার
৮. ফোকলোর : পরিচিতি ও পঠন-পাঠন - মযহারুল ইসলাম
৯. লোকসংস্কৃতির তত্ত্ব জিজ্ঞাসা - ড. সৌমেন সেন
১০. বিশ্বায়ন ও লোকসংস্কৃতি – ড. ক্ষেত্র গুপ্ত
১১. বাংলা ধাঁধার ভূমিকা - নির্মলেন্দু ভৌমিক
১২. বাংলা ধাঁধার বিষয় বৈচিত্র্য ও সামাজিক পরিচয় – ড. শীলা বসাক
১৩. বিহঙ্গ - চারণা (লোকগীতি) - নির্মলেন্দু ভৌমিক
১৪. উত্তরবঙ্গের লোকগীতি – শিশিরকুমার মজুমদার
১৫. অবনীন্দ্রনাথ ও বাংলার ব্রত – নির্মলেন্দু ভৌমিক
১৬. বাংলার লোকনৃত্য – মহুয়া মুখোপাধ্যায়
১৭. ভারতের লোকনাট্য – ধ্রুব দাস
১৮. বাংলার লোকনাট্য – সনৎকুমার মিত্র(সম্পাদিত)
১৯. আদিবাসী লোককথা সংগ্রহ – দিব্যজ্যোতি মজুমদার
২০. বাংলার ব্রত ও অন্যান্য – (সম্পা.) সনৎ মিত্র
২১. মৈমনসিংহ-গীতিকা : পুনর্বিচার – মুনমুন চট্টোপাধ্যায়
২২. বাংলার ছড়া : ছড়ার বাংলা - (সম্পা.) সৌগত চট্টোপাধ্যায়
২৩. লোককথার বর্ণমালা - (সম্পা.) সৌগত চট্টোপাধ্যায়
২৪. বাংলার ব্রত ও অবনীন্দ্রনাথ - সৌগত চট্টোপাধ্যায়

CC-14: সংস্কৃত, ইংরেজি ও প্রতিবেশী সাহিত্যের ইতিহাস Credits 06

C14T: সংস্কৃত, ইংরেজি ও প্রতিবেশী সাহিত্যের ইতিহাস

Course Contents:

ক. সংস্কৃত সাহিত্যের ইতিহাস
(বৈদিক সাহিত্য, রামায়ণ, মহাভারত, কালিদাস, অশ্বঘোষ, ভাস)

খ. ইংরেজি সাহিত্যের ইতিহাস
(সেক্সপীয়ার, ওয়ার্ডসওয়ার্থ, চার্লস ডিকেন্স, বায়রণ, শেলী, টি.এস.এলিয়ট

গ. অন্যান্য প্রতিবেশী সাহিত্যের ইতিহাস
হিন্দি ভক্তি সাহিত্য, প্রেমচন্দ, মহাদেবী বর্মা, ফকির মোহন সেনাপতি, রমাকান্ত রথ, কালিন্দীচরণ পানিগ্রাহী, লক্ষ্মীকান্ত বেজবড়ুয়া, রজকান্ত বরদলৈ, বিরিঞ্চিকুমার বড়ুয়া।

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

Suggested Readings:

১. সংস্কৃত সাহিত্যের ইতিহাস – ত্রৈলোক্যনাথ ভট্টাচার্য
২. সংস্কৃত সাহিত্যের ইতিহাস – গৌরীনাথ শাস্ত্রী
৩. সংস্কৃত সাহিত্য পরিক্রমা – করুণাসিন্ধু দাস
৪. সংস্কৃত সাহিত্যের ইতিহাস – ধীরেন্দ্রনাথ বন্দ্যোপাধ্যায়
৫. সংস্কৃত সাহিত্যের দশরত্ন – সুখেন্দুসুন্দর গঙ্গোপাধ্যায়
৬. সংস্কৃত সাহিত্যের রূপরেখা – বিমানচন্দ্র ভট্টাচার্য
৭. সংস্কৃত সাহিত্যের রূপরেখা – বিমানবিহারী ভট্টাচার্য
৮. সংস্কৃত সাহিত্যের রূপরেখা – নৃসিংহ প্রসাদ ভাদুড়ী
৯. সংস্কৃত সাহিত্যের ইতিহাস – সুকুমারী ভট্টাচার্য
১০. ভারতীয় আর্য-সাহিত্যের ইতিহাস – সুকুমার সেন
১১. A History of English Literature – David Daiches
১২. The Short Oxford History of English Literature – A. sSnders
১৩. ইংরেজি সাহিত্যের ইতিহাস – কুন্তল চট্টোপাধ্যায়
১৪. প্রেমচন্দ–উপন্যাস ও গল্প – রামবহাল তেওয়ারী
১৫. আধুনিক হিন্দি সাহিত্য – গতি ও প্রকৃতি(১ম ও ২য় খণ্ড) –
১৬. হিন্দি সাহিত্যের ইতিহাস - রামবহাল তেওয়ারী
১৭. ওড়িয়া সাহিত্য – প্রিয়রঞ্জন সেন
১৮. Idea of Comparative Literature in India – Amiya Deb
১৯. অসমিয়া সাহিত্যের ইতিহাস – বিরিঞ্চি কুমার বড়ুয়া
২০. প্রগতি ভাবনা- বংলা কবিতা ও ওড়িয়া কবিতা- মৃণালকান্তি দাস
২১. ওড়িআ সাহিত্যের সংক্ষিপ্ত ইতিহাস- নটবর সামন্তরায়
২২. আধুনিক ওড়িআ কাব্যধারা- নরেন্দ্রনাথ মিশ্র

Discipline Specific Elective (DSE)

DSE-1: প্রাচীন সাহিত্যতত্ব ও সাহিত্যতাত্বিক **Credits 06**

DSE1T: প্রাচীন সাহিত্যতত্ব ও সাহিত্যতাত্বিক

Course Contents:

১. প্রাচীন মতানুসারে কাব্যের রূপ–রীতি, নাট্যতত্ব
২. রীতি, অলংকার, গুণ, ঔচিত্য ও বক্রোক্তি
৩. ভরত, ভামহ, বামন, দণ্ডী, আনন্দবর্ধন, অভিনব গুপ্ত, বিশ্বনাথ কবিরাজ

Suggested Readings:

১. সাহিত্য বিবেক- বিমলকুমার মুখোপাধ্যায়
২. কাব্যতত্ব বিচার – দুর্গাশঙ্কর মুখোপাধ্যায়
৩. প্রাচ্য ও পাশ্চাত্য সাহিত্যতত্ব ও সাহিত্য রূপের অভিধান — আকরাম হোসেন
৪. ভারতীয় কাব্যতত্ব— অবন্তী কুমার সান্যাল

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

৫. নন্দনের আলোকরেখা: কাব্যজিজ্ঞাসা — রামজীবন আচার্য
৬. সমালোচনা সাহিত্য – শ্রীকুমার বন্দ্যোপাধ্যায় ও প্রফুল্ল পাল
৭. সাহিত্য বিচার: তত্ত্ব ও প্রয়োগ— বিমলকুমার মুখোপাধ্যায়
৮. কাব্য বিচার – সুরেন্দ্রনাথ দাশগুপ্ত
৯. ভারতীয় কাব্যতত্ত্ব – অবন্তীকুমার সান্যাল
১০. সাহিত্যতত্ত্ব, সাহিত্য প্রসঙ্গ ও সমালোচনা-বিচিত্রা — দুর্গাশঙ্কর মুখোপাধ্যায়
১১. কাব্যতত্ত্ব – জীবেন্দ্র সিংহ রায়
১২. ভারতীয় নন্দনতত্ত্ব – তপোধীর ভট্টাচার্য
১৩. সাহিত্য ও সমালোচনার রূপরীতি- উজ্জ্বলকুমার মজুমদার
১৪. সাহিত্য-প্রকরণ - হীরেন চট্টোপাধ্যায়
১৫. সাহিত্যের রূপ ও রীতি- দিলীপকুমার রায়
১৬. সাহিত্যের রূপভেদ ও রূপরীতি- সত্যচরণ চট্টোপাধ্যায়
১৭. সাহিত্যের রূপরীতি- কুন্তল চট্টোপাধ্যায়
১৮. সাহিত্যের রূপভেদ ও রূপরীতি নির্ণয়- সুধাংশুশেখর মন্ডল
১৯. কাব্যালোক – সুধীর দাশগুপ্ত
২০. রসসমীক্ষা – রমারঞ্জন মুখোপাধ্যায়

অথবা

DSE-1: বাংলা সাহিত্যে প্রভাব — Credits 06

DSE1T: বাংলা সাহিত্যে প্রভাব

Course Contents:

ক. বাংলা সাহিত্যে সংস্কৃত সাহিত্যের প্রভাব
বেদ-উপনিষদ, পুরাণ, কালিদাস
খ. বাংলা সাহিত্যে ইউরোপীয় সাহিত্যের প্রভাব
শেক্সপিয়ার, মলিয়ের, স্কট, বোদলেয়ার, চার্লস ল্যাম্ব, টি.এস.এলিয়ট
গ. বাংলা সাহিত্যিকদের উপর বাংলা লোকসাহিত্যের প্রভাব
রবীন্দ্রনাথ, অবনীন্দ্রনাথ ঠাকুর, উপেন্দ্রকিশোর রায় চৌধুরী, ত্রৈলোক্যনাথ মুখোপাধ্যায়, বিভূতিভূষণ বন্দ্যোপাধ্যায়, তারাশঙ্কর বন্দ্যোপাধ্যায়

Suggested Readings:

১. বাংলা কাব্যে পাশ্চাত্য প্রভাব - উজ্জ্বলকুমার মজুমদার
২. আধুনিক বাংলা কবিতায় ইউরোপীয় প্রভাব - মঞ্জুভাষ মিত্র
৩. প্রতীচ্য প্রেরণা ও কল্লোলীয় সাহিত্য - গোকুলানন্দ মিশ্র
৪. সংস্কৃতানুশীলনে রবীন্দ্রনাথ -সুখময় ভট্টাচার্য
৫. রবীন্দ্রসাহিত্যে সংস্কৃত সাহিত্যের প্রভাব -কল্যাণী শঙ্কর ঘটক
৬. প্রাচীন ভারতীয় সাহিত্য অনুপ্রাণনায় পাঁচজন আধুনিক কবি – বাণী রঞ্জন দে
৭. রবীন্দ্রনাথ ও লোকসংস্কৃতি – সুভাষ মুখোপাধ্যায়
৮. অবনীন্দ্রনাথের শিল্পতত্ত্ব – সত্যেন্দ্রনাথ রায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

৯. বাংলা উপন্যাসে লৌকিক উপাদান – সুভাষ মুখোপাধ্যায়

অথবা

DSE-1: সাহিত্য আন্দোলন, সমালোচনা ও রূপরীতি **Credits 06**

DSE1T: সাহিত্য আন্দোলন, সমালোচনা ও রূপরীতি

Course Contents:

ক. আন্দোলন :
মডার্নিজম, পোস্ট মডার্নিজম, ফেমিনিজম, এক্সপ্রেশানিজম, ইমপ্রেশানিজম, অ্যাবসার্ডিজম
খ. সমালোচনা :
মিথ ক্রিটিসিজম, আর্কেটাইপাল ক্রিটিসিজম, হিস্টোরিক্যাল ক্রিটিসিজম, কম্পারেটিভ ক্রিটিসিজম।
গ. রীতি :
সনেট, ব্যালাড, চেতনাপ্রবাহমূলক উপন্যাস, আত্মজীবনীমূলক উপন্যাস, মেলোড্রামা, নৃত্যনাট্য, কাব্যনাট্য, নাট্যকাব্য।

Suggested Readings:

১. সাহিত্যের রূপ-রীতি ও অন্যান্য প্রসঙ্গ - কুন্তল চট্টোপাধ্যায়
২. বাংলা সাহিত্যের নানাদিক – শুদ্ধসত্ত্ব বসু
৩. বাংলা কাব্যে রূপ ও রীতি – ক্ষুদিরাম দাস
৪. সাহিত্যের রূপ শিল্প – অপূর্ব রায়
৫. সাহিত্য-সন্দর্শন – শ্রীশচন্দ্র দাশ
৬. A Glossary of Literary Terms – M.K. Abrams
৭. A History of Literary Critisicm – Rafey Habib
৮. A short history of literary criticism – Vernon Hall
৯. Literary Criticism : A short history – William Kurtz Wimsatt
১০. সাহিত্যের রূপ-রীতি – উজ্জ্বলকুমার মজুমদার
১১. সাহিত্যের রূপভেদ : রূপরীতি – সত্যচরণ চট্টোপাধ্যায়
১২. Literary Criticism: A short history – William k. Wimsatt, JR. Cleanth Brooks

DSE-2: জীবনী সাহিত্য ও পত্র সাহিত্য **Credits 06**

DSE2T: জীবনী সাহিত্য ও পত্র সাহিত্য

Course Contents:

১. রবীন্দ্রনাথের ছিন্নপত্র (নির্বাচিত অংশ)
(১৬, ৩০, ৪৯, ৮০, ৯২, ১০২, ১০৩, ১০৬, ১১৫)
২. আপন কথা – অবনীন্দ্রনাথ ঠাকুর
৩. তৃণাঙ্কুর – বিভূতিভূষণ বন্দ্যোপাধ্যায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

Suggested Readings:

১. চিঠিপত্রে রবীন্দ্রনাথ – শৌরীন্দ্রমোহন রায়চৌধুরী
২. বিভূতিভূষণ জীবন ও সাহিত্য - সুনীল কুমার চট্টোপাধ্যায়
৩. বিভূতিভূষণ জীবন ও শিল্প - গোপিকানাথ রায়চৌধুরী
৪. অবনীন্দ্রনাথ : সৃষ্টি সমীক্ষা – সরোজ বন্দ্যোপাধ্যায়
৫. বাংলা সাহিত্যে আত্মজীবনী - সোমেন্দ্রনাথ বসু
৬. বাংলা পত্রোপন্যাস – অতুলকুমার দাশ
৭. রবীন্দ্রনাথের পত্রধারা : ছিন্নপত্র ও অন্যান্য - সৌমেন্দ্রনাথ সরকার

অথবা

DSE-2: বাংলা বিতর্কমূলক, সৌন্দর্যতত্ত্বমূলক এবং বিজ্ঞানচেতনামূলক গ্রন্থপাঠ

Credits 06

DSE2T: বাংলা বিতর্কমূলক, সৌন্দর্যতত্ত্বমূলক এবং বিজ্ঞানচেতনামূলক গ্রন্থপাঠ

Course Contents:

ক. ব্রজবিলাস – ঈশ্বরচন্দ্র বিদ্যাসাগর
খ. বাগেশ্বরী শিল্প প্রবন্ধাবলী – অবনীন্দ্রনাথ ঠাকুর
(দৃষ্টি ও সৃষ্টি, শিল্প ও ভাষা, সৌন্দর্য্যের সন্ধান, অন্তর বাহির, অসুন্দর, অরূপ না রূপ)
গ. অব্যক্ত – জগদীশচন্দ্র বসু

Suggested Readings:

১. অবনীন্দ্র-নন্দনতত্ত্ব – সত্যজিৎ চৌধুরী
২. বিদ্যাসাগর – চণ্ডীচরণ বন্দ্যোপাধ্যায়
৩. অব্যক্ত – সম্পা. চারুচন্দ্র ভট্টাচার্য
৪. বাংলা সাহিত্যে বিদ্যাসাগর – অসিতকুমার বন্দ্যোপাধ্যায়
৫. বিদ্যাসাগর ও বাঙালী সমাজ – বিনয় ঘোষ
৬. রসসাগর বিদ্যাসাগর – শঙ্করীপ্রসাদ বসু
৭. অবনীন্দ্রনাথ সংখ্যা – পশ্চিমবঙ্গ (তথ্য ও সংস্কৃতি বিভাগ)
৮. বিজ্ঞানসাধক আচার্য জগদীশচন্দ্র– সম্পা. সুদীপ বসু ও অশোক উপাধ্যায়

অথবা

DSE-2: বাংলা ছোটগল্প, ভ্রমণ কাহিনি ও গোয়েন্দা কাহিনি পাঠ **Credits 06**

DSE2T: বাংলা ছোটগল্প, ভ্রমণ কাহিনি ও গোয়েন্দা কাহিনি পাঠ

Course Contents:

ক. রসময়ীর রসিকতা – প্রভাতকুমার মুখোপাধ্যায়
বেদেনী – তারাশঙ্কর বন্দ্যোপাধ্যায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

প্রাগৈতিহাসিক – মানিক বন্দ্যোপাধ্যায়
হয়তো – প্রেমেন্দ্র মিত্র
অশ্বমেধের ঘোড়া – দীপেন বন্দ্যোপাধ্যায়

খ. মরুতীর্থ হিংলাজ – কালিকানন্দ অবধূত

গ. সজারুর কাঁটা – শরদিন্দু বন্দ্যোপাধ্যায়

Suggested Readings:

১. বাংলা ছোটগল্প : প্রসঙ্গ ও প্রকরণ - বীরেন্দ্র দত্ত
২. বাংলা ছোটগল্প – ভূদেব চৌধুরী
৩. বাংলা ছোটগল্প – শিশির কুমার দাস
৪. বাংলা গল্প বিচিত্রা – নারায়ণ গঙ্গোপাধ্যায়
৫. ছোটগল্পে ত্রয়ী – বিশ্ববন্ধু ভট্টাচার্য
৬. প্রেমেন্দ্র মিত্র ও আধুনিক বাংলা সাহিত্য - তরুণ মুখোপাধ্যায় ও শীতল চৌধুরী
৭. ক্রাইম কাহিনীর কাল-ক্রান্তি – সুকুমার সেন
৮. তারাশঙ্করের শিল্পীমানস – নিতাই বসু
৯. মানিক বন্দ্যোপাধ্যায়ের জীবনদৃষ্টি ও শিল্পরীতি – গোপিকানাথ রায়চৌধুরী
১০. মানিক বন্দ্যোপাধ্যায়ের জীবন ও সাহিত্য – সরোজমোহন মিত্র
১১. মানিকের ছোটগল্প : শিল্পীর নবজন্ম – আশিষ কুমার দে
১২. তারাশঙ্কর সাহিত্য সমীক্ষা – গৌরমোহন রায়
১৩. প্রভাত মুখোপাধ্যায় জীবন ও সাহিত্য – ড. শিবেশকুমার চট্টোপাধ্যায়
১৪. বাংলা ভ্রমণ সাহিত্যে মুক্তচিন্তা – পার্থ চট্টোপাধ্যায়
১৫. ছোটগল্পের রূপশিল্পী – ড. রামরঞ্জন রায়
১৬. প্রেমেন্দ্র মিত্রের ছোটগল্প মননে ও সৃজনে – অনিন্দিতা বন্দ্যোপাধ্যায়
১৭. কথাশিল্পী শরদিন্দু : মন ও শিল্প- প্রমীলা ভট্টাচার্য
১৮. শরদিন্দু বন্দ্যোপাধ্যায় – নিতাই বসু
১৯. ব্যোমকেশ শরদিন্দু : শরদিন্দুর ব্যোমকেশ – বিবেক সিংহ

অথবা

DSE-2: বাংলা রঙ্গমঞ্চ, সাময়িকপত্র ও অনুবাদ সাহিত্যের ইতিহাস Credits 06

DSE2T: বাংলা রঙ্গমঞ্চ, সাময়িকপত্র ও অনুবাদ সাহিত্যের ইতিহাস

Course Contents:

ক. বাংলা রঙ্গমঞ্চের ইতিহাস
খ. বাংলা সাময়িকপত্রের ইতিহাস
গ. বাংলা অনুবাদ সাহিত্যের ইতিহাস

Suggested Readings:

১. বাংলা থিয়েটারের ইতিহাস – দর্শন চৌধুরী
২. বাংলা নাট্যমঞ্চের রূপ-রেখা – দুর্গাশঙ্কর মুখোপাধ্যায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

৩. বাংলা রঙ্গ মঞ্চের রূপ-রেখা – অশোককুমার মিশ্র
৪. বাংলা রঙ্গালয়ের ইতিহাসের উপাদান – শঙ্কর ভট্টাচার্য
৫. সংস্কৃত সাহিত্যের অনুবাদ ধারা – সাবিত্রী দে
৬. বাংলা সংবাদপত্র ও বাঙ্গালীর নবজাগরণ – পার্থ চট্টোপাধ্যায়
৭. বাংলা সাময়িক পত্র – ব্রজেন্দ্রনাথ বন্দ্যোপাধ্যায়
৮. মঞ্চ অভিনয়, নাট্যকলা ও রবীন্দ্রনাথ – পুলিন দাস
৯. বঙ্গরঙ্গমঞ্চ ও বাংলা নাটক - পুলিন দাস
১০. নাট্যমঞ্চ ও নাট্যরূপ – পবিত্র সরকার

১১. বাংলা থিয়েটারে সামাজিক ও রাজনৈতিক নাটক – দীপক পোদ্দার
১২. নাট্যতত্ত্ব ও নাট্যমঞ্চ – অজিতকুমার ঘোষ
১৩. বাংলা সাময়িক পত্র-পত্রিকার ক্রমবিকাশ পঞ্জি – অশোককুমার রায়

DSE-3: গদ্য সাহিত্য পাঠ — Credits 06

DSE3T: গদ্য সাহিত্য পাঠ

Course Contents:

ক. আলালের ঘরের দুলাল- প্যারীচাঁদ মিত্র
খ. কমলাকান্তের দপ্তর(নির্বাচিত) – বঙ্কিমচন্দ্র চট্টোপাধ্যায়
(আমার মন, পতঙ্গ, আমার দুর্গোৎসব, একটি গীত, বিড়াল)
গ. পঞ্চতন্ত্র (নির্বাচিত) - সৈয়দ মুজতবা আলী
(বই কেনা, ইন্টারভ্যু, বিষ্ণু শর্মা, ঐতিহাসিক উপন্যাস)

Suggested Readings:

১. বাংলা গদ্যের পদাঙ্ক – বিজিত দত্ত
২. প্যারীচাঁদ মিত্র ও সমকালীন বাংলা – সৌরিন্দ্রকুমার ঘোষ
৩. বঙ্কিম মানস – অরবিন্দ পোদ্দার
৪. বঙ্কিম সরণী – প্রমথনাথ বিশী
৫. বঙ্কিম কণিকা – সমীর সেনগুপ্ত
৬. বঙ্কিম ভাবনালোক – ভবতোষ দত্ত
৭. বঙ্কিমচন্দ্র : সৃজন ও বীক্ষণ – ভবতোষ চট্টোপাধ্যায়
৮. কমলাকান্তের দপ্তর – ভবানীগোপাল সান্যাল
৯. মুজতবা আলী জীবন ও সাহিত্য – স্বাতী ভট্টাচার্য
১০. মজলিশী মুজতবা – কোরক পত্রিকা

অথবা

DSE-3: কাব্য সাহিত্য পাঠ — Credits 06

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

DSE3T: কাব্য সাহিত্য পাঠ

Course Contents:

ক. বিস্মরণী – মোহিতলাল মজুমদার
খ. পারাপার- অমিয় চক্রবর্তী
গ. যৌবন বাউল – অলোকরঞ্জন দাশগুপ্ত

Suggested Readings:

১. কালের পুতুল – বুদ্ধদেব বসু
২. মোহিতলালের কাব্য ও কবিমানস – দুর্গাশঙ্কর মুখোপাধ্যায়
৩. কবি অমিয় চক্রবর্তী – সুমিতা চক্রবর্তী
৪. অমিয় চক্রবর্তীর পারাপার ও কবিমন – গোকুলানন্দ মিশ্র
৫. কালের প্রতিমা - অরুণ মুখোপাধ্যায়
৬. আধুনিক কবিতা ভাবনা ও অনুভাবনা – শ্রুতিনাথ চক্রবর্তী
৭. কাব্যের মুক্তি ও তারপর – দেবীপ্রসাদ বন্দ্যোপাধ্যায়
৮. আধুনিক কবিতার ইতিহাস – অলোকরঞ্জন দাশগুপ্ত ও দেবীপ্রসাদ বন্দ্যোপাধ্যায়
৯. আধুনিক বাংলা কাব্য পরিচয় - দীপ্তি ত্রিপাঠী
১০. মোহিতলাল মজুমদার : সাহিত্য ও ব্যক্তি প্রতিভা – দ্বিজেন্দ্রলাল নাথ
১১. আমার কালের কয়েকজন কবি – জগদীশ ভট্টাচার্য

অথবা

DSE-3: নাট্য সাহিত্য পাঠ — Credits 06

DSE3T: নাট্য সাহিত্য পাঠ

Course Contents:

ক. সাজাহান – দ্বিজেন্দ্রলাল রায়
খ. সাজানো বাগান – মনোজ মিত্র
গ. একাঙ্ক নাটক
শিককাবাব – বনফুল
রাজপুরী – মন্মথ রায়
চৌর্যানন্দ – তুলসী লাহিড়ী
এক পশলা বৃষ্টি – ধনঞ্জয় বৈরাগী
সরীসৃপ – বিধায়ক ভট্টাচার্য

Suggested Readings:

১. একাঙ্ক নাটকের রূপ-রেখা(সম্পাদিত) - সরোজ মোহন মিত্র
২. দ্বিজেন্দ্রলাল কবি ও নাট্যকার – রথীন্দ্রনাথ রায়
৩. নাট্যতত্ত্ব বিচার – দুর্গাশঙ্কর মুখোপাধ্যায়
৪. বাংলা নাট্যসাহিত্যের ইতিহাস – আশুতোষ ভট্টাচার্য

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

৫. বাংলা নাটকের বিবর্তন – সুরেশচন্দ্র মৈত্র
৬. একাঙ্ক নাটক প্রয়োগ ও বিচার – তপন ঘোষাল
৭. দ্বিজেন্দ্রলাল রায় স্মরণ বিস্মরণ – সুধীর চক্রবর্তী
৮. দ্বিজেন্দ্রলালের সাজাহান – রথীন্দ্রনাথ রায়
৯. দ্বিজেন্দ্রলাল রায়ের সাজাহান – সুকুমার বন্দ্যোপাধ্যায়
১০. রবীন্দ্রোত্তর বাংলা নাটক – জগন্নাথ ঘোষ

DSE-4: রবীন্দ্রসাহিত্য পাঠ — Credits 06

DSE4T: রবীন্দ্রসাহিত্য পাঠ

Course Contents:

১। সে
২। মুক্তধারা
৩। নির্বাচিত কবিতা- নির্ঝরের স্বপ্নভঙ্গ, সোনারতরী, বধূ, স্বর্গ হইতে বিদায়, রূপ সাগরে ডুব দিয়েছি(৪৭ সংখ্যক,গীতাঞ্জলি), সাধারণ মেয়ে।

Suggested Readings:

১. রবীন্দ্র ছোটগল্পের শিল্পরূপ - তপোব্রত ঘোষ
২. রবীন্দ্র নাটকের ট্র্যাজিডি – সোমেন্দ্রনাথ বসু
৩. রবীন্দ্র নাট্য সমীক্ষা রূপক-সাংকেতিক - দুর্গা শংকর মুখোপাধ্যায়
৪. রবীন্দ্র সাহিত্যের ভূমিকা - নীহাররঞ্জন রায়
৫. রবীন্দ্রনাথের রূপক নাট্য - শান্তি কুমার দাশগুপ্ত
৬. রবীন্দ্রনাথকে কবি রবীন্দ্রনাথ - সতীনাথ চক্রবর্তী
৭. কথা কবিতা রবীন্দ্রনাথ - নারায়ণ গঙ্গোপাধ্যায়
৮. কালের মাত্রা ও রবীন্দ্র নাটক - শঙ্খ ঘোষ
৯. রবীন্দ্র কাব্য পরিক্রমা - উপেন্দ্রনাথ ভট্টাচার্য
১০. রবিরশ্মি - চারুচন্দ্র বন্দ্যোপাধ্যায়
১১. রবীন্দ্র নাট্যপ্রবাহ - প্রমথনাথ বিশী
১২. রবীন্দ্র সরণি - প্রমথনাথ বিশী
১৩. রবীন্দ্র মানুষ - অরবিন্দ পোদ্দার
১৪. রবীন্দ্রনাথের উত্তর কাব্য - শিশির কুমার ঘোষ
১৫. রবীন্দ্রনাথের মুক্তধারা – ধ্রুবকুমার মুখোপাধ্যায়

অথবা

DSE-4: উপন্যাস সাহিত্য পাঠ — Credits 06

DSE4T: উপন্যাস সাহিত্য পাঠ

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

Course Contents:

ক. পুতুল নাচের ইতিকথা – মানিক বন্দ্যোপাধ্যায়
খ. তুঙ্গভদ্রার তীরে – শরদিন্দু বন্দ্যোপাধ্যায়
গ. টানাপোড়েন – সমরেশ বসু

Suggested Readings:

১. বঙ্গ সাহিত্যে উপন্যাসের ধারা - শ্রীকুমার বন্দ্যোপাধ্যায়
২. বাংলা উপন্যাসের কালান্তর - সরোজ বন্দ্যোপাধ্যায়
৩. বাংলা উপন্যাসের ইতিহাস (প্রথম থেকে সপ্তম খন্ড) – ক্ষেত্র গুপ্ত
৪. বাংলা উপন্যাস সমীক্ষা - বীতশোক ভট্টাচার্য
৫. মানিক বন্দ্যোপাধ্যায়ের জীবন-দৃষ্টি ও শিল্পরীতি - গোপিকানাথ রায় চৌধুরী
৬. মানিক বন্দ্যোপাধ্যায়ের জীবন ও শিল্প - সরোজ মোহন মিত্র
৭. সমরেশ বসু : স্মরণ-সমীক্ষণ – সত্যজিৎ চৌধুরী ও অন্যান্য
৮. সমরেশ বসু : জীবন ও সাহিত্য – অমল হোড়
৯. সমরেশ বসু : সময় চিহ্ন – পার্থপ্রতিম বন্দ্যোপাধ্যায়
১০. রমণীয় শরদিন্দু – ক্ষেত্রগুপ্ত
১১. কথাগঠন – অনিন্দ্য ভট্টাচার্য

অথবা

DSE-4: প্রকৃতিচেতনামূলক, জাতীয়তামূলক ও বিশ্বমানবতামূলক সাহিত্যপাঠ

Credits 06

DSE4T: প্রকৃতিচেতনামূলক, জাতীয়তামূলক ও বিশ্বমানবতামূলক সাহিত্যপাঠ

Course Contents:

ক. নবজাতক – রবীন্দ্রনাথ ঠাকুর
খ. পলাশীর যুদ্ধ – নবীনচন্দ্র সেন
গ. আরণ্যক – বিভূতিভূষণ বন্দ্যোপাধ্যায়

Suggested Readings:

১. রবীন্দ্রকাব্য পরিক্রমা – উপেন্দ্রনাথ ভট্টাচার্য
২. রবীন্দ্র কাব্য প্রবাহ – প্রমথনাথ বিশী
৩. নবজাতক সমীক্ষা – গোকুলানন্দ মিশ্র
৪. আরণ্যক : নানা চোখে – (সম্পা) তরুণ বন্দ্যোপাধ্যায়
৫. আরণ্যকের অনন্যতা - (সম্পা) তাপস বসু
৬. বিভূতিভূষণের আরণ্যক – সমরেশ মজুমদার
৭. নবীনচন্দ্র সাহিত্য ও সাধনা – শান্তি চট্টোপাধ্যায়

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

অথবা

DSE-4: বাংলা সাহিত্য এবং চিত্র, চলচ্চিত্র ও ক্রীড়া **Credits 06**

DSE4T: বাংলা সাহিত্য এবং চিত্র, চলচ্চিত্র ও ক্রীড়া

Course Contents:

ক. বাংলা সাহিত্যের চলচ্চিত্রায়ন
খ. বাংলা ক্রীড়া সাহিত্য
গ. বাংলা সাহিত্য ও চিত্রকলা

Suggested Readings:

১চলচ্চিত্র কথা- তানভীর মোকাম্মেল
২. চলচ্চিত্র দর্পণে রবীন্দ্রনাথ- ভুবনেশ্বর বন্দ্যোপাধ্যায়
৩. চলচ্চিত্রের রবীন্দ্ররচনা - কমল সাহা
৪. মতি নন্দী সংখ্যা – কল্যাণ মজুমদার (সম্পা.)
৫. খেলা সংগ্রহ (মতি নন্দী) – অভীক চট্টোপাধ্যায় (সম্পা.)
৬.চিত্র সমালোচনা – উত্তম চৌধুরী
৭.চিত্রদর্শন – অলোক মুখোপাধ্যায়
৮.ভারতীয় প্রাচীন চিত্রকলা - সুরেন্দ্রনাথ দাশগুপ্ত
৯.বাংলা চিত্রকলা – অশোক ভট্টাচার্য
১০.ছবি কাকে বলে – অশোক মিত্র
১১.বিষয় চলচ্চিত্র – সত্যজিৎ রায়
১২.বাংলা চলচ্চিত্র ও বাংলা সাহিত্য – নিশীথ কুমার মুখোপাধ্যায়

Skill Enhancement Elective Course (SEC)

SEC-1: বাংলা ব্যাকরণ ও অনুবাদতত্ত্ব **Credits 02**

SEC1T: বাংলা ব্যাকরণ ও অনুবাদতত্ত্ব

Course Contents:

ক. সমাস, সন্ধি, প্রত্যয়, ছেদ ও যতি চিহ্নের ব্যবহার, বাগ্‌ধারা ও প্রবাদ-প্রবচন, এক কথায় প্রকাশ
খ. অনুবাদতত্ত্ব (আক্ষরিক অনুবাদ, ভাবানুবাদ ও সংক্ষিপ্ত অনুবাদ) ও পরিভাষা চর্চা

Suggested Readings:

১. ব্যাকরণ কৌমুদী – বিদ্যাসাগর
২. উচ্চতর বাংলা ব্যাকরণ – বামনদেব চক্রবর্তী
৩. ভাষা প্রকাশ বাঙ্গালা ব্যাকরণ – সুনীতিকুমার চট্টোপাধ্যায়
৪. ভাষার ইতিবৃত্ত – সুকুমার সেন
৫. On Translations – Richards, I,A.
৬. Translation – Alan Daff

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

অথবা

SEC-1: লিখন-দক্ষতা বৃদ্ধি **Credits 02**

SEC1T: লিখন-দক্ষতা বৃদ্ধি

Course Contents:

ক. অফিসিয়াল পত্রলিখন, সংবাদপত্রে প্রতিবেদন, ভাবার্থ ও ভাবসম্প্রসারণ, সরকারী কাজের রিপোর্ট লিখন, বিজ্ঞাপনের খসড়া রচনা, বানানবিধি, প্রুফ সংশোধন

খ. বাংলা ভাষার কাজে কম্পিউটার শিক্ষা

Suggested Readings:

১. লেখক ও সম্পাদকের অভিধান – সুভাষ ভট্টাচার্য

২. **Basic Computer Course Made Simple – Satish Jain**

৩. বাংলা বানান চিন্তা – মিতালি ভট্টাচার্য

SEC-2: বাংলা ভাষা ও সাহিত্য বিষয়ক প্রকল্প রচনা ও প্রকল্পপত্র উপস্থাপনা

Credits 02

SEC2T: বাংলা ভাষা ও সাহিত্য বিষয়ক প্রকল্প রচনা ও প্রকল্পপত্র উপস্থাপনা

Course Contents:

ক. প্রকল্প রচনা (Project Writing)

খ. প্রকল্পপত্র উপস্থাপনা (Paper presentation)

অথবা

SEC-2: চিত্রনাট্য রচনা ও সাম্প্রতিক ঘটনা বিশ্লেষণ **Credits 02**

SEC2T: চিত্রনাট্য রচনা ও সাম্প্রতিক ঘটনা বিশ্লেষণ

Course Contents:

ক. চিত্রনাট্য লিখন (Script-Writing)

খ. সাম্প্রতিক ঘটনা বিশ্লেষণ

Suggested Readings:

১. চলচ্চিত্রের অভিধান – ধীমান দাশগুপ্ত

২. সিনেমার অ আ ক খ - ধীমান দাশগুপ্ত

৩. বিষয় চলচ্চিত্র – সত্যজিৎ রায়

৪. বই নয়, ছবি –চিদানন্দ দাশগুপ্ত

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

৫. সিনেমার ভালোমন্দ – সোমেশ্বর ভৌমিক
৬. চিত্রনাট্য রচনা ও চিত্রনাট্য বিশ্লেষণ – ধীমান দাশগুপ্ত
৭. চিত্রনাট্য সাহিত্যে নতুন ভুবন - মানবেন্দ্রনাথ সাহা

Generic Electives (GE)
[Interdisciplinary for other Department]

GE-1: বাংলার ভূ-খণ্ড, জাতির উৎপত্তি ও ধর্ম ও সংস্কৃতির ইতিহাস এবং লোকসাহিত্য

Credits 06

GE1T: বাংলার ভূ-খণ্ড, জাতির উৎপত্তি ও ধর্ম ও সংস্কৃতির ইতিহাস এবং লোকসাহিত্য

Course Contents:

ক. বাঙালি জাতির উৎপত্তি ও বাংলা ভূ-খণ্ডের ইতিহাস
খ. বাঙালির ধর্ম ও সংস্কৃতির (খাদ্যাভ্যাস, পোশাক-পরিচ্ছদ, উৎসব-পার্বণ, সামাজিক রীতি-অনুষ্ঠান) সাধারণ পরিচয়
গ. লোকসাহিত্য সংজ্ঞা, স্বরূপ ও বৈশিষ্ট্য
ছড়া, ধাঁধা, প্রবাদ, ব্রতকথা, গীতিকা, লোককথা, লোকনাটক, লোকগীতি

Suggested Readings:

১. বাংলা ও বাঙালীর বিবর্তন - অতুল সুর
২. বৃহৎ বঙ্গ – দীনেশচন্দ্র সেন
৩. গৌড়ের ইতিহাস- রজনীকান্ত চক্রবর্তী
৪. গঙ্গারিডি ও বঙ্গভূমি - প্রভাতকুমার ঘোষ
৫.পশ্চিমবঙ্গের সংস্কৃতি - বিনয় ঘোষ
৬.সংবাদপত্রে সেকালের কথা - ব্রজেন্দ্রনাথ বন্দ্যোপাধ্যায়
৭.বাংলার ইতিহাস - রাখালদাস বন্দ্যোপাধ্যায়
৪. বাঙালীর নৃতাত্ত্বিক পরিচয় - অতুল সুর
৯. বাংলা বাঙালী ও বাঙালীত্ব - আহমদ শরীফ
১০. বাঙলার মুখ আমি দেখিয়াছি- শঙ্কর সেনগুপ্ত
১১. বাঙালীর ইতিহাস - নীহাররঞ্জন রায়
১২. বাঙলার লোকসংস্কৃতি বিশ্বকোষ- দুলাল চৌধুরী
১৩. বঙ্গীয় লোকসংস্কৃতি কোষ - বরুণকুমার চক্রবর্তী
১৪. লোকসাহিত্য - আসরাফ সিদ্দিকী
১৫. বাংলার প্রবাদ - সুদেষ্ণা বসাক
১৬. বাংলার ব্রতপার্বণ- শীলা বসাক
১৭. গীতিকা : স্বরূপ ও বৈশিষ্ট্য - বরুণ কুমার চক্রবর্তী
১৮. বাংলা ধাঁধার বিষয়বৈচিত্র্য ও সামাজিক পরিচয় –শীলা বসাক
১৯. বাংলার লোকগীত কথা – চিত্তরঞ্জন দেব
২০. বাংলার লোককথা – বুদ্ধদেব রায়
২১. বাংলার লোকনৃত্য ও গীতিবৈচিত্র্য– মণি বর্ধন

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

অথবা

GE-1: বাংলা ভাষার বিভিন্ন স্তর ও বাংলা ভাষাচর্চা Credits 06

GE1T: বাংলা ভাষার বিভিন্ন স্তর ও বাংলা ভাষাচর্চা

Course Contents:

ক. পৃথিবীর প্রধান প্রধান বংশের সাধারণ পরিচয়, ইন্দো-ইউরোপীয় ভাষাবংশের সাধারণ পরিচয়, বাংলা ভাষার উদ্ভবের ইতিহাস, বাংলা ভাষার বিভিন্ন স্তরের বৈশিষ্ট্য,

খ. বাংলা উপভাষা, বাংলা সাধু ও চলিত ভাষা, বাংলা বাক্যের গঠন (প্রথাগত), বাংলা শব্দভাণ্ডার

গ. ধ্বনি পরিবর্তনের কারণ ও সূত্রসমূহ, শব্দার্থ পরিবর্তনের কারণ ও সূত্রসমূহ

Suggested Readings:

১.সাধারণ ভাষাবিজ্ঞান ও বাংলা ভাষা - রামেশ্বর ‘শ
২.ভাষাবিদ্যা পরিচয় - পরেশচন্দ্র ভট্টাচার্য
৩.বাংলাভাষার ব্যাকরণ ও তার ক্রমবিকাশ- নির্মল দাশ
৪.বাংলা ভাষা পরিক্রমা- পরেশচন্দ্র মজুমদার
৫. ভাষাতত্ত্ব ও বাংলাভাষা – বাণী রঞ্জন দে
৬.ঝাড়খণ্ডী বাংলার ঝাড়গাঁয়ী রূপ – ছন্দা ঘোষাল
৭.ভাষাতত্ত্ব – অতীন্দ্র মজুমদার
৮.Origin and Development of the Bengali Language- Suniti Kumar Chatterjee
৯.বাংলা ভাষাতত্ত্বের ভূমিকা - সুনীতিকুমার চট্টোপাধ্যায়
১০.বাংলা ভাষা - পার্বতীচরণ ভট্টাচার্য
১১. বাংলা ভাষার ইতিবৃত্ত - ড. মুহম্মদ শহীদুল্লাহ
১২.ভাষার ইতিবৃত্ত - শ্রী সুকুমার সেন
১৩. প্রসঙ্গ: বাংলা ভাষা - সুখেন বিশ্বাস

GE-2: কাব্য সাহিত্যের ধারা ও বৈষ্ণব পদাবলী পাঠ Credits 06

GE2T: কাব্য সাহিত্যের ধারা ও বৈষ্ণব পদাবলী পাঠ

Course Contents:

ক. প্রাচীন ও মধ্যযুগের সাহিত্যের ধারা : চর্যাপদ, শ্রীকৃষ্ণকীর্ত্তন, মঙ্গলকাব্য, বৈষ্ণবপদাবলী

খ. আধুনিক কাব্য সাহিত্যের ধারা : মধুসূদন দত্ত, রবীন্দ্রনাথ ঠাকুর, জীবনানন্দ দাশ, নজরুল ইসলাম, সুধীন্দ্রনাথ দত্ত, অমিয় চক্রবর্তী, বিষ্ণু দে, শক্তি চট্টোপাধ্যায়

গ. বৈষ্ণবপদাবলী পাঠ

বিদ্যাপতি – চির চন্দন উরে হার না দেলা; এ সখি হামারি দুখের নাহি ওর;
চণ্ডীদাস – সই কেবা শুনাইল শ্যাম নাম ; এমন পীরিতি কভু নাহি দেখি শুনি
জ্ঞানদাস – রূপ লাগি আঁখি ঝুরে ; বঁধু তোমার গরবে গরবিনী হাম

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

গোবিন্দদাস – নীরদ নয়নে নীর ঘন সিঞ্চনে, কন্টক গাড়ি কমল সম পদতল

Suggested Readings:

১. বাংলা সাহিত্যের ইতিবৃত্ত – ড. অসিতকুমার বন্দ্যোপাধ্যায়
২. বাংলা সাহিত্যের ইতিকথা- ড. ভূদেব চৌধুরী
৩. বাঙ্গালা সাহিত্যের ইতিহাস- ড. সুকুমার সেন
৪. সমগ্র বাংলা সাহিত্যের পরিচয়- ড. পরেশচন্দ্র ভট্টাচার্য
৫. বাঙলা সাহিত্যের রূপরেখা- গোপাল হালদার
৬. সমগ্র বাংলা সাহিত্যের ইতিহাস- ক্ষেত্র গুপ্ত
৭. বাংলা সাহিত্যর সম্পূর্ণ ইতিবৃত্ত- অসিতকুমার বন্দ্যোপাধ্যায়
৮. মঙ্গলকাব্যের ইতিহাস- আশুতোষ ভট্টাচার্য
৯. মধ্যযুগের কবি ও কাব্য- শঙ্করীপ্রসাদ বসু
১০. পাঁচশত বৎসরের পদাবলী- বিমানবিহারী মজুমদার (সম্পাদনা)
১১. বৈষ্ণব সাহিত্য – ত্রিপুরা শঙ্কর সেন শাস্ত্রী
১২. বাংলা সাহিত্যে কৃষ্ণকথার ক্রমবিকাশ- সত্যবতী গিরি
১৩. বৈষ্ণব পদাবলী পরিচয়- জীবেন্দু রায়
১৪. বৈষ্ণব রহস্য প্রকাশ- ক্ষুদিরাম দাস
১৫. পদাবলী পরিচয়- হরেকৃষ্ণ মুখোপাধ্যায়
১৬. বৈষ্ণব কবি প্রসঙ্গে- দেবনাথ বন্দ্যোপাধ্যায়
১৭. প্রসঙ্গ : বৈষ্ণব সাহিত্য- লায়েক আলি খান
১৮. বৈষ্ণব পদাবলী- সত্য গিরি
১৯. আধুনিক বাংলা কবিতার রূপরেখা – বাসন্তীকুমার মুখোপাধ্যায়
২০. আধুনিক কবিতার মানচিত্র – জীবেন্দ্র সিংহ রায়
২১. আধুনিক বাংলা কাব্য পরিচয় – দীপ্তি ত্রিপাঠী
২২. আমার কালের কয়েকজন কবি – জগদীশ ভট্টাচার্য
২৩. বাংলা কবিতার কালান্তর – সরোজ বন্দ্যোপাধ্যায়
২৪. আধুনিক কবিতার দিগ্‌বলয় – অশ্রুকুমার সিকদার

অথবা

GE-2: নাট্য সাহিত্যের ধারা এবং কাব্য ও নাটক পাঠ **Credits 06**

GE2T: নাট্য সাহিত্যের ধারা এবং কাব্য ও নাটক পাঠ

Course Contents:

ক. বাংলা নাট্য সাহিত্যের ধারা – মধুসূদন দত্ত, দীনবন্ধু মিত্র, গিরিশচন্দ্র ঘোষ, রবীন্দ্রনাথ ঠাকুর, দ্বিজেন্দ্রলাল রায়, মন্মথ রায়
খ. বুড় শালিকের ঘাড়ে রোঁ – মধুসূদন দত্ত
গ. কথা ও কাহিনী – রবীন্দ্রনাথ ঠাকুর

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

১. বাংলা নাট্য সাহিত্যের ইতিহাস – শ্রী আশুতোষ ভট্টাচার্য
২. বাংলা নাটকের ইতিহাস – অজিতকুমার ঘোষ
৩. নাট্য সাহিত্যের আলোচনা ও নাটক বিচার – সাধনকুমার ভট্টাচার্য
৪. নাট্য সাহিত্যের ভূমিকা – বিভাস রায়চৌধুরী
৫. বাংলা প্রহসন : একেই কি বলে সভ্যতা ও বুড় সালিকের ঘাড়ে রোঁ – ক্ষেত্র গুপ্ত
৬. মধুসূদন : কবি ও নাট্যকার – সুবোধচন্দ্র সেনগুপ্ত
৭. রবীন্দ্র-কাব্য-পরিক্রমা – উপেন্দ্রনাথ ভট্টাচার্য
৮. বুড় শালিকের ঘাড়ে রোঁ – হীরেন চট্টোপাধ্যায়
৯. রবীন্দ্র কাব্য প্রবাহ – প্রমথনাথ বিশী
১০. বাংলা সাহিত্যে লঘুনাট্যের ধারা – বৈদ্যনাথ শীল

GE-3: বাংলা প্রবন্ধ ও কথাসাহিত্যের ধারা এবং প্রবন্ধ পাঠ Credits 06

GE3T: বাংলা প্রবন্ধ ও কথাসাহিত্যের ধারা এবং প্রবন্ধ পাঠ

Course Contents:

ক. বাংলা প্রবন্ধ সাহিত্যের ধারা –
ফোর্ট উইলিয়াম কলেজ, শ্রীরামপুর মিশন, বিদ্যাসাগর, বঙ্কিমচন্দ্র চট্টোপাধ্যায়, রবীন্দ্রনাথ ঠাকুর, প্রমথ চৌধুরী, সৈয়দ মুজতবা আলী, বুদ্ধদেব বসু, অন্নদাশঙ্কর রায়।
খ. বাংলা কথাসাহিত্যের ধারা – বঙ্কিমচন্দ্র চট্টোপাধ্যায়, রবীন্দ্রনাথ ঠাকুর, প্রভাতকুমার মুখোপাধ্যায়, শরৎচন্দ্র চট্টোপাধ্যায়, তারাশঙ্কর বন্দ্যোপাধ্যায়, বিভূতিভূষণ বন্দ্যোপাধ্যায়, মানিক বন্দ্যোপাধ্যায়, শরদিন্দু বন্দ্যোপাধ্যায়, বলাইচাঁদ মুখোপাধ্যায়, সমরেশ বসু।
গ. লোকরহস্য :
(বাবু, ব্যাঘ্রাচার্য্য বৃহল্লাঙ্গুল, ইংরাজ স্তোত্র, সুবর্ণগোলক, হনূমদ্বাবুসংবাদ) – বঙ্কিমচন্দ্র চট্টোপাধ্যায়

Suggested Readings:

১. বাংলা সাহিত্যে গদ্য – সুকুমার সেন
২. আধুনিক বাংলা প্রবন্ধ সাহিত্যের ধারা - অধীর দে
৩. বাংলা গদ্য রীতির ইতিহাস - অরুণকুমার মুখোপাধ্যায়
৪. বাংলা গদ্যের ক্রমবিকাশ - হীরেন্দ্রনাথ দত্ত
৫. বাংলা গদ্যের ক্রমবিকাশ- হীরেন্দ্রনাথ দত্ত
৬. বঙ্গ সাহিত্যে উপন্যাসের ধারা – শ্রীকুমার বন্দ্যোপাধ্যায়
৭. বাংলা উপন্যাসের কালান্তর – সরোজ বন্দ্যোপাধ্যায়
৮. বাংলা উপন্যাসের ইতিহাস (প্রথম থেকে সপ্তম খন্ড) – ক্ষেত্রগুপ্ত
৯. বাংলা উপন্যাস সমীক্ষা – বীতশোক ভট্টাচার্য
১০. বঙ্কিমচন্দ্র – সুবোধ কুমার সেনগুপ্ত

অথবা

GE-3: উপন্যাস ও ছোটগল্প পাঠ Credits 06

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

GE3T: উপন্যাস ও ছোটগল্প পাঠ

Course Contents:

১. বিষবৃক্ষ – বঙ্কিমচন্দ্র চট্টোপাধ্যায়
২. পথের পাঁচালী – বিভূতিভূষণ বন্দ্যোপাধ্যায়
৩. ছোটগল্প সংকলন –
পোষ্টমাস্টার – রবীন্দ্রনাথ
মহেশ – শরৎচন্দ্র
নিমগাছ – বনফুল
ডাইনি –তারাশঙ্কর বন্দ্যোপাধ্যায়
চিত্রচোর – সুবোধ ঘোষ

Suggested Readings:

১. পথের পাঁচালি : জীবনদৃষ্টি ও শিল্পরূপ – সমরেশ মজুমদার
২. রবীন্দ্র ছোটগল্পের শিল্পরূপ – তপোব্রত ঘোষ
৩. শরৎচন্দ্র জীবন ও সাহিত্য – ড. অজিতকুমার ঘোষ
৪. বনফুল : জীবন, মন ও সাহিত্য – ড. উর্মি নন্দী
৫. বিভূতিভূষণ : জীবন ও সাহিত্য – সুনীলকুমার চট্টোপাধ্যায়
৬. তারাশঙ্কর অন্বেষা – সরোজ বন্দ্যোপাধ্যায়
৭. বাংলা ছোটগল্প : নববীক্ষণ – সরোজ পান
৮. রবীন্দ্রনাথের নির্বাচিত ছোটগল্প – অসিতকুমার বন্দ্যোপাধ্যায়
৯. বঙ্কিমচন্দ্র – সুবোধ কুমার সেনগুপ্ত
১০. শরৎচন্দ্র - সুবোধ কুমার সেনগুপ্ত
১১. আমার কালের কয়েকজন কথাশিল্পী – জগদীশ ভট্টাচার্য
১২. বাংলা ছোটগল্প – শিশির কুমার দাশ
১৩. সুবোধ ঘোষের ছোটগল্পের মানব মনস্তত্ত্ব – মোমেনুর রসুল
১৪. বাংলা ছোটগল্প : প্রসঙ্গ ও প্রকরণ – বীরেন্দ্র দত্ত
১৫. গল্পচর্চা – উজ্জ্বলকুমার মজুমদার
১৬. ছোটগল্পের পথে পথে – রবিন পাল
১৭. রবীন্দ্রনাথের গল্প : বিশ্লেষণীপাঠ – সমরেশ মজুমদার
১৮. রবীন্দ্রনাথের ছোটগল্প – প্রমথনাথ বিশী
১৯. বাংলা ছোটগল্প : মননে দর্পণে – শীতল চৌধুরী

GE-4: বাংলা গীতিসাহিত্য, শিশুসাহিত্য ও রম্যরচনার ধারা **Credits 06**

GE4T: বাংলা গীতিসাহিত্য, শিশুসাহিত্য ও রম্যরচনার ধারা

Course Contents:

ক. বাংলা গীতি (সঙ্গীত-সাহিত্য) ধারা
খ. বাংলা শিশুসাহিত্যের ধারা

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

(বিদ্যাসাগর, মদনমোহন তর্কালঙ্কার,শিবনাথ শাস্ত্রী, দক্ষিণারঞ্জন মিত্র মজুমদার, রবীন্দ্রনাথ, অবনীন্দ্রনাথ,যোগীন্দ্রনাথ সরকার, উপেন্দ্রকিশোর রায়চৌধুরী, সত্যজিৎ রায়, সুকুমার রায়, লীলা মজুমদার, নারায়ণ গঙ্গোপাধ্যায়, প্রেমেন্দ্র মিত্র, ত্রৈলোক্যনাথ মুখোপাধ্যায়, সুখলতা রাও)

গ. রম্যরচনার ধারা –
হুতোম প্যাঁচা, প্রমথ চৌধুরী, কালপেঁচা, মুজতবা আলী, সঞ্জীব চট্টোপাধ্যায়

Suggested Readings:

১. সংগীতকোষ – করুনাময়ী গোস্বামী
২ বাঙ্গালীর গান- দুর্গাদাস লাহিড়ী
৩. রবীন্দ্রসংগীত- শান্তিদেব ঘোষ
৪. সুরের আগুন- সন্ধ্যা সেন
৫. রবীন্দ্রনাথের গান- সৌমেন্দ্রনাথ ঠাকুর
৬.ভারতীয় সংগীতের প্রকৃতি ও বাংলা গান - শান্তিদেব ঘোষ
৭. বাংলা গানের বিবর্তন – উৎপলা গোস্বামী
৮. বাংলা গানের সন্ধানে – সুধীর চক্রবর্তী
৯.বাংলা শিশু কিশোর সাহিত্যের ইতিহাস ও বিবর্তন- মহুয়া ভট্টাচার্য
১০. বাংলা শিশু সাহিত্য ও পরিক্রমা – অশোককুমার দে
১১. বাংলা শিশুসাহিত্যের ক্রমবিকাশ - আশা গঙ্গোপাধ্যায়
১২. শিশু সাহিত্য ও সাহিত্যিক – প্রভাসরঞ্জন দে
১৩. শতাব্দীর শিশু সাহিত্য – খগেন্দ্রনাথ মিত্র
১৪. রম্যকথা – বিশ্বনাথ বন্দ্যোপাধ্যায়
১৫. রম্যকথা আলোচনা – কুমারেশ ঘোষ
১৬. বাংলা রম্য রচনার প্রাথমিক পরিচয় – ড. প্রতীপ মজুমদার
১৭. গদ্য পরম্পরা – ফাদার দ্যুপিয়েন
১৮. বাংলা সাহিত্যে সামাজিক নকশার পটভূমির প্রতিষ্ঠা – আবুল কাশেম চৌধুরী
১৯. আধুনিক ব্যঙ্গ পরিচয় – পরিমল গোস্বামী
২০. বীরবলের বৈঠকী গল্প – মিহির সেন
২১.বাংলা গানের চার দিগন্ত – সুধীর চক্রবর্তী
২২.বাংলা গানের ইতিবৃত্ত – সাবিত্রী ঘোষ

অথবা

GE-4: বাংলা সাহিত্য এবং দার্শনিক, রাজনৈতিক ও সামাজিক চিন্তা **Credits 06**

GE4T: বাংলা সাহিত্য এবং দার্শনিক, রাজনৈতিক ও সামাজিক চিন্তা

Course Contents:

ক. বাংলা সাহিত্য ও বাঙালির দর্শনচিন্তা
খ. বাংলা সাহিত্য ও বাঙালির রাজনৈতিক চিন্তা

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

গ. বাংলা সাহিত্য ও বাঙালী সমাজচিন্তা

Suggested Readings:

১. চিন্তানায়ক বঙ্কিমচন্দ্র - ভবতোষ দত্ত
২. বঙ্গীয় রেনেসাঁসে পাশ্চাত্য বিদ্যার ভূমিকা – সুনীল বন্দ্যোপাধ্যায়
৩. বাঙ্গালির সংস্কৃতি – সুনীতিকুমার চট্টোপাধ্যায়
৪. গৌড়বঙ্গ সংস্কৃতি – হরেকৃষ্ণ মুখোপাধ্যায়
৫. বাঙলা ও বাঙ্গালির বিবর্তন – অতুল সুর
৬. বাঙলা ও বাঙালির সামাজ ও সংস্কৃতি – অতুল সুর
৭. বঙ্গের জাতীয় ইতিহাস (রাজন্যকাণ্ড) - নগেন্দ্রনাথ বসু
৮. বাংলার সামাজিক ইতিহাসের ধারা - বিনয় ঘোষ
৯. মধ্যযুগে বাঙ্গালা - কালীপ্রসন্ন বন্দ্যোপাধ্যায়
১০. বাংলার মুসলিম আধিকারের আদিপর্ব - সুখময় মুখোপাধ্যায়
১১. বাংলায় নবচেতনার ইতিহাস - স্বপন বসু
১২. উনিশশতক : ভাব, সংঘাত ও সমন্বয় - রাখালচন্দ্র নাথ
১৩. বাঙালীর নৃতাত্ত্বিক পরিচয় – অতুল সুর
১৪. বাঙালীর রাষ্ট্রচিন্তা – সৌরেন্দ্রমোহন গঙ্গোপাধ্যায়
১৫. ষোড়শ শতকের বাংলা সমাজ ও সাহিত্য - সুমঙ্গল রানা

MIL (AECC- Elective) - Bengali

AECC (Elective) - MIL (Bengali): বাংলা ভাষা-প্রসঙ্গ, অনুবাদ ও কথন-দক্ষতা

Credit 02

Course Contents:

বিভাগ-ক
বাংলা ভাষা-প্রসঙ্গ

১. ভাষাপরিকল্পনা
২. ধর্ম, পেশা, লিঙ্গ ভিত্তিক বাংলা সমাজভাষা
৩. বর্তমান আদর্শ কথ্য-বাংলার প্রকৃতি

বিভাগ-খ
অনুবাদ

১. অনুবাদ (বাংলা থেকে ইংরেজি ও ইংরেজি থেকে বাংলা)

বিভাগ-গ
কথন-দক্ষতা

২. সাক্ষাৎকার (Interview)
৩. বক্তৃতা (public speech) দক্ষতা

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

Suggested Readings:

১. Sociolinguistics Pattern – William Lebov

২. Sociolinguistic – R.H. Hudson

৩. ভাষা ও সমাজ – মৃণাল নাথ

৪. সমাজভাষাবিজ্ঞান – রাজীব হুমায়ুন

5. Theories of Translation – J. Williams

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:02:32; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/bengali_hons.pdf

Vidyasagar University

Curriculum for B.A (General) in Bengali
[Choice Based Credit System]

Semester-I

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC1 [DSC-1A]		**C1T:বাংলা সাহিত্যের ইতিহাস ও বাংলা ভাষাতত্ত্ব**	Core Course-1	5	1	0	6	75
CC2 [DSC-2A]	TBD	**DSC-2A (other Discipline)**	Core Course-2				6	75
AECC Core[L-1]		**English-1**	AECC-Core **[Language core]**	5	1	0	6	75
AECC (Elective)		**English**	AECC (Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC** = Core Course, **TBD** = To be decided, **AECC (Elective)** = Ability Enhancement Compulsory Course (Elective)

DSC-1 = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,
AECC- Core [L-1]: Ability Enhancement Compulsory Course-Core [Language Core -1]

Scanned by CamScanner

প্রথম সেমেস্টার (Semester-I)
কোর কোর্স [Core Course (CC)]

কোর কোর্স-১(CC-1): বাংলা সাহিত্যের ইতিহাস ও বাংলা ভাষাতত্ত্ব **Credits 06**

১) ক. প্রাচীন ও মধ্যযুগ- চর্যাগীতি, শ্রীকৃষ্ণকীর্তন, কৃত্তিবাস, কাশীদাস, মুকুন্দরাম, ভারতচন্দ্র।

খ. উনিশ শতকের গদ্য- ফোর্ট উইলিয়াম কলেজ, শ্রীরামপুর মিশন, রামমোহন রায়, বিদ্যাসাগর, প্যারীচাঁদ মিত্র, কালীপ্রসন্ন সিংহ, বঙ্কিমচন্দ্র চট্টোপাধ্যায়।

গ. কবিতা- মধুসূদন দত্ত, রবীন্দ্রনাথ ঠাকুর, নজরুল ইসলাম, জীবনানন্দ।

ঘ. কথাসাহিত্য- বঙ্কিমচন্দ্র চট্টোপাধ্যায়, রবীন্দ্রনাথ ঠাকুর, শরৎচন্দ্র চট্টোপাধ্যায়, বিভূতিভূষণ বন্দ্যোপাধ্যায়।

২) বাংলা ভাষার উদ্ভব, বাংলা ভাষার স্তরসমূহের বৈশিষ্ট্য, শব্দার্থের পরিবর্তন, বাংলা শব্দভান্ডার, ধ্বনি পরিবর্তন, বাংলা উপভাষা।

Scanned by CamScanner

Vidyasagar University

Curriculum for B.A (General) in Bengali [Choice Based Credit System]

Semester-II

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC3 [DSC-1B]		কাব্য-কবিতা	Core Course	5	1	0	6	75
CC4 [DSC-2B]	TBD	DSC-2B (other Discipline)	Core Course				6	75
AECC Core[L-1]		MIL-1	AECC-Core [Language core]	5	1	0	6	75
AECC (Elective)		Environmental Studies	AECC(Elective)				4	100
Semester Total							22	325

L=Lecture, **T**=Tutorial, **P**=Practical, **CC** = Core Course, **TBD** = To be decided, **AECC (Elective)** = Ability Enhancement Compulsory Course (Elective)

DSC-1 = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,

AECC- Core: Ability Enhancement Compulsory Course-Core [Language Core-1]

Semester-II

DSC-1B: কাব্য - কবিতা **Credits 06**

Course contents:

মধ্যযুগের কাব্য-কবিতা

ক. বৈষ্ণব পদাবলী (৮টি নির্বাচিত পদ)

Scanned by CamScanner

বিদাপতি- এ সখি হামারি দুখের নাহি ওর
আজু রজনী হাম ভাগে পোহায়লুঁ
চন্ডীদাস- যত নিবারিয়ে চাই নিবার না যায়
রাধার কি হইল অন্তরে ব্যাথা
জ্ঞানদাস- রূপ লাগি আঁখি ঝুরে গুণে মন ভোর

গোবিন্দদাস- গগনি নিমগ্ন দিনমনি কান্তি
কন্টক গাড়ি কমল সম পদতল
বলরাম দাস- শ্রীদাম সুদাম দাম শুন ওরে বলরাম

খ. শাক্ত পদাবলী (৬টি নির্বাচিত পদ)

ওরে নবমী নিশি- কমলাকান্ত ভট্টাচার্য
ওহে গিরিরাজ, গৌরী অভিমান- কমলাকান্ত ভট্টাচার্য
ওহে প্রাণনাথ গিরিবর- রামপ্রসাদ সেন
কি হলো নবমী নিশি- কমলাকান্ত ভট্টাচার্য
গিরি, এবার আমার উমা- রামপ্রসাদ সেন
বারে বারে কহ রাণি- কমলাকান্ত ভট্টাচার্য

অধুনিক যুগের কাব্য-কবিতা

ক. বীরাঙ্গনা কাব্য-

(দুষ্মন্তের প্রতি শকুন্তলা, সোমের প্রতি তারা, দশরথের প্রতি কেকয়ী, লক্ষ্মণের প্রতি সূর্পনখা, দ্বারকানাথের প্রতি রুক্মিণী, নীলধ্বজের প্রতি জনা)

খ. আধুনিক কবিতা সংকলন (নির্বাচিত কবিতা ১০টি)

মধুসূদন দত্ত- আত্মবিলাপ
রবীন্দ্রনাথ ঠাকুর- সোনার তরী
সত্যেন্দ্রনাথ দত্ত- চম্পা
যতীন্দ্রনাথ সেনগুপ্ত- দুঃখবাদী
দিনেশ দাস- কাস্তে
সুধীন্দ্রনাথ দত্ত- শাশ্বতী
সুভাষ মুখোপাধ্যায়- যত দূরে যাই

Scanned by CamScanner

শক্তি চট্টোপাধ্যায়- অবনী বাড়ি আছো

সুনীল গঙ্গোপাধ্যায়- নীরার জন্য কবিতার ভূমিকা

Suggested Readings:

১. বৈষ্ণব সাহিত্য – ত্রিপুরা শঙ্কর সেন শাস্ত্রী

২. বাংলা সাহিত্যে কৃষ্ণকথার ক্রমবিকাশ - সত্যবতী গিরি

৩. বৈষ্ণব পদাবলী পরিচয় - জীবেন্দু রায়

৪. বৈষ্ণব রসপ্রকাশ - ক্ষুদিরাম দাস

৫. পদাবলী পরিচয় - হরেকৃষ্ণ মুখোপাধ্যায়

৬. বৈষ্ণব কবি প্রসঙ্গে - দেবনাথ বন্দ্যোপাধ্যায়

৭. প্রসঙ্গ : বৈষ্ণব সাহিত্য - লায়েক আলি খান

৮. বৈষ্ণব পদাবলী - সত্য গিরি

৯. ভারতের শক্তিসাধনা ও শাক্তসাহিত্য - শশিভূষণ দাশগুপ্ত

১০. শাক্তপদাবলী ও শক্তিসাধনা - জাহ্নবীকুমার চক্রবর্তী

১১. শাক্তপদাবলী - অমরেন্দ্রনাথ রায় (সম্পাদনা)

১২. শাক্তপদাবলী - ধ্রুবকুমার মুখোপাধ্যায় (সম্পাদনা)

১৩. শাক্তগীতি পদাবলী - অরুণকুমার বসু

১৪. বীরাঙ্গনা কাব্য – হীরেন চট্টোপাধ্যায়

১৫. মধুসূদন ব্যক্তি ও সৃষ্টি – সুকুমার রায়

১৬. মধুসূদনের কবিতা ও কাব্য শিল্প – ক্ষেত্রগুপ্ত

১৭. কবি শ্রী মধুসূদন - মোহিতলাল মজুমদার

১৮. মধুসূদন কবি ও নাট্যকার - সুবোধ চন্দ্র সেনগুপ্ত

১৯. রবীন্দ্র সাহিত্যের ভূমিকা - নীহাররঞ্জন রায়

২০. রবীন্দ্র কাব্য পরিক্রমা - উপেন্দ্রনাথ ভট্টাচার্য

২১. রবিরশ্মি - চারুচন্দ্র বন্দ্যোপাধ্যায়

২২. কালের পুতুল – বুদ্ধদেব বসু

২৩. কালের প্রতিমা - অরুণ মুখোপাধ্যায়

২৪. আধুনিক কবিতা ভাবনা ও অনুভাবনা – শ্রুতিনাথ চক্রবর্তী

২৫. কাব্যের মুক্তি ও তারপর – দেবীপ্রসাদ বন্দ্যোপাধ্যায়

২৬. আধুনিক কবিতার ইতিহাস – অলোকরঞ্জন দাশগুপ্ত ও দেবীপ্রসাদ বন্দ্যোপাধ্যায়

২৭. আধুনিক বাংলা কাব্য পরিচয় - দীপ্তি ত্রিপাঠী

২৮. আমার কালের কয়েকজন কবি – জগদীশ ভট্টাচার্য

Scanned by CamScanner

AECC (Core)
[Language-Core]
MIL-1
[AECC- Core] Bengali -1

CL-1: কবিতা ও ছোটগল্প **Credit 06**

Course Contents:

ক. বাংলা কবিতা (নির্বাচিত পাঁচটি)

আমি- রবীন্দ্রনাথ ঠাকুর

মহুয়ার দেশ- সমর সেন

সাম্যবাদী- নজরুল

বড়বাবুর কাছে নিবেদন- অমিয় চক্রবর্তী

উটপাখি –সুধীন্দ্রনাথ দত্ত

খ. বাংলা ছোটগল্প (নির্বাচিত পাঁচটি)

মহেশ- শরৎচন্দ্র চট্টোপাধ্যায়

লম্বকর্ণ-পরশুরাম

পুঁইমাচা- বিভূতিভূষণ বন্দ্যোপাধ্যায়

গিরগিটি-জ্যোতিরিন্দ্র নন্দী

টিচার- মানিক বন্দ্যোপাধ্যায়

তারিনী মাঝি (ছোটগল্প)- তারাশঙ্কর বন্দ্যোপাধ্যায়

Suggested Readings:

১. রবীন্দ্র-কাব্য-পরিক্রমা – উপেন্দ্রনাথ ভট্টাচার্য

২. রবীন্দ্র কাব্য প্রবাহ – প্রমথনাথ বিশী

৩. আধুনিক কবিতা ভাবনা ও অনুভাবনা – শ্রুতিনাথ চক্রবর্তী

Scanned by CamScanner

৪. কাব্যের মুক্তি ও তারপর – দেবীপ্রসাদ বন্দ্যোপাধ্যায়
৫. আধুনিক কবিতার ইতিহাস – অলোকরঞ্জন দাশগুপ্ত ও দেবীপ্রসাদ বন্দ্যোপাধ্যায়
৬. আধুনিক বাংলা কাব্য পরিচয় - দীপ্তি ত্রিপাঠী
৭. শরৎচন্দ্র জীবন ও সাহিত্য – ড. অজিতকুমার ঘোষ
৮. বিভূতিভূষণ : জীবন ও সাহিত্য – সুনীলকুমার চট্টোপাধ্যায়
৯. তারাশঙ্কর অন্বেষা – সরোজ বন্দ্যোপাধ্যায়
১০. শরৎচন্দ্র - সুবোধ কুমার সেনগুপ্ত
১১. আমার কালের কয়েকজন কথাশিল্পী – জগদীশ ভট্টাচার্য
১২. বাংলা ছোটগল্প – শিশির কুমার দাশ
১৩. বাংলা ছোটগল্প : প্রসঙ্গ ও প্রকরণ – বীরেন্দ্র দত্ত
১৪. গল্পচর্চা – উজ্জ্বলকুমার মজুমদার
১৫. ছোটগল্পের পথে পথে – রবিন পাল

Scanned by CamScanner

Vidyasagar University

Curriculum for B.A (General) in Bengali [Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1C		DSC1CT: বাংলা কথাসাহিত্য, নাটক ও প্রবন্ধ	Core Course	5	1	0	6	75
DSC-2C	TBD	DSC-2C (other Discipline)	Core Course				6	75
AECC Core[L-2]		English-2	AECC-Core [Language core]	5	1	0	6	75
SEC-1		TBD	Skill Enhancement Course	1	1	0	2	50
Semester Total							20	275

L=Lecture, **T**=Tutorial, **P**=Practical, **CC** = Core Course, **TBD** = To be decided, **AECC (Elective)** = Ability Enhancement Compulsory Course (Elective)

DSC-1 = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,

AECC- Core: Ability Enhancement Compulsory Course-Core [Language Core-2]

Semester-III

Core Course (CC)

DSC-1C(CC-3): বাংলা কথাসাহিত্য, নাটক ও প্রবন্ধ **Credits 06**

DSC1CT: বাংলা কথাসাহিত্য, নাটক ও প্রবন্ধ

Course contents:

১. বাংলা নাটক ও প্রবন্ধপাঠ

ক. সাজাহান – দ্বিজেন্দ্রলাল রায়

খ. প্রবন্ধ (৫টি নির্বাচিত প্রবন্ধ)

গীতিকাব্য- বঙ্কিমচন্দ্র চট্টোপাধ্যায়

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:21:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Bengali(General)_sem3.pdf

Scanned by CamScanner

পিতামহ রামজয় তর্কভূষণ- বিদ্যাসাগর

অপবিজ্ঞান- রাজশেখর বসু

জাতীয় জীবন গঠনে সাহিত্যের স্থান- সুনীতিকুমার চট্টোপাধ্যায়

আধুনিক যুগ ও রবীন্দ্রনাথ- অন্নদাশঙ্কর রায়

২. কথাসাহিত্য পাঠ-

ক. বাংলা ছোটগল্প (নির্বাচিত ৬টি ছোটগল্প)

ফুলের মূল্য- প্রভাতকুমার মুখোপাধ্যায়

চিকিৎসা সংকট- পরশুরাম

চতুর্থ পানিপথের যুদ্ধ- সুবোধ ঘোষ

মতিলাল পাদরী- কমলকুমার মজুমদার

স্তন্যদায়িনী- মহাশ্বেতা দেবী

আত্মজা- বিমল কর

খ. পথের পাঁচালি- বিভূতিভূষণ বন্দ্যোপাধ্যায়

Suggested Readings:

১. দ্বিজেন্দ্রলাল : কবি ও নাট্যকার- রথীন্দ্রনাথ রায়

২. দ্বিজেন্দ্রলাল রায় : জীবন ও সাহিত্য- দুর্গাশঙ্কর মুখোপাধ্যায়

৩. সাজাহান- জগন্নাথ ঘোষ (সম্পাদিত)

৪. সাজাহান- নির্মলেন্দু ভৌমিক (সম্পাদিত)

৫. দীনবন্ধু মিত্রের সধবার একাদশী- সম্পা. অজিতকুমার ঘোষ

৬. দ্বিজেন্দ্রলাল রায়ের সাহিত্য ও শিল্পী মানস - দুর্গাশঙ্কর মুখোপাধ্যায়

৭. দীনবন্ধু মিত্র : কবি ও নাট্যকার- মিহিরকুমার দাশ

৮. দীনবন্ধু মিত্র- সুশীলকুমার দে

৯. আধুনিক বাংলা প্রবন্ধ সাহিত্যের ধারা – অধীর দে

১০. বাংলা গদ্যরীতির ইতিহাস – অরুণকুমার মুখোপাধ্যায়

১১. বঙ্কিমচন্দ্র : সৃজন ও বীক্ষণ – ভবতোষ চট্টোপাধ্যায়

১২. বঙ্কিমচন্দ্রের বিবিধ প্রবন্ধ – নাড়ুগোপাল দে

১৩. প্রমথ চৌধুরী – জীবেন্দ্র সিংহ রায়

১৪. রাজশেখর বসু : জীবন ও সাহিত্য – কল্যাণী ঘোষ

১৫. রামেন্দ্রসুন্দরের চরিতকথা – বুদ্ধদেব ভট্টাচার্য

১৬. চিন্তানায়ক বঙ্কিমচন্দ্র – ভবতোষ দত্ত

১৭. আধুনিক বাংলা প্রবন্ধ সাহিত্যের ধারা(১ম ও ২য়) –অধীর দে

১৮. বাংলা ছোটগল্প – শিশির কুমার দাশ

১৯. সুবোধ ঘোষের ছোটগল্পের মানব মনস্তত্ত্ব – মোমেনুর রসুল

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:21:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Bengali(General)_sem3.pdf

Scanned by CamScanner

২০. বাংলা ছোটগল্প : প্রসঙ্গ ও প্রকরণ – বীরেন্দ্র দত্ত
২১. গল্পচর্চা – উজ্জ্বলকুমার মজুমদার
২২. ছোটগল্পের পথে পথে – রবিন পাল
২৩. বাংলা ছোটগল্প : মননে দর্পণে – শীতল চৌধুরী
২৪. পথের পাঁচালি : জীবনদৃষ্টি ও শিল্পরূপ – সমরেশ মজুমদার

Skill Enhancement Course (SEC)

Credits 02

SEC-1: লিখন নৈপুণ্য বৃদ্ধি

SEC1T: লিখন নৈপুণ্য বৃদ্ধি

Course contents:

লিখন নৈপুণ্য বৃদ্ধি

ক. ভাবার্থ ও ভাবসম্প্রসারণ
খ. সংবাদপত্রের উপযোগী প্রতিবেদন রচনা
গ. অনুচ্ছেদ রচনা
ঘ. প্রাতিষ্ঠানিক পত্র লিখন
ঙ. বিজ্ঞাপনের খসড়া রচনা

Suggested Readings:

১. লেখক ও সম্পাদকের অভিধান – সুভাষ ভট্টাচার্য
২.বাংলা বানান চিন্তা – মিতালি ভট্টাচার্য

Or

Credits 02

SEC-1: ব্যবহারিক বাংলা

SEC1T: ব্যবহারিক বাংলা

Course contents:

ব্যবহারিক বাংলা

ক. বাংলা ভাষার কাজে কম্পিউটার শিক্ষা
খ. প্রুফ সংশোধন, বানান বিধি, পরিভাষা

Suggested Readings:

Basic Computer Course Made Simple – Satish Jain

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:21:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Bengali(General)_sem3.pdf

Scanned by CamScanner

Vidyasagar University

Curriculum for B.A (General) in Bengali [Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1D		DSC1DT: সাহিত্যতত্ত্ব ও সাহিত্য নির্মাণ কলা	Core Course	5	1	0	6	75
DSC-2D	TBD	DSC-2D (other Discipline)	Core Course				6	75
AECC Core[L-2]		Bengali -2	AECC-Core [Language core]	5	1	0	6	75
SEC-2		TBD	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							20	275

L=Lecture, **T**=Tutorial, **P**=Practical, **CC** = Core Course, **TBD** = To be decided, **DSC-1** = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2.

AECC-Core [L-2]: Ability Enhancement Compulsory Course - Core [Language Core-2]

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:21:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Bengali(General)_sem4.pdf

Scanned by CamScanner

Semester-IV

Core Course (CC)

DSC-1D(CC-4): সাহিত্যতত্ত্ব ও সাহিত্য নির্মাণ কলা **Credits 06**

DSC1DT: সাহিত্যতত্ত্ব ও সাহিত্য নির্মাণ কলা

Course contents:

ক. রস ও ধ্বনি (কাব্যজিজ্ঞাসা - অতুলচন্দ্র গুপ্ত)

খ. ছন্দ - দলবৃত্ত, কলাবৃত্ত, মিশ্রবৃত্ত ও ছন্দনির্ণয়

অলঙ্কার- অনুপ্রাস, যমক, শ্লেষ, উপমা, উৎপ্রেক্ষা, সমাসোক্তি, রূপক।

Suggested Readings:

১. সাহিত্য বিবেক - বিমলকুমার মুখোপাধ্যায়

২.কাব্যতত্ত্ব বিচার - দুর্গাশংকর মুখোপাধ্যায়

৩. প্রাচ্য ও পাশ্চাত্য সাহিত্যতত্ত্ব ও সাহিত্য রূপের অভিধান - আকরাম হোসেন

৪. ভারতীয় কাব্যতত্ত্ব - অবন্তীকুমার সান্যাল

৫. নন্দনের আলোকরেখা: কাব্যজিজ্ঞাসা - রামজীবন আচার্য

৬. কাব্যপ্রকাশ - সুরেন্দ্রনাথ দাশগুপ্ত

৭. সাহিত্য বিচার: তত্ত্ব ও প্রয়োগ- বিমলকুমার মুখোপাধ্যায়

৮. পাশ্চাত্য সাহিত্যতত্ত্ব ও সাহিত্য ভাবনা - নবেন্দু সেন

৯. প্রতীচ্যের সাহিত্যতত্ত্ব - তপোধীর ভট্টাচার্য

১০. সাহিত্যতত্ত্ব, সাহিত্য প্রসঙ্গ ও সমালোচনা বিচিত্রা - দুর্গাশঙ্কর মুখোপাধ্যায়

১১. সাহিত্য সংজ্ঞা অভিধান - বদিউর রহমান

১২. ভারতীয় নন্দনতত্ত্ব – তপোধীর ভট্টাচার্য

১৩. সাহিত্য ও সমালোচনার রূপরীতি - উজ্জ্বলকুমার মজুমদার

১৪. সাহিত্য প্রকরণ - হীরেন চট্টোপাধ্যায়

১৫. বাংলা ছন্দশিল্প ও ছন্দচিন্তার অগ্রগতি - প্রবোধচন্দ্র সেন

১৬. নূতন ছন্দ পরিক্রমা - প্রবোধচন্দ্র সেন

১৭. বাংলা ছন্দের মূলসূত্র - অমূল্যধন মুখোপাধ্যায়

১৮. বাংলা ছন্দশিল্প ও ছন্দচিন্তা - নীলরতন সেন

১৯. বাংলা ছন্দ বিবর্তনের ধারা - নীলরতন সেন

২০. ছন্দের বারান্দা - শঙ্খ ঘোষ

২১. বাংলা ছন্দ – জীবেন্দ্র সিংহ রায়

২২. নব ছন্দশৈলী – সুধাংশুশেখর শাসমল

২৩. ছন্দ পরিচয় - রামবহাল তেওয়ারী

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:21:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Bengali(General)_sem4.pdf

Scanned by CamScanner

২৪. বাংলা ছন্দ : রূপ ও রীতি- মিহির চৌধুরী কামিল্যা
২৫. বাংলা ছন্দশিল্প : প্রসঙ্গ অনুসঙ্গ - অপূর্ব কোলে
২৬. অলঙ্কার চন্দ্রিকা - শ্যামাপদ চক্রবর্তী
২৭. বাংলা অলংকার বিচার - পঞ্চানন মালাকার
২৮. বাংলা অলংকার মঞ্জরী - অশোককুমার মিশ্র
২৯. বাংলা অলংকার : রূপ ও স্বরূপ - মিহির চৌধুরী কামিল্যা
৩০. প্রসঙ্গ অলঙ্কার – শুদ্ধসত্ত্ব বসু

Skill Enhancement Course(SEC)

SEC-2:অনুবাদতত্ত্ব ও সৃজনশীল রচনা **Credits 02**

SEC2T:অনুবাদতত্ত্ব ও সৃজনশীল রচনা

Course contents:

ক. অনুবাদতত্ত্ব

খ. সৃজনশীল রচনা

Suggested Readings:

১. On Translations - Richards, I, A.
২. Translation – Alan Daff

Or

SEC-2: বাংলা ধ্বনিতত্ত্ব ও রূপতত্ত্ব **Credits 02**

SEC2T: বাংলা ধ্বনিতত্ত্ব ও রূপতত্ত্ব

Course contents:

বাংলা ধ্বনিতত্ত্ব ও রূপতত্ত্ব

ক. বাংলা ভাষার স্বরধ্বনি, ব্যঞ্জনধ্বনি, ধ্বনি পরিবর্তনের সূত্র সমূহ

খ. উপসর্গ, প্রত্যয়, বিভক্তি

Suggested Readings:

১. ব্যাকরণ কৌমুদী – বিদ্যাসাগর
২. উচ্চতর বাংলা ব্যাকরণ – বামনদেব চক্রবর্তী
৩. ভাষা প্রকাশ বাঙ্গালা ব্যাকরণ – সুনীতিকুমার চট্টোপাধ্যায়
৪. ভাষার ইতিবৃত্ত – সুকুমার সেন

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:21:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Bengali(General)_sem4.pdf

Scanned by CamScanner

AECC (Core) MIL-2
MIL (Bengali) (Core)

AECC (Core) MIL (Bengali) -2: উনিশ শতকের বাংলা প্রবন্ধ ও লোকসাহিত্য **Credit 06**

Course Contents:

উনিশ শতকের বাংলা প্রবন্ধ ও লোকসাহিত্য

ক. গীতিকাব্য- বঙ্কিমচন্দ্র চট্টোপাধ্যায়

বিদ্যাসাগর- রামেন্দ্রসুন্দর ত্রিবেদী

ভাববার কথা- বিবেকানন্দ

মুসলমানি বাংলা- হরপ্রসাদ শাস্ত্রী

খ. মহুয়া পালা

Suggested Readings:

১.বঙ্কিম মানস – অরবিন্দ পোদ্দার

২. বঙ্কিম সরণী – প্রমথনাথ বিশী

৩. বঙ্কিম কণিকা – সমীর সেনগুপ্ত

৪. বঙ্কিম ভাবনালোক – ভবতোষ দত্ত

৫. বঙ্কিমচন্দ্র : সৃজন ও বীক্ষণ – ভবতোষ চট্টোপাধ্যায়

৬. আধুনিক বাংলা প্রবন্ধ সাহিত্যের ধারা - অধীর দে

৭. বাংলা গদ্য রীতির ইতিহাস - অরুণকুমার মুখোপাধ্যায়

৮. বাংলা গদ্যের ক্রমবিকাশ - হীরেন্দ্রনাথ দত্ত

৯. বাংলা লোকসাহিত্য - আশুতোষ ভট্টাচার্য

১০. রবীন্দ্রনাথের লোকসাহিত্য – সনৎ কুমার মিত্র

১১. লোকসংস্কৃতির তত্ত্বরূপ ও স্বরূপ সন্ধান – তুষার চট্টোপাধ্যায়

১২. লোকসংস্কৃতির সীমানা ও স্বরূপ – পল্লব সেনগুপ্ত

১৩. বঙ্গীয় লোকসংস্কৃতি কোষ – ড. বরুণকুমার চক্রবর্তী (সম্পাদিত)

Or

AECC (Core) MIL (Bengali) - 2: ভাষাতত্ত্ব ও সাহিত্যতত্ত্ব **Credit 06**

Course Contents:

১. ভাষাতত্ত্ব

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:21:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Bengali(General)_sem4.pdf

Scanned by CamScanner

ক. শৈলী, শৈলীবিজ্ঞানের সাহায্যে সাহিত্যের শৈলী বিচার পদ্ধতি।

খ. ভাষা পরিকল্পনা

২. সাহিত্যতত্ত্ব

ক. পাশ্চাত্য সাহিত্যতত্ত্ব -

রিয়ালিজম্, স্যুররিয়ালিজম্, স্ট্রাকচারালিজম্, ফেমিনিজম্

খ. ভারতীয় সাহিত্যতত্ত্ব -

অলঙ্কার, রীতি, বক্রোক্তি, ঔচিত্য, গুণ

Suggested Readings:

১. ভাষা ও সমাজ – মৃণাল নাথ

২. সমাজভাষাবিজ্ঞান – রাজীব হুমায়ুন

৩. Theories of Translation – J. Williams

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:21:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Bengali(General)_sem4.pdf

Scanned by CamScanner

Vidyasagar University

Curriculum for B.A (General) in Bengali [Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1A		Any one from Discipline-1(Bengali) DSE1AT: বাংলা নাটক ও কবিতা or রবীন্দ্রনাথ	Core Course	5	1	0	6	75
DSE-2A	TBD	Other Discipline (Any one from Discipline-2)/TBD	Core Course	5	1	0	6	75
GE-1		GE1T: শিশুসাহিত্য ও গোয়েন্দা কাহিনি or কাব্য	Generic Elective	5	1	0	6	75
SEC-3		SEC3T: শৈলী, কাব্যশৈলী বিচার , গদ্যশৈলী ও নাট্যশৈলী বিচার	Skill Enhancement Course	1	1	0	2	50
Semester Total							20	275

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE**= Discipline Specific Electives, **GE**= Generic Elective, **SEC**= Skill Enhancement Course, **TBD** = To be decided.

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:20:37: Copyright : Vidyasagar University

Scanned by CamScanner

Semester-V

Discipline specific Elective (DSE)

Credits 06

DSE-1A: বাংলা নাটক ও কবিতা

DSE1AT: বাংলা নাটক ও কবিতা

Course contents:

ক. বাংলা নাটক ও কবিতা

১. কৃষ্ণকুমারী- মধুসূদন দত্ত

২. নির্বাচিত পাঁচটি কবিতা

ক. বঙ্গভূমির প্রতি- মধুসূদন দত্ত

খ. বলাকা- রবীন্দ্রনাথ ঠাকুর

গ. সংগতি – অমিয় চক্রবর্তী

ঘ. আমরা – সত্যেন্দ্রনাথ দত্ত

ঙ. শাশ্বতী – সুধীন্দ্রনাথ দত্ত

চ. অবনী বাড়ি আছো – শক্তি চট্টোপাধ্যায়

Suggested Readings:

১. মধুসূদনের কবিতা ও কাব্য শিল্প – ক্ষেত্রগুপ্ত

২. কবি শ্রী মধুসূদন - মোহিতলাল মজুমদার

৩. মধুসূদন কবি ও নাট্যকার - সুবোধ চন্দ্র সেনগুপ্ত

৪. বাংলা কবিতার কালান্তর - সরোজ বন্দ্যোপাধ্যায়

৫. আধুনিক কবিতা ভাবনা ও অনুভাবনা – শ্রুতিনাথ চক্রবর্তী

৬. প্রাচীন ভারতীয় সাহিত্য অনুপ্রাণনায় পাঁচজন আধুনিক কবি - বাণীরঞ্জন দে

৭. বলাকা কাব্য পরিক্রমা – শ্রী ক্ষিতিমোহন সেন

৮. কবি অমিয় চক্রবর্তী – সুমিতা চক্রবর্তী

৯. অমিয় চক্রবর্তীর পারাপার ও কবিমন – গোকুলানন্দ মিশ্র

১০. সত্যেন্দ্রনাথ দত্তের কবিতা ও কাব্যরূপ – হরপ্রসাদ মিত্র

১১. সুধীন্দ্রনাথ পাঠের ভূমিকা – দেবীপ্রসাদ বন্দ্যোপাধ্যায়

১২. সুধীন্দ্রনাথ দত্ত – অমিয় দেব

১৩. সুধীন্দ্রনাথ দত্ত : ভাববিশ্ব ও কাব্যবীক্ষা – তপোধীর ভট্টাচার্য

১৪. কবি শক্তি – সমীর সেনগুপ্ত

Scanned by CamScanner

15

Or

DSE-1A: রবীন্দ্রনাথ **Credits 06**

DSE1AT: রবীন্দ্রনাথ

Course contents:

খ. রবীন্দ্রনাথ

১. ডাকঘর- রবীন্দ্রনাথ ঠাকুর

২. জীবনস্মৃতি-রবীন্দ্রনাথ ঠাকুর

Suggested Readings:

১. ডাকঘর - সৌমিত্র বসু (সম্পাদিত)

২. রবীন্দ্রনাট্যে কবি রবীন্দ্রনাথ – শ্রুতিনাথ চক্রবর্তী

৩. রবীন্দ্রনাথ ও কাব্য পরিক্রমা – অজিত চক্রবর্তী

৪. বাংলা সাহিত্যে আত্মজীবনী - সোমেন্দ্রনাথ বসু

Skill Enhancement Course (SEC)

SEC-3: শৈলী, কাব্যশৈলী বিচার, গদ্যশৈলী ও নাট্যশৈলী বিচার **Credits 02**

SEC3T: শৈলী, কাব্যশৈলী বিচার, গদ্যশৈলী ও নাট্যশৈলী বিচার

Course contents:

ক. শৈলী, কাব্যশৈলী বিচার

খ. গদ্যশৈলী ও নাট্যশৈলী বিচার

Generic Elective (GE)

GE- 1: শিশুসাহিত্য ও গোয়েন্দা কাহিনি **Credits 06**

GE1T: শিশুসাহিত্য ও গোয়েন্দা কাহিনি

Course contents:

শিশুসাহিত্য ও গোয়েন্দা কাহিনি

Downloaded from Vidyasagar University by 47.11.233.114 on 08 February 2022 : 12:20:37· Copyright : Vidyasagar University

Scanned by CamScanner

ক. রাজকাহিনি- অবনীন্দ্রনাথ ঠাকুর
খ. সে- রবীন্দ্রনাথ ঠাকুর

Suggested Readings:

১. অবনীন্দ্র-নন্দনতত্ত্ব – সত্যজিৎ চৌধুরী
২. রবীন্দ্র ছোটগল্পের শিল্পরূপ – তপোব্রত ঘোষ
৩. রবীন্দ্রনাথের নির্বাচিত ছোটগল্প – অসিতকুমার মুখোপাধ্যায়
৪. রবীন্দ্রনাথের গল্প : বিশ্লেষণীপাঠ – সমরেশ মজুমদার
৫. রবীন্দ্রনাথের ছোটগল্প – প্রমথনাথ বিশী

Or

GE-1: কাব্য **Credits 06**

GE1T: কাব্য

Course contents:

কাব্য

ক. চিত্রা- রবীন্দ্রনাথ ঠাকুর
খ. পারাপার- অমিয় চক্রবর্তী

Suggested Readings:

১. রবীন্দ্র সাহিত্যের ভূমিকা - নীহাররঞ্জন রায়
২. রবীন্দ্র কাব্য পরিক্রমা - উপেন্দ্রনাথ ভট্টাচার্য
৩. রবিরশ্মি - চারুচন্দ্র বন্দ্যোপাধ্যায়
৪. কবি অমিয় চক্রবর্তী – সুমিতা চক্রবর্তী
৫. অমিয় চক্রবর্তীর পারাপার ও কবিমন – গোকুলানন্দ মিশ্র

Scanned by CamScanner

Vidyasagar University

Curriculum for B.A (General) in Bengali [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1B		Any one from Discipline-1(Bengali) DSE1BT: উপন্যাস ও ছোটগল্প Or প্রবন্ধ ও ভ্রমণকাহিনি	Core Course	5	1	0	6	75
DSE-2B	TBD	Other Discipline (Any one from Discipline-2)/TBD	Core Course	5	1	0	6	75
GE-2		GE2T: একাঙ্ক নাটক ও গোয়েন্দা কাহিনি Or প্রবন্ধ ও সাহিত্যের রূপরীতি-বিচার পদ্ধতি	Generic Elective	5	1	0	6	75
SEC-4		SEC4T: বিষয় ভিত্তিক আলোচনা ও আলোচনাপত্র উপস্থাপন	Skill Enhancement Course	1	1	0	2	50
Semester Total							20	275

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE**= Discipline Specific Electives, **GE**= Generic Elective, **SEC**= Skill Enhancement Course, **TBD** = To be decided.

Downloaded from Vidyasagar University by 47.11.95.139 on 06 April 2021 : 22:38:09: Copyright : Vidyasagar University

Scanned by CamScanner

Semester-VI

Discipline Specific Elective (DSE)

Credits 06

DSE-1B: উপন্যাস ও ছোটগল্প

DSE1BT: উপন্যাস ও ছোটগল্প

Course contents:

উপন্যাস ও ছোটগল্প

ক. কচিসংসদ- রাজশেখর বসু, মায়াকুরঙ্গী- শরদিন্দু বন্দ্যোপাধ্যায়, অভাগীর স্বর্গ- শরৎচন্দ্র চট্টোপাধ্যায়, বেদিনী- তারাশঙ্কর বন্দ্যোপাধ্যায়, ভিখারী সাহেব- প্রভাতকুমার মুখোপাধ্যায়।

খ. রাধা – তারাশঙ্কর বন্দ্যোপাধ্যায়

Suggested Readings:

১. বাংলা সাহিত্যের ছোটগল্প ও গল্পকার – ভূদেব চৌধুরী

২. দুই বিশ্বযুদ্ধ মধ্যবর্তী বাংলা কথা সাহিত্য – গোপীকানাথ রায়চৌধুরী

৩. বাংলা ছোটগল্প : প্রসঙ্গ ও প্রকরণ – বীরেন্দ্র দত্ত

৪. গল্পচর্চা – উজ্জ্বলকুমার মজুমদার

৫. পরশুরামের গল্প : জীবনের ধূপছায়া - গীতিকা পণ্ডা

৬. কথাশিল্পী শরদিন্দু : মন ও শিল্প- প্রমীলা ভট্টাচার্য

৭. শরদিন্দু বন্দ্যোপাধ্যায় – নিতাই বসু

৮. ব্যোমকেশ শরদিন্দু : শরদিন্দুর ব্যোমকেশ – বিবেক সিংহ

৯. তারাশঙ্করের শিল্প মানস – নিতাই বসু

১০. তারাশঙ্কর অনুসন্ধান – ক্ষেত্র গুপ্ত

১১. তারাশঙ্কর অন্বেষা – সরোজ বন্দ্যোপাধ্যায়

১২ তারাশঙ্কর : দেশ-কাল – অলোক রায়

১৩. তারাশঙ্কর ও রাঢ় বাংলা – রঞ্জিতকুমার মুখোপাধ্যায়

১৪. তারাশঙ্কর : সময় ও সমাজ – আদিত্য মুখোপাধ্যায়

১৫. তারাশঙ্করের উপন্যাসে সমাজ চিন্তা – শেখর দাশ

Or

DSE-1B: প্রবন্ধ ও ভ্রমণকাহিনি

DSE1BT: প্রবন্ধ ও ভ্রমণকাহিনি

Credits 06

Downloaded from Vidyasagar University by 47.11.95.xxx

Scanned by CamScanner

Course contents:

প্রবন্ধ ও ভ্রমণকাহিনি

ক. চাচাকাহিনী (নির্বাচিত)- সৈয়দ মুজতবা আলী
খ. পালামৌ – সঞ্জীবচন্দ্র চট্টোপাধ্যায়

Suggested Readings:

১. বাংলা ভ্রমণ সাহিত্যে মুক্তচিন্তা – পার্থ চট্টোপাধ্যায়
২. মুজতবা আলী জীবন ও সাহিত্য – স্বাতী ভট্টাচার্য
৩. মজলিশী মুজতবা – কোরক পত্রিকা

Skill Enhancement Course (SEC)

SEC-4: বিষয় ভিত্তিক আলোচনা ও আলোচনাপত্র উপস্থাপন **Credits 02**

SEC4T: বিষয় ভিত্তিক আলোচনা ও আলোচনাপত্র উপস্থাপন

Course contents:

বিষয় ভিত্তিক আলোচনা ও আলোচনাপত্র উপস্থাপন

ক. প্রকল্প পত্ররচনা(Project writing)
খ. উপস্থাপনা (Paper Presentation)

Generic Electives (GE)

GE-2: একাঙ্ক নাটক ও গোয়েন্দা কাহিনি **Credits 06**

GE2T: একাঙ্ক নাটক ও গোয়েন্দা কাহিনি

Course contents:

Downloaded from Vidyasagar University by 47.11.95.139 on 06 April 2021 : 22:38:09: Copyright : Vidyasagar University

Scanned by CamScanner

একাঙ্ক নাটক ও গোয়েন্দা কাহিনি

ক. নির্বাচিত চারটি একাঙ্ক নাটক

রাজপুরী - মন্মথ রায়

দেবী - প্রভাত কুমার মুখোপাধ্যায়

শিককাবাব - বনফুল

এক পশলা বৃষ্টি - ধনঞ্জয় বৈরাগী

খ. সজারুর কাঁটা - শরদিন্দু বন্দ্যোপাধ্যায়

Suggested Readings:

১. একাঙ্ক নাটকের রূপ - রেখা(সম্পাদিত) - সরোজ মোহন মিত্র

২. একাঙ্ক নাটক প্রয়োগ ও বিচার – তপন ঘোষাল

৩. কথাশিল্পী শরদিন্দু : মন ও শিল্প- প্রমীলা ভট্টাচার্য

৪. শরদিন্দু বন্দ্যোপাধ্যায় – নিতাই বসু

৫. ব্যোমকেশ শরদিন্দু : শরদিন্দুর ব্যোমকেশ – বিবেক সিংহ

Or

GE-2: প্রবন্ধ ও সাহিত্যের রূপরীতি-বিচার পদ্ধতি

Credits 06

GE2T: প্রবন্ধ ও সাহিত্যের রূপরীতি-বিচার পদ্ধতি

Course contents:

প্রবন্ধ ও সাহিত্যের রূপরীতি-বিচার পদ্ধতি

ক. নির্বাচিত প্রবন্ধ

বাবু- বঙ্কিমচন্দ্র চট্টোপাধ্যায়

সৌন্দর্যবোধ-রবীন্দ্রনাথ ঠাকুর

ভারতীয় সংস্কৃতির গোড়ার কথা- অমূল্যচরণ বিদ্যাভূষণ

বইপড়া-প্রমথ চৌধুরী

খ. সাহিত্যের রূপরীতি-বিচার পদ্ধতি

রোমান্টিসিজম, ক্লাসিসিজম, ট্র্যাজেডি, কমেডি, লিরিক, ওড, এলিজি, আঞ্চলিক উপন্যাস।

Suggested Readings:

Scanned by CamScanner

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (HONOURS)
in
ENGLISH

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

VIDYASAGAR UNIVERSITY
BA (Honours) in English
[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		**C1T**: British Poetry and Drama: Beginning to 14th Century and History of English Language	6	5-1-0	15	60	75
		Core-2		**C2T**: British Poetry and Drama: Renaissance to 17th and 18th Centuries	6	5-1-0	15	60	75
		GE-1		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-1 (elective)		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		**C3T:** British Literature (fiction and non-fiction): 18th Century	6	5-1-0	15	60	75
		Core-4		**C4T:** British Romantic Literature (1798-1832)	6	5-1-0	15	60	75
		GE-2		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-2 (elective)		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		**C5T:** British Literature: 19th Century (1832-1900)	6	5-1-0	15	60	75
		Core-6		**C6T:** British Literature: The Early 20th Century	6	5-1-0	15	60	75
		Core-7		**C7T:** American Literature	6	5-1-0	15	60	75
		GE-3		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-1		**SEC-1:** English Language Teaching **Or** Soft Skills **Or** Translation Studies	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		**C8T:** European Classical Literature	6	5-1-0	15	60	75
		Core-9		**C9T:** Modern European Drama	6	5-1-0	15	60	75
		Core-10		**C10T:** Popular Literature	6	5-1-0	15	60	75
		GE-4		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-2		**SEC-2:** Creative Writing **Or** Business Communication **Or** Technical Writing	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		**C11T**: Postcolonial Literatures	6	5-1-0	15	60	75
		Core-12		**C12T**: Women's Writing	6	5-1-0	15	60	75
		DSE-1		DSE-1: Nineteenth Century European Realism	6	5-1-0	15	60	75
		DSE-2		DSE-2: World Literatures	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
	VI	**Semester-VI**							
		Core-13		**C13T**: Indian Classical Literature	6	5-1-0	15	60	75
		Core-14		**C14T**: Indian Writing in English	6	5-1-0	15	60	75
		DSE-3		DSE-3: Science Fiction and Detective Literature Or Literature and Cinema	6	5-1-0	15	60	75
		DSE-4		DSE - 4: Partition Literature Or Travel Writing	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical ,**L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

List of Core Courses and Electives

Core Course (CC)

CC-1: British Poetry and Drama: Beginning to 14th Century and History of English Language
CC-2: British Poetry and Drama: Renaissance to 17th and 18th Centuries
CC-3: British Literature (fiction and non-fiction): 18th Century
CC-4: British Romantic Literature (1798-1832)
CC-5: British Literature: 19th Century (1832-1900)
CC-6: British Literature: The Early 20th Century
CC-7: American Literature
CC-8: European Classical Literature
CC-9: Modern European Drama
CC-10: Popular Literature
CC-11: Postcolonial Literatures
CC-12: Women's Writing
CC-13: Indian Classical Literature
CC-14: Indian Writing in English

Discipline Specific Electives (DSE)

DSE-1: Nineteenth Century European Realism
DSE-2: World Literatures
DSE-3: Science Fiction and Detective Literature
Or
DSE-3: Literature and Cinema
DSE-4: Partition Literature
Or
DSE-4: Travel Writing

Skill Enhancement Course (SEC)

SEC-1: English Language Teaching
Or
SEC-1: Soft Skills
Or
SEC-1: Translation Studies
SEC-2: Creative Writing
Or
SEC-2: Business Communication
Or
SEC-2: Technical Writing

Generic Electives (GE)

[Interdisciplinary for other department]

GE-1: Academic Writing and Composition
GE-2: Media and Communication Skills
Or
GE-2: Text and Performance
GE-3: Language and Linguistics
Or
GE-3: Contemporary India: Women and Empowerment
GE-4: Gender & Human Rights
Or
GE-4: Environment & Literature

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

Core Courses (CC)

CC-1: British Poetry and Drama: Beginning to 14th Century and History of English Language **Credits 06**

C1T: British Poetry and Drama: Beginning to 14th Century and History of English Language

Course Contents:
Group: A (History of Literature)

- Old English poetry and prose
- Beowulf
- Chaucer: *The Wife of Bath's Prologue*

Group: B (Philology)

- Influences: Greek, Latin, Scandinavian, French

Suggested Topics and Background Prose Readings for Class Presentations Topics:

- Birth of English Literature and Language
- Advent of Christianity and its influence on English Literature
- Influence of Norman conquest and Black death
- Three phases of Chaucer

Suggested Readings:

- C.L.Wren: The English Language
- S.A.J. Bradley: Anglo-Saxon Poetry
- Greenfield & Calder: A New Critical History of Old English Literature
- Neville Coghill (ed.): The Nun's Priest's Tale
- Aditi Choudhury:A History of English Literature(Orient Blackswan)

CC-2: British Poetry and Drama: Renaissance to 17th and 18th Centuries
Credits 06

C2T: British Poetry and Drama: Renaissance to 17th and 18th Centuries

Course Contents:
Poetry:

- Edmund Spenser: Sonnet LXXV "One day I wrote her name"
- William Shakespeare: Sonnet 130 "My mistress' eyes are nothing like the sun"
- John Donne:'Good Morrow'
- Milton: *Paradise Lost Book-I*
- Pope: *Rape of the Lock* (3 cantos)

Play:

- Christopher Marlowe:*Edward II*
- William Shakespeare:*Macbeth*

Literary terms related to poetry and drama:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Allegory, Ballad, Blank-Verse, Heroic Couplet, Bathos, Comedy, Dramatic Monologue, Elegy, Image, Ode, Carpe-diem, Soliloquy, Symbol, Tragedy, Catharsis, Hamartia, Three Unities, Anagnorisis, Antagonist, Chorus, Denouement, Comic-relief, Aside, Anti-Hero, Catastrophe

Suggested Topics and Background Prose Readings for Class Presentations Topics

- Renaissance Humanism
- The Stage, Court and City
- Religious and Political Thought
- Ideas of Love and Marriage
- The Writer in Society

Suggested Readings:

- Pico Della Mirandola, excerpts from the *Oration on the Dignity of Man*, in *The Portable Renaissance Reader*, ed. James Bruce Ross and Mary Martin McLaughlin (New York: Penguin Books, 1953) pp. 476–9.
- John Calvin, 'Predestination and Free Will', in *The Portable Renaissance Reader*, ed. James Bruce Ross and Mary Martin McLaughlin (New York: Penguin Books, 1953) pp. 704–11.
- Baldassare Castiglione, 'Longing for Beauty' and 'Invocation of Love', in Book 4 of *The Courtier*, 'Love and Beauty', tr. George Bull (Harmondsworth: Penguin, rpt. 1983) pp. 324–8, 330–5.
- Philip Sidney, *An Apology for Poetry*, ed. Forrest G. Robinson (Indianapolis: Bobbs-Merrill, 1970) pp. 13–18.

CC-3: British Literature (fiction and non-fiction): 18th Century

Credits 06

CC3T: British Literature (fiction and non-fiction): 18th Century

Course Contents:

Play:

- William Congreve: *The Way of the World*

Prose:

- Jonathan Swift:*Gulliver's Travels* (Books III and IV)
- Addison and Steele: 'Sir Roger at Church'
- Laurence Sterne:*The Life and Opinions of Tristram Shandy, Gentleman*

Suggested Topics and Background Prose Readings for Class Presentations Topics

- The Enlightenment and Neoclassicism
- Restoration Comedy
- The Country and the City
- The Novel and the Periodical Press

Suggested Readings:

- Jeremy Collier, *A Short View of the Immorality and Profaneness of the English Stage* (London: Routledge, 1996).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Daniel Defoe, 'The Complete English Tradesman' (Letter XXII), 'The Great Law of Subordination Considered' (Letter IV), and 'The Complete English Gentleman', in *Literature and Social Order in Eighteenth-Century England*, ed. Stephen Copley (London: Croom Helm, 1984).
- Samuel Johnson, 'Essay 156', in *The Rambler, in Selected Writings: SamuelJohnson*, ed. Peter Martin (Cambridge, Mass.: Harvard University Press, 2009) pp.194–7; *Rasselas* Chapter 10; 'Pope's Intellectual Character: Pope and Dryden Compared', from *The Life of Pope*, in *The Norton Anthology of English Literature*, vol. 1, ed. Stephen Greenblatt, 8th edn (New York: Norton, 2006) pp. 2693–4, 2774–7.

CC-4: British Romantic Literature (1798-1832) **Credits 06**

CC4T: British Romantic Literature (1798-1832)

Course Contents:
Poetry:

- William Blake: 'The Lamb', 'The Tyger'
- William Wordsworth: 'Tintern Abbey'
- Samuel Taylor Coleridge: 'Christabel' Part-1
- Percy Bysshe Shelley: 'Ozymandias'
- John Keats: 'Ode to a Nightingale'

Novel:

- Mary Shelley:*Frankenstein*
- Jane Austen: *Pride and Prejudice*

Suggested Topics and Background Prose Readings for Class Presentations Topics

- Reason and Imagination
- Conceptions of Nature
- Literature and Revolution
- The Gothic
- The Romantic Lyric

Suggested Readings:

- William Wordsworth, 'Preface to Lyrical Ballads', in *Romantic Prose and Poetry*, ed. Harold Bloom and Lionel Trilling (New York: OUP, 1973) pp. 594–611.
- John Keats, 'Letter to George and Thomas Keats, 21 December 1817', and 'Letter to Richard Woodhouse, 27 October, 1818', in *Romantic Prose and Poetry*, ed. Harold Bloom and Lionel Trilling (New York: OUP, 1973) pp. 766–68, 777–8.
- Jean-Jacques Rousseau, 'Preface' to *Emile or Education*, tr. Allan Bloom (Harmondsworth: Penguin, 1991).
- Samuel Taylor Coleridge, *Biographia Literaria*, ed. George Watson (London: Everyman, 1993) chap. XIII, pp. 161–66.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

CC-5: British Literature: 19th Century (1832-1900) **Credits 06**

CC5T: British Literature: 19th Century (1832-1900)

Course Contents:

Poetry:

- Alfred Tennyson: 'Ulysses'
- Robert Browning: 'My Last Duchess', 'The Last Ride Together'
- Mathew Arnold: 'Dover Beach'

Novel:

- Charles Dickens:*Hard Times*

Suggested Topics and Background Prose Readings for Class Presentations Topics

- Utilitarianism
- The 19th Century Novel
- Marriage and Sexuality
- The Writer and Society
- Faith and Doubt
- The Dramatic Monologue

Suggested Readings:

- Karl Marx and Friedrich Engels, 'Mode of Production: The Basis of Social Life', 'The Social Nature of Consciousness', and 'Classes and Ideology', in *A Reader in Marxist Philosophy*, ed. Howard Selsam and Harry Martel (New York: International Publishers,1963) pp. 186–8, 190–1, 199–201.
- Charles Darwin, 'Natural Selection and Sexual Selection', in *The Descent of Man* in *The Norton Anthology of English Literature*, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Northon, 2006) pp. 1545–9.
- John Stuart Mill, *The Subjection of Women* in *Norton Anthology of English Literature*, 8th edn, vol.2, ed. Stephen Greenblatt (New York: Norton, 2006) chap. 1,pp.1061–9.

CC-6: British Literature: The Early 20th Century **Credits 06**

C6T: British Literature: The Early 20th Century

Course Contents:

Poetry:

- W.B. Yeats: 'The Second Coming', 'The Wild Swans at Coole'
- T.S. Eliot 'The Love Song of J. Alfred Prufrock'

Fiction:

- Joseph Conrad: *The Secret Sharer*
- Katherine Mansfield: 'The Fly'

Suggested Topics and Background Prose Readings for Class Presentations Topics

- Modernism and non-European Cultures
- The Women's Movement in the Early 20th Century

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Psychoanalysis and the Stream of Consciousness
- The Uses of Myth
- The Avant Garde

Suggested Readings:

- Sigmund Freud, 'Theory of Dreams', 'Oedipus Complex', and 'The Structure of the Unconscious', in *The Modern Tradition*, ed. Richard Ellman et. al. (Oxford: OUP, 1965) pp. 571, 578–80, 559–63.
- T.S. Eliot, 'Tradition and the Individual Talent', in *Norton Anthology of English Literature*, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Norton, 2006) pp. 2319–25.
- Raymond Williams, 'Introduction', in *The English Novel from Dickens to Lawrence* (London: Hogarth Press, 1984) pp. 9–27.
- Borris Ford, *The Pelican Guide to English Literature*, vol.8.

CC-7: American Literature **Credits 06**

C7T: American Literature

Course Contents:

Poetry:

- Robert Frost: 'The Road not Taken'
- Langston Hughes: 'Harlem to be Answered'
- Walt Whitman: 'O Captain, My Captain'

Stories:

- Edgar Allan Poe: 'The Purloined Letter'

Novel:

- Mark Twain: *The Adventures of Tom Sawyer*

Play:

- Tennessee Williams: *A Streetcar Named Desire*

Suggested Topics and Background Prose Readings for Class Presentations Topics

- The American Dream
- Social Realism and the American Novel
- Folklore and the American Novel
- Black Women's Writings
- Questions of Form in American Poetry

Suggested Readings:

- Hector St John Crevecouer, 'What is an American', (Letter III) in *Letters from an American Farmer* (Harmondsworth: Penguin, 1982) pp. 66–105.
- Frederick Douglass, *A Narrative of the life of Frederick Douglass* (Harmondsworth: Penguin, 1982) chaps. 1–7, pp. 47–87.
- Henry David Thoreau, 'Battle of the Ants' excerpt from 'Brute Neighbours', in *Walden* (Oxford: OUP, 1997) chap. 12.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Ralph Waldo Emerson, 'Self Reliance', in *The Selected Writings of Ralph Waldo Emerson*, ed. with a biographical introduction by Brooks Atkinson (New York: The Modern Library, 1964).
- Toni Morrison, 'Romancing the Shadow', in *Playing in the Dark: Whiteness and Literary Imagination* (London: Picador, 1993) pp. 29–39.

CC-8: European Classical Literature **Credits 06**

C8T: European Classical Literature

Course Contents:

- Homer: *The Iliad*, tr. E.V. Rieu (Harmondsworth: Penguin,1985)(Book I).
- Sophocles: *Oedipus the King*, tr. Robert Fagles in *Sophocles: The Three Theban Plays* (Harmondsworth: Penguin, 1984).
- Plautus:*Pot of Gold*, tr. E.F. Watling (Harmondsworth: Penguin, 1965).
- Ovid Selections from *Metamorphoses* 'Bacchus', (Book III), 'Pyramus and Thisbe' (Book IV), tr. Mary M. Innes (Harmondsworth: Penguin, 1975).

Suggested Topics and Background Prose Readings for Class Presentations Topics

- The Epic
- Comedy and Tragedy in Classical Drama
- The Athenian City State
- Catharsis and Mimesis
- Satire
- Literary Cultures in Augustan Rome

Suggested Readings:

- Aristotle, *Poetics*, translated with an introduction and notes by Malcolm Heath, (London: Penguin, 1996) chaps. 6–17, 23, 24, and 26.
- Plato, *The Republic*, Book X, tr. Desmond Lee (London: Penguin, 2007).
- Horace, *Ars Poetica*, tr. H. Rushton Fairclough, Horace: Satires, Epistles and ArsPoetica (Cambridge Mass.: Harvard University Press, 2005) pp. 451–73.

CC-9: Modern European Drama **Credits 06**

C9T: Modern European Drama

Course Contents:

- Henrik Ibsen: *Ghosts*
- Bertolt Brecht:*The Good Woman of Szechuan*
- Samuel Beckett:*Waiting for Godot*

Suggested Topics and Background Prose Readings for Class Presentations

Topics

- Politics, Social Change and the Stage
- Text and Performance
- European Drama: Realism and Beyond

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Tragedy and Heroism in Modern European Drama
- The Theatre of the Absurd

Suggested Readings:

- Constantin Stanislavski, *An Actor Prepares*, chap. 8, 'Faith and the Sense of Truth', tr. Elizabeth Reynolds Hapgood (Harmondsworth: Penguin, 1967) sections 1, 2, 7, 8, 9, pp. 121–5, 137–46.
- Bertolt Brecht, 'The Street Scene', 'Theatre for Pleasure or Theatre for Instruction', and 'Dramatic Theatre vs Epic Theatre', in *Brecht on Theatre: The Development ofan Aesthetic*, ed. and tr. John Willet (London: Methuen, 1992) pp. 68–76, 121–8.
- George Steiner, 'On Modern Tragedy', in *The Death of Tragedy* (London: Faber, 1995) pp. 303–24.

CC-10: Popular Literature **Credits 06**

C10T: Popular Literature

Course Contents:

- Lewis Carroll: *Through the Looking Glass*
- Agatha Christie: *The Murder of Roger Ackroyd*
- Shyam Selvadurai: *Funny Boy*
- Sukumar Ray: *AbolTabol* (Translated by Sukanta Chowdhuri)/Autobiographical Notes on Ambedkar (For the Visually Challenged students)

Suggested Topics and Background Prose Readings for Class Presentations Topics

- Coming of Age
- The Canonical and the Popular
- Caste, Gender and Identity
- Ethics and Education in Children's Literature
- Sense and Nonsense
- The Graphic Novel

Suggested Readings:

- Chelva Kanaganayakam, 'Dancing in the Rarefied Air: Reading Contemporary Sri Lankan Literature' (*ARIEL*, Jan. 1998) rpt, Malashri Lal, Alamgir Hashmi, and Victor J. Ramraj, eds., *Post Independence Voices in South Asian Writings* (Delhi: Doaba Publications, 2001) pp. 51–6
- Sumathi Ramaswamy, 'Introduction', in *Beyond Appearances?: Visual Practices andIdeologies in Modern India* (Sage: Delhi, 2003) pp. xiii–xxix.
- Leslie Fiedler, 'Towards a Definition of Popular Literature', in *Super Culture:American Popular Culture and Europe*, ed. C.W.E. Bigsby (Ohio: Bowling Green University Press, 1975) pp. 29–38.
- Felicity Hughes, 'Children's Literature: Theory and Practice', *English Literary History*, vol. 45, 1978, pp. 542–61.

CC-11: Postcolonial Literatures **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

C11T: Postcolonial Literatures

Course Contents:
Poetry:

- Pablo Neruda: 'Tonight I can Write' 'The Way Spain Was'
- Derek Walcott: 'A Far Cry from Africa' 'Names'
- Mamang Dai: 'Small Towns and the River' 'The Voice of the Mountain'

Novel:

- Chinua Achebe: *Things Fall Apart*

Stories:

- Bessie Head: 'The Collector of Treasures'
- Ama Ata Aidoo: 'The Girl who can'

Suggested Topics and Background Prose Readings for Class Presentations

Topics

- De-colonization, Globalization and Literature
- Literature and Identity Politics
- Writing for the New World Audience
- Region, Race, and Gender
- Postcolonial Literatures and Questions of Form

Suggested Readings:

- Franz Fanon, 'The Negro and Language', in *Black Skin, White Masks,* tr. Charles Lam Markmann (London: Pluto Press, 2008) pp. 8–27.
- Ngugi waThiong'o, 'The Language of African Literature', in *Decolonising the Mind* (London: James Curry, 1986) chap. 1, sections 4–6.
- Gabriel Garcia Marquez, the Nobel Prize Acceptance Speech, in *Gabriel GarciaMarquez: New Readings*, ed. Bernard McGuirk and Richard Cardwell (Cambridge:Cambridge University Press, 1987).

CC-12: Women's Writing **Credits 06**

C12T: Women's Writing

Course Contents:
Poetry:

- Emily Dickinson: 'I cannot live with you', 'I'm wife; I've finished that'
- Sylvia Plath: 'Daddy'
- Eunice De Souza: 'Advice to Women',

Fiction:

- Mahashweta Devi 'Draupadi', tr. Gayatri Chakravorty Spivak (Calcutta: Seagull, 2002)
- Toni Morrison: *Beloved*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

Non-Fiction:

- Baby Kamble: *Our Wretched Life*
- Rassundari Debi Excerpts from *Amar Jiban* in Susie Tharu and K. Lalita, eds., *Women's Writing in India*, vol. 1 (New Delhi: OUP, 1989) pp. 191–2.

Suggested Topics and Background Prose Readings for Class Presentations

Topics

- The Confessional Mode in Women's Writing
- Sexual Politics
- Race, Caste and Gender
- Social Reform and Women's Rights

Suggested Readings:

- Virginia Woolf, *A Room of One's Own* (New York: Harcourt, 1957) chaps. 1 and 6.
- Simone de Beauvoir, 'Introduction', in *The Second Sex*, tr. Constance Borde and ShielaMalovany-Chevallier (London: Vintage, 2010) pp. 3–18.
- Kumkum Sangari and Sudesh Vaid, eds., 'Introduction', in *Recasting Women:Essays in Colonial History* (New Delhi: Kali for Women, 1989) pp. 1–25.
- Chandra Talapade Mohanty, 'Under Western Eyes: Feminist Scholarship and Colonial Discourses', in *Contemporary Postcolonial Theory: A Reader*, ed. Padmini Mongia (New York: Arnold, 1996) pp. 172–97.

CC-13: Indian Classical Literature **Credits 06**

C13T: Indian Classical Literature

Course Contents:

- Kalidasa. *Abhijnana Shakuntalam,* tr. Chandra Rajan, in *Kalidasa: The Loom of Time* (New Delhi: Penguin, 1989).

- Vyasa. 'The Dicing' and 'The Sequel to Dicing, 'The Book of the Assembly Hall', 'The Temptation of Karna', Book V 'The Book of Effort', in *The Mahabharata:* tr. and ed. J.A.B. van Buitenen (Chicago: Brill, 1975) pp. 106–69.
- Sudraka. *Mrcchakatika*, tr. M.M. Ramachandra Kale (New Delhi: Motilal Banarasidass, 1962).

Suggested Topics and Background Prose Readings for Class Presentations

Topics

- The Indian Epic Tradition: Themes and Recensions
- Classical Indian Drama: Theory and Practice
- Alankara and Rasa
- Dharma and the Heroic

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Bharata, *Natyashastra*, tr. Manomohan Ghosh, vol. I, 2nd edn (Calcutta: Granthalaya, 1967) chap. 6: 'Sentiments', pp. 100–18.
- Iravati Karve, 'Draupadi', in *Yuganta*: *The End of an Epoch* (Hyderabad: Disha, 1991) pp. 79–105.
- J.A.B. Van Buitenen, 'Dharma and Moksa', in Roy W. Perrett, ed., *Indian Philosophy, vol. V, Theory of Value: A Collection of Readings* (New York: Garland, 2000) pp. 33–40.
- Vinay Dharwadkar, 'Orientalism and the Study of Indian Literature', in *Orientalismand the Postcolonial Predicament: Perspectives on South Asia*, ed. Carol A.Breckenridge and Peter van der Veer (New Delhi: OUP, 1994) pp. 158–95.

CC-14: Indian Writing in English **Credits 06**

C14T: Indian Writing in English

Course Contents:
Poetry:
- R.K. Narayan: *Swami and Friends*
- H.L.V. Derozio: 'The Harp of India'
- Kamala Das: 'Introduction'
- Nissim Ezekiel: 'The Night of the Scorpion'

Fiction:
- Mulk Raj Anand: 'Two Lady Rams'
- Salman Rushdie: 'The Free Radio'

Drama:
- Girish Karnad: *Tughlaq*

Suggested Topics and Background Prose Readings for Class Presentations

Topics
- Indian English
- Indian English Literature and its Readership
- Themes and Contexts of the Indian English Novel
- The Aesthetics of Indian English Poetry
- Modernism in Indian English Literature

Suggested Readings:
- Raja Rao, Foreword to *Kanthapura* (New Delhi: OUP, 1989) pp. v–vi.
- Salman Rushdie, 'Commonwealth Literature does not exist', in *Imaginary Homelands* (London: Granta Books, 1991) pp. 61–70.
- Meenakshi Mukherjee, 'Divided by a Common Language', in *The Perishable Empire* (New Delhi: OUP, 2000) pp.187–203.
- Bruce King, 'Introduction', in *Modern Indian Poetry in English* (New Delhi: OUP, 2nd edn, 2005) pp. 1–10.

Discipline Specific Electives (DSE)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

DSE-1: Nineteenth Century European Realism **Credits 06**

DSE1T: Nineteenth Century European Realism

Course Contents:

- Fyodor Dostoyvesky: *Crime and Punishment*, tr. Jessie Coulson London: Norton, 1989).
- Gustave Flaubert: *Madame Bovary*, tr. Geoffrey Wall (London: Penguin, 2002).

Suggested Topics and Background Prose Readings for Class Presentations

Topics

- History, Realism and the Novel Form
- Ethics and the Novel
- The Novel and its Readership in the 19th Century
- Politics and the Russian Novel: Slavophiles and Westernizers

Suggested Readings:

- Leo Tolstoy, 'Man as a creature of history in *War and Peace*', ed. Richard Ellmann et. al., *The Modern Tradition*, (Oxford: OUP, 1965) pp. 246–54.
- Honore de Balzac, 'Society as Historical Organism', from Preface to *The Human Comedy*, in *The Modern Tradition*, ed. Ellmann et. al (Oxford: OUP, 1965) pp. 265– 67.
- Gustav Flaubert, 'Heroic honesty', Letter on *Madame Bovary*, in *The Modern Tradition*, ed. Richard Ellmann et. al. (Oxford: OUP, 1965) pp. 242–3.
- George Lukacs, 'Balzac and Stendhal', in *Studies in European Realism* (London, Merlin Press, 1972) pp. 65–85.

DSE-2: World Literatures **Credits 06**

DSE2T: World Literatures

Course Contents:

- V.S. Naipaul: *Bend in the River* (London: Picador, 1979).
- Julio Cortazar: 'Blow-Up', in *Blow-Up and other Stories* (New York: Pantheon, 1985).
- Judith Wright: 'Bora Ring', in *Collected Poems* (Sydney: Angus & Robertson, 2002) p. 8.

Suggested Topics and Background Prose Readings for Class Presentations

Topics

- The Idea of World Literature
- Memory, Displacement and Diaspora
- Hybridity, Race and Culture
- Adult Reception of Children's Literature
- Literary Translation and the Circulation of Literary Texts
- Aesthetics and Politics in Poetry

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

Suggested Readings:

- Sarah Lawall, 'Preface' and 'Introduction', in *Reading World Literature: Theory, History, Practice*, ed. Sarah Lawall (Austin, Texas: University of Texas Press, 1994) pp. ix–xviii, 1–64.
- David Damrosch, *How to Read World Literature?* (Chichester: Wiley-Blackwell, 2009) pp. 1–64, 65–85.
- Franco Moretti, 'Conjectures on World Literature', *New Left Review*, vol.1 (2000), pp. 54–68.
- Theo D'haen et. al., eds., 'Introduction', in *World Literature: A Reader* (London: Routledge, 2012).

DSE-3: Science Fiction and Detective Literature **Credits 06**

DSE3T: Science Fiction and Detective Literature

Course Contents:

- Wilkie Collins: *The Woman in White*
- Arthur Conan Doyle: *The Hound of the Baskervilles*

Suggested Topics and Readings for Class Presentation Topics

- Crime across the Media
- Constructions of Criminal Identity
- Cultural Stereotypes in Crime Fiction
- Crime Fiction and Cultural Nostalgia
- Crime Fiction and Ethics
- Crime and Censorship

Suggested Readings:

- J. Edmund Wilson, 'Who Cares Who Killed Roger Ackroyd?', *The New Yorker*, 20 June 1945.
- George Orwell, *Raffles and Miss Blandish*, available at: <www.george-orwell.org/Raffles_and_Miss_Blandish/0.html>
- W.H. Auden, *The Guilty Vicarage*, available at: <harpers.org/archive/1948/05/the-guilty-vicarage/>
- Raymond Chandler, 'The Simple Art of Murder', *Atlantic Monthly*, Dec. 1944, available at: <http://www.en.utexas.edu/amlit/amlitprivate/scans/chandlerart.html

OR

DSE-3: Literature and Cinema **Credits 06**

DSE3T: Literature and Cinema

Course Contents:

- William Shakespeare, *Romeo and Juliet*, and its adaptations: *Romeo & Juliet* (1968; dir. Franco Zeffirelli, Paramount); and *Romeo + Juliet* (1996; dir. Baz Luhrmann, 20th Century Fox).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Bapsi Sidhwa, *Ice Candy Man* and its adaptation *Earth* (1998; dir. Deepa Mehta, Cracking the Earth Films Incorp.); and Amrita Pritam, *Pinjar: The Skeleton and Other Stories*, tr. Khushwant Singh (New Delhi: Tara Press, 2009) and its adaptation: *Pinjar* (2003; dir. C.P. Dwivedi, Lucky Star Entertainment).

Suggested Topics and Background Prose Readings for Class Presentations

Topics

- Theories of Adaptation
- Transformation and Transposition
- Hollywood and 'Bollywood'
- The 'Two Ways of Seeing'
- Adaptation as Interpretation

Suggested Readings:

- Linda Hutcheon, 'On the Art of Adaptation', *Daedalus*, vol. 133, (2004).
- Thomas Leitch, 'Adaptation Studies at Crossroads', *Adaptation*, 2008, vol. 1, no. 1, pp. 63–77.
- Poonam Trivedi, 'Filmi Shakespeare', *Litfilm Quarterly*, vol. 35, issue 2, 2007.
- Tony Bennett and Janet Woollacott, 'Figures of Bond', in *Popular Fiction: Technology, Ideology, Production, Reading*, ed. Tony Bennet (London and New York: Routledge, 1990).

Other films that may be used for class presentations:

- William Shakespeare: *Comedy of Errors*, *Macbeth*, and *Othello* and their adaptations: *Angoor* (dir. Gulzar, 1982), *Maqbool* (dir. Vishal Bhardwaj, 2003), *Omkara* (dir. Vishal Bhardwaj, 2006) respectively.
- Jane Austen: *Pride and Prejudice* and its adaptations: BBC TV mini-series (1995), Joe Wright (2005) and Gurinder Chadha's *Bride and Prejudice* (2004).
- *Rudaali* (dir. Kalpana Lajmi, 1993) and *Gangor* or 'Behind the Bodice' (dir. Italo Spinelli, 2010).
- Ruskin Bond: *Junoon* (dir. Shyam Benegal, 1979), *The Blue Umbrella* (dir. Vishal Bhardwaj, 2005), and *Saat Khoon Maaf* (dir. Vishal Bhardwaj, 2011).
- E.M. Forster, *Passage to India* and its adaptation dir. David Lean (1984).

Note:

a) For every unit, 4 hours are for the written text and 8 hours for its cinematic adaptation (Total: 12 hours)

b) To introduce students to the issues and practices of cinematic adaptations, teachers may use the following critical material:

1. Deborah Cartmell and Imelda Whelehan, eds., *The Cambridge Companion to Literature on Screen* (Cambridge: Cambridge University Press, 2007).
2. John M. Desmond and Peter Hawkes, *Adaptation: Studying Film and Literature* (New York: McGraw-Hill, 2005).
3. Linda Hutcheon, *A Theory of Adaptation* (New York: Routledge, 2006).
4. J.G. Boyum, *Double Exposure* (Calcutta: Seagull, 1989).
5. B. Mcfarlens, *Novel to Film: An Introduction to the Theory of Adaptation* (Clarendon University Press, 1996).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

DSE - 4: Partition Literature **Credits 06**

DSE4T: Partition Literature

Course Contents:

- Amitav Ghosh: *The Shadow Lines.*
- Dibyendu Palit: 'Alam's Own House', tr. Sarika Chaudhuri, *Bengal Partition Stories*: *An Unclosed Chapter*, ed. Bashabi Fraser (London: Anthem Press, 2008) pp. 453– 72.
- Manik Bandhopadhya, 'The Final Solution', tr. Rani Ray, *Mapmaking: Partition Stories from Two Bengals*, ed. Debjani Sengupta (New Delhi: Srishti, 2003) pp. 23–39.
- Sa'adat Hasan Manto, 'Toba Tek Singh', in *Black Margins: Manto*, tr. M. Asaduddin (New Delhi: Katha, 2003) pp. 212–20.
- Jibananda Das, 'I Shall Return to This Bengal', tr. Sukanta Chaudhuri, in *Modern Indian Literature* (New Delhi: OUP, 2004) pp. 8–13.

Suggested Topics and Readings for Class Presentation Topics

- Colonialism, Nationalism, and the Partition
- Communalism and Violence
- Homelessness and Exile
- Women in the Partition

Background Readings and Screenings

- Ritu Menon and Kamla Bhasin, 'Introduction', in *Borders and Boundaries* (New Delhi: Kali for Women, 1998).
- Sukrita P. Kumar, *Narrating Partition* (Delhi: Indialog, 2004).
- Urvashi Butalia, *The Other Side of Silence: Voices from the Partition of India* (Delhi: Kali for Women, 2000).
- Sigmund Freud, 'Mourning and Melancholia', in *The Complete Psychological Works of Sigmund Freud*, tr. James Strachey (London: Hogarth Press, 1953) pp. 3041–53.

Films

Garam Hawa (dir. M.S. Sathyu, 1974).
Khamosh Paani: Silent Waters (dir. Sabiha Sumar, 2003).
Subarnarekha (dir. Ritwik Ghatak, 1965)

Or

DSE - 4: Travel Writing **Credits 06**

DSE4T: Travel Writing

Course Contents:

- Ibn Batuta: 'The Court of Muhammad bin Tughlaq', Khuswant Singh's *City Improbable: Writings on Delhi*, Penguin Publisher

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Mark Twain: *The Innocent Abroad* (Chapter VII , VIII and IX) (Wordsworth Classic Edition)
- William Dalrymple: *City of Dijnn* (Prologue, Chapters I and II) Penguin Books
- Rahul Sankrityayan: *From Volga to Ganga* (Translation by Victor Kierman) (Section I to Section II) Pilgrims Publishing

Suggested Topics and Background Prose Readings for Class Presentations

Topics:

- Travel Writing and Ethnography
- Gender and Travel
- Globalization and Travel
- Travel and Religion
- Orientalism and Travel

Suggested Readings:

- Susan Bassnett, 'Travel Writing and Gender', in *Cambridge Companion to Travel Writing*, ed. Peter Hulme and Tim Young (Cambridge: CUP,2002) pp, 225-241
- Tabish Khair, 'An Interview with William Dalyrmple and Pankaj Mishra' in *Postcolonial Travel Writings: Critical Explorations*, ed. Justin D Edwards and Rune Graulund (New York: Palgrave Macmillan, 2011), 173-184
- Casey Balton, 'Narrating Self and Other: A Historical View', in *Travel Writing: The Self and The Other* (Routledge, 2012), pp.1-29
- Sachidananda Mohanty, 'Introduction: Beyond the Imperial Eyes' in *Travel Writing and Empire* (New Delhi: Katha, 2004) pp. ix –xx.

Skill Enhancement Courses (SEC)

SEC-1: English Language Teaching **Credits 02**

SEC-1: English Language Teaching

Course Contents:

- Knowing the Learner
- Structures of English Language
- Methods of Teaching English Language and Literature
- Materials for Language Teaching
- Assessing Language Skills
- Using Technology in Language Teaching

Suggested Readings:

- Penny Ur, *A Course in Language Teaching: Practice and Theory* (Cambridge: CUP, 1996).
- Marianne Celce-Murcia, Donna M. Brinton, and Marguerite Ann Snow, *Teaching English as a Second or Foreign Language* (Delhi: Cengage Learning, 4th edn, 2014).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Adrian Doff, *Teach English: A Training Course For Teachers (Teacher's Workbook)* (Cambridge: CUP, 1988).
- *Business English* (New Delhi: Pearson, 2008).
- R.K. Bansal and J.B. Harrison, *Spoken English: A Manual of Speech and Phonetics* (New Delhi: Orient BlackSwan, 4th edn, 2013).
- Mohammad Aslam, *Teaching of English* (New Delhi: CUP, 2nd edn, 2009).

Or

SEC-1: Soft Skills **Credits 02**

SEC1T: Soft Skills

Course Contents:

What is soft skill? Teamwork, Adaptability, Leadership, Problem solving

Development of Sooft skills: Precis; Comprehension; Essays.

Suggested Readings:

- *English and Soft Skills.* S.P. Dhanavel. Orient BlackSwan
- *English for Students of Commerce:* Precis, Composition, Essays, Poems eds. Kaushik,et al.

Or

SEC-1: Translation Studies **Credits 02**

SEC1T: Translation Studies

Course Contents:

1. Introducing Translation: a brief history and significance of translation in a multi linguistic and multicultural society like India.
2. Exercises in different Types / modes of translation, such as:
    a) Semantic / Literal translation
    b) Free / sense/ literary translation
    c) Functional / communicative translation

3.

a) Introducing basic concepts and terms used in Translation Studies through relevant tasks, for example: Equivalence, Language variety, Dialect, Idiolect, Register, Style, Mode, Code mixing / Switching.
b) Translation in Practice.

Resources for Practice:

Dictionaries
Encyclopedias
Thesauri
Glossaries
Software of translation

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

Suggested Readings:

- Baker, Mona, *In Other Words: A Coursebook on Translation*, Routledge, (Useful exercises for practical translation and training)
- ---------- (Ed.) *Routledge Encyclopedia of Translation Studies*. London and New York: Routledge, 2001. (Readable entries on concepts and terms) Sherry Simon, Gender in translation: Cultural Identity and the Politics of Transmission. New York: Routledge,
- Catford, I.C. *A Linguistic Theory of Translation*. London: OUP, 1965. Frishberg, Nancy J. *Interpreting: An Introduction*. Registry of Interpreters,.
- Gargesh, Ravinder and Krishna Kumar Goswami. (Eds.). *Translation and Interpreting: Reader and Workbook*. New Delhi: Orient Longman,.
- House, Juliana. *A Model for Translation Quality Assessment*. Tubingen: Gunter Narr,
- Lakshmi, H. *Problems of Translation*. Hyderabad: Booklings Corporation,.
- Newmark, Peter. *A Textbook of Translation*. London: Prentice Hall,
- Nida, E.A. and C.R. Taber. *The Theory and Practice of Translation.* Leiden: E.J. Brill,
- Toury, Gideon. *Translation Across Cultures*. New Delhi : Bahri Publications Private Limited,

SEC-2: Creative Writing **Credits 02**

SEC2T: Creative Writing

Course Contents:

Unit 1:
What is Creative Writing?
Unit 2:
The Art and Craft of Writing
Unit 3:
Modes of creative Writing
Unit 4:
Writing for the Media
Unit 5:
Preparing for Publication

Suggested Readings:

- Creative writing: A Beginner's Manual by Anjana Neira Dev and Others, Published by Pearson, Delhi.

Or

SEC-2: Business Communication **Credits 02**

SEC2T: Business Communication

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

- Introduction to the essentials of Business Communication: Theory and practice
- Writing a project report
- Writing reports on field work/visits to industries, business concerns etc. /business negotiations.
- Summarizing annual report of companies
- E-correspondence
- Spoken English for business communication (Viva for internal assessment)

Suggested Readings:

- Scot, O.; Contemporary *Business Communication*. Biztantra, New Delhi.
- Lesikar, R.V. & Flatley, M.E.; *Basic Business Communication Skills for Empowering the Internet Generation*, Tata McGraw Hill Publishing Company Ltd. New Delhi.
- Ludlow, R. & Panton, F.; *The Essence of Effective Communications*, Prentice Hall of India Pvt. Ltd., New Delhi.
- R. C. Bhatia, *Business Communication*, Ane Books Pvt Ltd, New Delhi

Or

SEC-2: Technical Writing **Credits 02**

SEC2T: Technical Writing

Course Contents:

1. Communication: Language and communication, distinct features of writing.
2. Writing Skills; Selection of topic, thesis statement, developing the thesis introductory, developmental, transitional and concluding paragraphs, linguistic unity, coherence and cohesion, descriptive, narrative, expository and argumentative writing.
3. Technical Writing: Scientific and technical subjects; formal and informal writings; formal writings/reports, handbooks, manuals, letters, memorandum, notices, agenda, minutes; common errors to be avoided.

Suggested Readings:

- M. Frank. Writing as thinking: *A guided process approach, Englewood Cliffs,* Prentice Hall Reagents.
- L. Hamp-Lyons and B. Heasely: Study Writing; *A course in written English.* For academic and professional purposes, Cambridge Univ. Press.
- R. Quirk, S. Greenbaum, G. Leech and J. Svartik: *A comprehensive grammar of the English language*, Longman, London.
- Daniel G. Riordan & Steven A. Panley: *"Technical Report Writing Today"* - Biztaantra.
- Daniel G. Riordan, Steven E. Pauley, Biztantra: *Technical Report Writing Today,* 8th Edition

Generic Elective (GE)
[Interdisciplinary for other department]

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

GE- 1: Academic Writing and Composition **Credits 06**

GE1T: Academic Writing and Composition

Course Contents:

- Introduction to the Writing Process
- Introduction to the Conventions of Academic Writing
- Writing in one's own words: Summarizing and Paraphrasing
- Critical Thinking: Syntheses, Analyses, and Evaluation
- Structuring an Argument: Introduction, Interjection, and Conclusion
- Citing Resources; Editing, Book and Media Review

Suggested Readings:

- Liz Hamp-Lyons and Ben Heasley, *Study writing: A Course in Writing Skills for Academic Purposes* (Cambridge: CUP, 2006).
- Renu Gupta, *A Course in Academic Writing* (New Delhi: Orient BlackSwan, 2010).
- Ilona Leki, *Academic Writing: Exploring Processes and Strategies* (New York: CUP, 2nd edn, 1998).
- Gerald Graff and Cathy Birkenstein, *They Say/I Say: The Moves That Matter in Academic Writing* (New York: Norton, 2009).

GE- 2: Media and Communication Skills **Credits 06**

GE2T: Media and Communication Skills

Course Contents:

1. Introduction to Mass Communication

1. Mass Communication and Globalization
2. Forms of Mass Communication

Topics for Student Presentations:

a. Case studies on current issues Indian journalism
b. Performing street plays
c. Writing pamphlets and posters, etc.

2. Advertisement

1. Types of advertisements
2. Advertising ethics
3. How to create advertisements/storyboards

Topics for Student Presentations:

a. Creating an advertisement/visualization
b. Enacting an advertisement in a group
c. Creating jingles and taglines

3. Media Writing

1. Scriptwriting for TV and Radio
2. Writing News Reports and Editorials
3. Editing for Print and Online Media

Topics for Student Presentations:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

a. Script writing for a TV news/panel discussion/radio programme / hosting radio programmes on community radio
b. Writing news reports/book reviews/film reviews/TV program reviews/interviews
c. Editing articles
d. Writing an editorial on a topical subject

4. Introduction to Cyber Media and Social Media

1. Types of Social Media
2. The Impact of Social Media
3. Introduction to Cyber Media

Or

GE-2: Text and Performance **Credits 06**

GE2T: Text and Performance

Course Contents:

1. Introduction

1. Introduction to theories of Performance
2. Historical overview of Western and Indian theatre
3. Forms and Periods: Classical, Contemporary, Stylized, Naturalist

Topics for Student Presentations:

a. Perspectives on theatre and performance
b. Historical development of theatrical forms
c. Folk traditions

2. Theatrical Forms and Practices

1. Types of theatre, semiotics of performative spaces, e.g. proscenium 'in the round', amphitheatre, open-air, etc.
2. Voice, speech: body movement, gestures and techniques (traditional and contemporary), floor exercises: improvisation/characterization

Topics for Student Presentations:

a. On the different types of performative space in practice
b. Poetry reading, elocution, expressive gestures, and choreographed movement

3. Theories of Drama

1. Theories and demonstrations of acting: Stanislavsky, Brecht
2. Bharata

Topics for Student Presentations**:**

a. Acting short solo/ group performances followed by discussion and analysis with application of theoretical perspectives

4. Theatrical Production

1. Direction, production, stage props, costume, lighting, backstage support.
2. Recording/archiving performance/case study of production/performance/impact of media on performance processes.

Topics for Student Presentations:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

a. All aspects of production and performance; recording, archiving, interviewing performers and data collection.

GE- 3: Language and Linguistics **Credits 06**

GE3T: Language and Linguistics

Course Contents:

1. Language: language and communication; language varieties: standard and non-standard language; language change.
   Mesthrie, Rajend and Rakesh M Bhatt. 2008. *World Englishes: The study of new linguistic varieties.*Cambridge: Cambridge University Press.
2. Phonology and Morphology: Akmajian, A., R. A. Demers and R, M. Harnish, *Linguistics: An Introduction to Language and Communication,* 2nd ed.
   Fromkin, V., and R. Rodman, *An Introduction to Language*, 2nd ed. (New Yourk: Holt, Rinehart and Winston, 1974) Chapters 3, 6 and 7
3. Syntax : categories and constituents phrase structure; maxims of conversation.
   Akmajian, A., R. A. Demers and R, M Harnish, Llinguistics: An Introduction to Language and Communication, 2nd ed. (Cambridge, Mass,: MIT Press, 1984; Indian edition, Prentice Hall, 1991) Chapter 5 and 6.

Or

GE- 3: Contemporary India: Women and Empowerment **Credits 06**

GE3T: Contemporary India: Women and Empowerment

Course Contents:

1. Social Construction of Gender (Masculinity and Feminity) Patriarchy in Indian History.
2. Women and Law
   Women and the Indian Constitution
   Personal Laws(Customary practices on inheritance and Marriage) (Supplemented by workshop on legal awareness)
3. Women and Environment
   State interventions, Domestic violence, Female foeticide, sexual harassment
   Female Voices: *Sultana's Dream* or Bama : Karuk ku

GE- 4: Gender & Human Rights **Credits 06**

GE4T: Gender & Human Rights

Course Contents:

1. Poetry: Meena Kandasamy "Aggression" Temsula Ao "Laburnum for My Head"
2. Drama: Manjula Padmanabhan *Lights Out*
3. Essay: Virginia Woolf "Professions for Women", *Women's Rights are Human Rights.* Section V "The Human Rights Framework in Practice"

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

Or

GE - 4: Environment & Literature **Credits 06**

GE4T: Environment & Literature

Course Contents:

Introduction (Nature in Oriental & Western Thought, Deep Ecology, Third World Environmentalism)

1. G M Hopkins. 'Binsey Poplars'
2. Mahasweta Devi. 'Pterodactyl'
3. Ruskin Bond. 'Dust on the Mountains'.

Suggested Readings:

- Vasudha Narayanan 'Water, Wood, and Wisdom: Ecological Perspectives from the Hindu Traditions'
- Allen Carlson. *Environmental Aesthetics*
- Preeti Ranjan Ghosh. "Towards an Understanding of Environmental Aesthetics: Some Reflections", The Philosophical Quarterly, 1998
- Beth Fowkes Tobin. *Colonizing Nature*
- Vasudha Narayanan. *Water, Wood and Wisdom*
- Vandana Shiva. *Women in Nature*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:03:48; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/English_Hons_Revised270519.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (General)
in

ENGLISH

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

VIDYASAGAR UNIVERSITY
BA (General) in English
[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	**I**			**SEMESTER-I**			**CA**	**ESE**	**TOTAL**
		Core-1 (DSC-1A)		Poetry & Short Story	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-1 **(Core)[Language Core]**		English-I	6	5-1-0	15	60	75
		AECC-1 **(Elective)**		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	20				275
				SEMESTER-II					
	II	Core-3 (DSC-1B)		Essay, Drama & Novel	6	5-1-0	15	60	75
		Core-4 (DSC-2B)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-2 **(Core)[Language Core]**		MIL-I	6	5-1-0	15	60	75
		AECC-2 (**Elective)**		Environmental Studies	4		20	80	100
				Semester - 2 : Total	22				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	**III**			**SEMESTER-III**			**CA**	**ESE**	**TOTAL**
		Core-5 (DSC-1C)		Contemporary India: Women and Empowerment	6	5-1-0	15	60	75
		Core-6 (DSC-2C)		Other Discipline (Discipline-2)/TBD	6		15	60	75
		AECC-3 **(Core)[Language Core]**		English-II	6	5-1-0	15	60	75
		SEC-1		**SEC-1:** Soft Skills **Or** Film Studies	2	1-1-0	10	40	50
				Semester - 3 : Total	20				275
				SEMESTER-IV					
	IV	Core-7 (DSC-1D)		Academic Writing and Composition	6	5-1-0	15	60	75
		Core-8 (DSC-2D)		Other Discipline (Discipline-2) /TBD	6		15	60	75
		AECC-4 **(Core)[Language Core]**		MIL-II	6	5-1-0	15	60	75
		SEC-2		**SEC-2:** Creative Writing **Or** Technical Writing	2	1-1-0	10	40	50
				Semester - 4 : Total	20				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	**V**			**SEMESTER-V**			**CA**	**ESE**	**TOTAL**
		DSE-1A		Any one from Discipline -1(English)	6	5-1-0	15	60	75
		DSE-2A		Other Discipline(any one from Discipline -2) / TBD	6		15	60	75
		GE-1		TBD	6		15	60	75
		SEC-3		**SEC-3:** Translation Studies **Or** English Language Teaching	2	1-1-0	10	40	50
				Semester - 5 : Total	20				**275**
				SEMESTER-VI					
	VI	DSE-1B		Any one from Discipline -1(English)	6	5-1-0	15	60	75
		DSE-2B		Other Discipline (any one from Discipline -2) / TBD	6		15	60	75
		GE-2		TBD	6		15	60	75
		SEC-4		**SEC-4:** Business Communications **Or** Spoken English	2	1-1-0	10	40	50
				Semester - 6 : Total	20				**275**
				Total in all semester:	**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519.pdf

List of Core Courses and Electives

Core Course (CC)

DSC-1A: Poetry & Short story
DSC-1B: Essay, Drama & Novel
DSC-1C: Contemporary India: women and empowerment
DSC-1D: Academic Writing and Composition

Discipline Specific Electives (DSE)

DSE-1: British Literature
Or
DSE-1: Indian Literature in Translation
DSE-2: Partition Literature
Or
DSE-2: Nation, Culture and India

Skill Enhancement Course (SEC)

SEC-1: Soft Skills
Or
SEC-1: Film Studies
SEC-2: Creative Writing
Or
SEC-2: Technical Writing
SEC-3: Translation Studies
Or
SEC-3: English Language Teaching
SEC-4: Business Communications
Or
SEC-4: Spoken English

Generic Electives (GE)
[Interdisciplinary for other department]

GE-1: Gender & Human Rights
Or
GE-1: Contemporary India: Women and Empowerment
Or
GE-1: Academic Writing and Composition
GE-2: Environment & Literature
Or
GE-2: Novel and Prose
Or
GE-2: Language and Linguistics

AECC(Core)[Language Core]-English
English (AECC-Core L1 &L2)

CL-1(English): British Poetry -1
Or
CL-1(English): Language, Variety and Stylistics
CL-2(English): British Poetry - 2
Or
CL-2(English): Language, Imagination & Creativity

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

Core Courses (CC)

DSC-1A (CC-1): Poetry & Short story **Credits 06**

DSC1AT: Poetry & short Story

Course Contents:

1. a) William Shakespeare: Sonnet 116
   b) William Wordsworth: "A Slumber did my Spirit Seal"
2. a) John Keats – "Bright Star"
   b) Wilfred Owen – "Strange Meeting"
3. Charles Lamb – "Dream Children"
4. H. E. Bates – "The Ox"

DSC-1B(CC-2): Essay, Drama & Novel **Credits 06**

DSC1BT: Essay, Drama & Novel

Course Contents:

1. George Orwell – "Shooting an Elephant'
2. R. K. Narayan – "A Library without Books"
3. George Bernard Shaw – *Arms and the Man*
4. J. B. Priestley – *An Inspector Calls*
5. Ernest Hemingway – *The Old Man and the Sea*

DSC-1C (CC-3): Contemporary India: women and empowerment **Credits 06**

DSC1CT: Contemporary India: women and empowerment

Course Contents:

1. Social Construction of Gender:

1. Masculinity, Femininity
2. Patriarchy
3. Sex & Gender
4. Gender Socialization
5. Gender discrimination
6. Gender stereotyping

Texts: (any one)

Nivedita Menon : *Sexualities*: *Issues in Contemporary Indian Feminisms* (selections)

Nivedita Menon : *Gender and Politics in India* (Selections)

2. History of Women's Movements in India (Pre- and Post-Independence):

1. Women and Nationalism
2. Women and Partition
3. Women and Political Participation

Text: (any two)

1. "Letters to a Wife: Satyendranath Tagore's Letters to Jynadanandini Tagore" from *Epistolary Cultures in 19th century Bengal*, Stree Samya, Kolkata,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

2. Gholam Murshed “Chapter Four” from *The Reluctant Debutante.*
3. Urvashi Butalia ‘Beginnings’ from *The Other Side of Silence*
4. Jashodhara Bagchi and Shubharanjan Dasgupta. *The Trauma and The Triumph: Gender and Partition in Eastern India,*Vol I (“Introduction”)

3. Women and Law:

1. Women and the Indian Constitution
2. Personal Laws
3. Customary practices on inheritance and Marriage

Text: (Selections from any one text)

1. Flavia Agnes. Ed. *Women and Law in India: An Omnibus* Comprising
2. Flavia Agnes. *Enslaved Daughters* (selections).
3. Sudhir Chandra. *Hindu Women and Marriage Law*
4. Monomoyee Basu. *Law and Gender Inequality.*

4. Women and Violence:

1. State interventions
2. Domestic violence
3. Female *foeticide*
4. Sexual harassment

Texts: (any one)

1. Rokeya Sakhawat Hussain – *Sultana’s Dream*
2. Bama Faustina Soosairaj – *Karukku*

Suggested Readings:

- David Glover. *Gender*. New York: Routledge New Critical Idiom Series.
- *The Social Construction of Gender* (A Gender & Society Reader) by Judith Lorber (Editor), Susan A. Farrell (Editor)
- Veena Oldenburg. *Dowry Murders: The Imperial Origins of a Cultural Crime*
- Attia Hussein. *Translating Partition.* New Delhi: Katha
- Brinda Bose. *Translating Desire.* New Delhi: Katha
- Radha Kumar. *The History of Doing: The Women's Movement in India*
- Kalpana Kannabiran. *Women and Law Critical Feminist Perspectives*
- Carolyn Merchant. *Earthcare: Women and the Environment.*

DSC-1D (CC- 4): Academic Writing and Composition Credits 06

DSC1DT: Academic Writing and Composition

Course Contents:

1. Introduction to the Writing Process: Conventions of Academic Writing, Writing in one’s own words – Summarizing and Paraphrasing
2. Critical Thinking: Syntheses, Analyses, and Evaluation
3. Structuring an Argument: Introduction, Interjection, and Conclusion
4. Citing Resources, Editing, Book and Media Review

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

Suggested Readings:

- Liz Hamp-Lyons and Ben Heasley, *Study writing: A Course in Writing Skills for Academic Purposes* (Cambridge: CUP, 2006).
- Renu Gupta, *A Course in Academic Writing* (New Delhi: Orient BlackSwan, 2010).
- IlonaLeki, *Academic Writing: Exploring Processes and Strategies* (New York: CUP, 2nd edn, 1998).
- Gerald Graff and Cathy Birkenstein, *They Say/I Say: The Moves That Matter in Academic Writing* (New York: Norton, 2009).
- John M. Swales. *Academic Writing for Graduate Students*

DISIPLINE SPECIFIC ELECTIVE (DSE)

DSE -1: British Literature **Credits 06**

DSE1T: British Literature

Course Contents:

1. William Shakespeare – *As you Like It*
2. Thomas Hardy- Ah, Are Digging on My Grave?
3. Robert Lynd- On Not Being a Philosopher

Or

DSE- 1: Indian Literature in Translation **Credits 06**

DSE1T: Indian Literature in Translation

Course Contents:

1. Rabindranath Tagore – *The Wife's Letter* (Translation of *Steer Patra*)
2. Vijay Tendulkar – *Silence: The Court is in Session* (Translation of *Shantata*: *Court ChaluAhe*)
3. Mahasweta Devi- 'Draupadi'

DSE-2 : Partition Literature **Credits 06**

DSE2T: Partition Literature

Course Contents:

1. Sa'adat Hasan Manto, 'Toba Tek Singh', in *Black Margins: Manto*, tr. M. Asaduddin (New Delhi: Katha, 2003) pp. 212–20.
2. Jibananda Das, 'I Shall Return to This Bengal', tr. SukantaChaudhuri, in *Modern Indian Literature* (New Delhi: OUP, 2004) pp. 8–13.

Or

DSE-2 : Nation, Culture and India **Credits 06**

DSE2T: Nation, Culture and India

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

Course Contents:

1. AmartyaSen – "Secularism and its Discontents" (from *The Argumentative Indian*) 10
2. Rabindranath Tagore – "Nationalism and India" (from Nationalism) 15

SKILL ENHANCEMENT COURSE (SEC)

SEC-1: Soft Skills **Credits 02**

Course Contents:

1. Teamwork
2. Emotional Intelligence
3. Adaptability
4. Leadership
5. Problem solving

Suggested Readings

- *English and Soft Skills.* S.P. Dhanavel. Orient BlackSwan
- *English for Students of Commerce: Precis, Composition, Essays, Poems* eds. Kaushik, et al.

Or

SEC-1: Film Studies **Credits 02**

Course Contents:

1. Evolution of the Cinema: Silent Film, Talkie, Colour Film, Digital Age, 3D Films.
2. Response and Review: (Illustrative film shows & appreciation programme to be arranged)

Suggested Readings:

- James Monako. *How To Read a Film.* New York: OUP, 2009.
- Andrew Dix. *Beginning Film Studies.* Manchester *university Press, 2008.*
- Satyajit Ray. *Our Films, Their Films.* Orient Blackswan, 2001.
- Satyajit Ray. *Deep Focus: Reflection on Indian Cinema.* Ed. Sandip Ray. Harper Collins India. 2011.

SEC-2: Creative Writing **Credits 02**

Course Contents:

Unit 1.

What is Creative Writing?

Unit 2.

The Art and Craft of Writing

Unit 3.

Modes of creative Writing

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

Unit 4.
Writing for the Media

Suggested Readings:

- Anjana Neira Dev and Others, *Creative writing: A Beginner's Manual* (Delhi: Pearson, 2009).
- Mary Lee Marksberry. *Foundation of Creativity* (New York : Harper and Row, 1963)

Or

SEC-2: Technical Writing **Credits 02**

Course Contents:

1. Communication: Language and communication, differences between speech and writing, distinct features of speech, distinct features of writing.
2. Writing Skills: Selection of topic,developmental, transitional and concluding paragraphs, descriptive, narrative, expository and argumentative writing.
3. Technical Writing: Formal and informal writings, formal writings/reports, letters, memorandum, notices, agenda, minutes, common errors to be avoided.

Suggested Readings

- M. Frank. Writing as thinking: A guided process approach, Englewood Cliffs, Prentice Hall Reagents.
- L. Hamp-Lyons and B. Heasely. Study Writing: A course in written English. For academic and professional purposes, Cambridge Univ. Press.
- R. Quirk, S. Greenbaum, G. Leech and J. Svartik.A comprehensive grammar of the English language, Longman, London.
- Daniel G. Riordan & Steven A. Panley. Technical Report Writing Today Biztaantra. Additional Reference Books
- Daniel G. Riordan, Steven E. Pauley, Biztantra: Technical Report Writing Today, 8th Edition (2004).

SEC-3: Translation Studies **Credits 02**

Course Contents:

1. Introducing Translation: A brief history and significance of translation in a multi lingual and multicultural society like India
2. Exercises in different Types/modes of translation: a. Semantic/Literal b. free sense/literary c. Functional/communicative d. Transcreation.
3. Introducing basic concepts and terms used in Translation Studies through relevant tasks: Equivalence, Language variety, Dialect, Idiolect, Register, Style, Mode, and Code mixing/Switching. b. Defining the process of translation (analysis, transference, restructuring) through critical examination of standard translated literary/non-literary texts.

Suggested Readings:

- Baker, Mona, *In Other Words: A Coursebook on Translation*, Routledge, 2001.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

- *Routledge Encyclopedia of Translation Studies*. London and New York: Routledge, 2001.
- 3 Sherry Simon, *Gender in translation: Cultural Identity and the Politics of Transmission*. New York: Routledge, 1996.
- Catford, I. C. *A Linguistic Theory of Translation*. London: OUP, 1965.
- Frishberg, Nancy J. *Interpreting: An Introduction. Registry of Interpreters*, 1990.
- Gargesh, Ravinder and Krishna Kumar Goswami. (Eds.). *Translation and Interpreting: Reader and Workbook*. New Delhi: Orient Longman, 2007.
- House, Juliana. *A Model for Translation Quality Assessment*. Tubingen: Gunter Narr, 1977.
- Lakshmi, H. *Problems of Translation*. Hyderabad: Booklings Corporation, 1993.

Or

SEC-3: English Language Teaching **Credits 02**

Course Contents:

1. Knowing the Learner

Or

1. Structures of the English Language
2. Methods of teaching English Language
3. Assessing Language Skills
4. Materials for Language Teaching

Or

4.Using Technology in Language Teaching

Suggested Readings:

- Penny Ur, A Course in Language Teaching: Practice and Theory (Cambridge: CUP, 1996).
- Marianne Celce-Murcia, Donna M. Brinton, and Marguerite Ann Snow, Teaching English as a Second or Foreign Language (Delhi: Cengage Learning, 4th edn, 2014).
- Adrian Doff, Teach English: A Training Course For Teachers (Teacher's Workbook) (Cambridge: CUP, 1988).
- Business English (New Delhi: Pearson, 2008).
- R. K. Bansal and J. B. Harrison, Spoken English: A Manual of Speech and Phonetics (New Delhi: Orient BlackSwan, 4th edn, 2013).
- Mohammad Aslam, Teaching of English (New Delhi: CUP, 2nd edn, 2009)

SEC-4: Business Communications **Credits 02**

Course Contents:

1. Introduction to the Essentials of Business Communication: Theory and Practice
2. Writing a project report
3. Citing References, using bibliographical and research tools
4. Writing minutes of meetings
5. E-Correspondence
6. Making oral presentations (Viva for internal assessment)
7. Spoken English for Business Communication (Viva for internal assessment)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

Suggested Readings:

- Scot, O. Contemporary Business Communication. Biztantra, New Delhi.
- Lesikar, R. V. &Flatley, M. E. Basic Business Communication Skills for Empowering the Internet Generation, Tata McGraw Hill Publishing Company Ltd. New Delhi.

Or

SEC-4: Spoken English **Credits 02**

Course Contents:

1. Differences between speech and writing – distinct features of Oral Communication; Essentials of Good Communication- Barriers
2. Listening: Weak Forms, Stress, Intonation, Voice Modulation, Telephonic Conversation, Rules of Interruption in Civilized discourse
3. Speech & Situation/ Context:
    a. Greeting & Leave Taking
    b. Making & Granting/Refusing Requests
    c. Queries & Giving Information/Direction
    d. Describing objects/process
    e. Narrating events & Commentary
    f. Persuasion & Motivation
    g. Complaints & Apologies
    h. Expressing disapproval
    i. Alerting & Warning

4. Presentation Skills: Interview, Debate, GD, Anchoring, Public Address, Broadcasting

(Intensive learner-centric pedagogic mode and use of Language Lab are desirable for making the course successful. Having explained the preliminaries of each course-content, teachers may put group of learners in a particular situation of conversation and monitor their conversation/ use of language as facilitators.)

Suggested Readings:

- W.S. Allen. Lining English speech. Orient Longman, London, 1968.
- R.K Bansal and J.B Harrison. Spoken English for India. Orient Longman, Madras, 1972.
- Leena Sen. Communication Skills. Prentice Hall of India, New Delhi.

Generic Elective (GE)

[Interdisciplinary for other department]

GE-1: Gender & Human Rights **Credits 06**

GE1T: Gender & Human Rights

Course Contents:

1. Poetry: Meena Kandasamy “Aggression” Temsula Ao “Laburnum for My Head”
2. Drama: Manjula Padmanabhan *Lights Out*
3. Essay: Virginia Woolf “Professions for Women”, *Women’s Rights are Human Rights.* Section V “The Human Rights Framework in Practice”

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

Or

GE-1: Contemporary India: Women and Empowerment **Credits 06**

GE1T: Contemporary India: Women and Empowerment

Course Contents:

1. Social Construction of Gender (Masculinity and Feminity) Patriarchy
2. History of Women's Movements in India (Pre-independence, post independence)
   Women, Nationalism, Partition
   Women and Political Participation
3. Women and Law
   Women and the Indian Constitution
   Personal Laws (Customary practices on inheritance and Marriage)
   (Supplemented by workshop on legal awareness)
4. Women and Environment
   State interventions, Domestic violence, Female foeticide, sexual harassment
   Female Voices: *Sultana's Dream*
   Dalit Discourse:

Or

GE-1 : Academic Writing and Composition **Credits 06**

GE1T : Academic Writing and Composition

Course Contents:

1. Introduction to the Writing Process
2. Introduction to the Conventions of Academic Writing
3. Writing in one's own words: Summarizing and Paraphrasing
4. Critical Thinking: Syntheses, Analyses, and Evaluation
5. Structuring an Argument: Introduction, Interjection, and Conclusion
6. Citing Resources; Editing, Book and Media Review

Suggested Readings

- Liz Hamp-Lyons and Ben Heasley, *Study writing: A Course in Writing Skills for Academic Purposes* (Cambridge: CUP, 2006).
- Renu Gupta, *A Course in Academic Writing* (New Delhi: Orient BlackSwan, 2010).
- Ilona Leki, *Academic Writing: Exploring Processes and Strategies* (New York: CUP,2nd edn, 1998).
- Gerald Graff and Cathy Birkenstein, *They Say/I Say: The Moves That Matter in Academic Writing* (New York: Norton, 2009).

GE-2: Environment & Literature **Credits 06**

GE2T: Environment & Literature

Course Contents:

Introduction (Nature in Oriental & Western Thought, Deep Ecology, Third World Environmentalism)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

1. Gordon J. L. Ramel. 'Daffodils No More'
2. Mahasweta Devi. 'Pterodactyl'
3. Ruskin Bond. 'Dust on the Mountains',

Suggested Readings:

- Vasudha Narayanan 'Water, Wood, and Wisdom: Ecological Perspectives from the Hindu Traditions'
- Allen Carlson. *Environmental Aesthetics*
- Preeti Ranjan Ghosh. "Towards an Understanding of Environmental Aesthetics: Some Reflections", The Philosophical Quarterly, 1998
- Beth Fowkes Tobin. *Colonizing Nature*
- Vasudha Narayanan. *Water, Wood and Wisdom*
- Vandana Shiva. *Women in Nature*

Or

GE-2: Novel and Prose **Credits 06**

GE2T: Novel and Prose

Course Contents:

1. Charles Dickens: Oliver Twist
2. R.K.Narayan: A Library without Books
3. Guy de Maupassant: My Uncle Jules

Or

GE-2: Language and Linguistics **Credits 06**

GE2T: Language and Linguistics

Course Contents:

1. Language: language and communication; language varieties: standard and non-standard language; language change.
2. Phonetics: Overview of Articulatory Phonetics. The Consonants of English. The Vowel Sounds of English
3. Phonology and Phonetic Transcription: The Phonology of English. Transcription of Consonants. Transcription of Vowels
4. Syntax and semantics: categories and constituents of phrase structure; (Noun Phrase & Verbal).

Suggested Reading:

- Roach Peter, *Phonetics* (New Delhi: Oxford University Press, 2001).
- Balasubramanian, T., Textbook of English Phonetics for Indian Students (New Delhi: Laxmi Publications, 2009).
- Mesthrie, Rajend and Rakesh M Bhatt. 2008. *World Englishes: The study of new linguistic varieties.*Cambridge: Cambridge University Press.
- De Saussure, Ferdinand. 1966. *Course in general linguistics.*New York: McGraw Hill Introduction: Chapter 3

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

- Akmajian, A., R. A. Demers and R, M. Harnish, *Linguistics: An Introduction to Language and Communication,* 2nd ed.
- Fromkin, V., and R. Rodman, *An Introduction to Language,* 2nd ed. (New Yourk: Holt, Rinehart and Winston, 1974) Chapters 3, 6 and 7
- Akmajian, A., R. A. Demers and R, M Harnish, Linguistics: An Introduction to Language and Communication, 2nd ed. (Cambridge, Mass,: MIT Press, 1984; Indian edition, Prentice Hall, 1991) Chapter 5 and 6.

AECC-CORE (AECC-Core)
[Language-Core]

[AECC- Core] English -1

CL-1(English): British Poetry -1 **Credits 06**

1. Shakespeare : Shall l Compare Thee to a Summer's Day,
   John Donne – Batter my Heart
   Milton : On His Blindness
   Pope: Ode on Solitude
2. William Blake: A Poison Tree
   Wordsworth : To the Skylark
   Shelley : To a Skylark
   Keats : Ode to Autumn
3. Rhetoric and Prosody

Suggested Readings:

- Jaydip Sarkar & Anindya Bhattacharya, *A Handbook of Rhetoric and Prosody*, Orient Blackswan, Kolkata, 2017

Or

CL-1(English): Language, Variety and Stylistics **Credits 06**

1. Language & Communication – distinctness of human language
2. Language varieties – Standard & Non-standard Language, Formal & Informal
3. Difference between Declarative and Expressive forms of language – when Statement becomes Expression
4. Register, Collocation and Style

Suggested Readings:

- Rajend Mesthrie and Rakesh M. Bhatt. *World Englishes: The Study of New Linguistic Varieties*
- GB Shaw. 'Spoken English & Broken English'
- Geoffrey N. Leech. *A Linguistic Guide to English Poetry*
- H.G.Widdowson. *Stylistics & the Teaching of Literature*
- *Language Literature and Creativity* Orient Blackswan

CL-2(English): Poetry - 2 **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

Course Contents:

1. Alfred L.Tennyson : Break Break Break,
2. Robert Browning: Porphyria's Lover
3. T.S.Eliot: Preludes
4. W.B. Yeats: The Lake Isles of Innisfree

Or

CL-2(English): Language, Imagination & Creativity Credits 06

Course Contents:

Language, Imagination & Creativity

1. Plain Language and Figurative Language (Related Tropes like Metaphor, Conceit, Metonymy)
2. Language and Emotion – Hyperbole, Pathetic Fallacy, Irony, Understatement
3. Escape from Banality – Foregrounding devices like Parallelism & Deviation
4. Avoiding/ Cultivating Ambiguity – Ambiguity: Weakness or Strength

Suggested Readings:

- I. A. Richards. *Practical Criticism* (Part III)
- Geoffrey N. Leech. *A Linguistic Guide to English Poetry*
- Bose & Sterling. *Rhetoric & Prosody*
- William Empson. *Seven Types of Ambiguity*
- Susanta Kumar Bardhan. *Introduction to Stylistics*
- Goeffrey Leech. *A Communicative Grammar of English*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:04:33; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/English_General_Revised270519

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B. A (HONOURS)
in

HISTORY

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

VIDYASAGAR UNIVERSITY

BA (Honours) in History

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: Greek and Roman Historians	6	5-1-0	15	60	75
		Core-2		CT2: Early Historic India (proto history to 6th century B.C)	6	5-1-0	15	60	75
		GE-1		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-1		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: Mauryan and Gupta Empire	6	5-1-0	15	60	75
		Core-4		CT4: Political History of Early Medieval India (600 AD to 1200 AD)	6	5-1-0	15	60	75
		GE-2		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-2		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		CT5: Delhi Sultanate	6	5-1-0	15	60	75
		Core-6		CT6: The Feudal Society	6	5-1-0	15	60	75
		Core-7		CT7: Akbar and the Making of Mughal India	6	5-1-0	15	60	75
		GE-3		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-1		TBD	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		CT8: Renaissance and reformation	6	5-1-0	15	60	75
		Core-9		CT9: The French Revolution & Nepoleon Bonaparte	6	5-1-0	15	60	75
		Core-10		CT10:19th Century Revolutions in Europe	6	5-1-0	15	60	75
		GE-4		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-2		TBD	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester - V							
3	**V**	Core-11		CT11: Select Themes in the Colonial Impact on Indian Economy and Society	6	5-1-0	15	60	75
		Core-12		CT12: Peasant and Tribal uprising in colonial India in the 19th Century	6	5-1-0	15	60	75
		DSE-1		TBD	6	5-1-0	15	60	75
		DSE-2		TBD	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: International Relations after the Second World War	6	5-1-0	15	60	75
		Core-14		CT14: Modern Nationalism in India	6	5-1-0	15	60	75
		DSE-3		TBD	6	5-1-0	15	60	75
		DSE-4		TBD	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

List of Core Course (CC)

CC-1: Greek and Roman Historians
CC-2: Early Historic India (proto history to 6th century B.C)
CC-3: Mauryan and Gupta Empire
CC-4: Political History of Early Medieval India (600 AD to 1200 AD)
CC-5: Delhi Sultanate
CC-6: The Feudal Society
CC-7: Akbar and the Making of Mughal India
CC-8: Renaissance and Reformation
CC-9: The French Revolution & Napoleon Bonaparte
CC-10: 19th Century Revolutions in Europe
CC-11: Select Themes in the Colonial Impact on Indian Economy and Society
CC-12: Peasant and Tribal Uprisings in Colonial India in the 19th Century
CC-13: International Relations after the Second World War
CC-14: Modern Nationalism in India

Discipline Specific Electives (DSE)

DSE-1: Europe in the Ancient Regime
Or
DSE 1: Modern Transformation of China (1839-1949)
DSE-2: Modern Transformation of Japan
Or
DSE 2: Women and Social Change in Nineteenth Century
DSE-3: The Russian Revolution
Or
DSE 3: War and Diplomacy, 1914-1945
DSE-4: Pre-colonial South East Asia
Or
DSE-4: Environmental History of India (Early India and Medieval Period)

Skill Enhancement Course (SEC)

SEC 1: Archaeology and Museum Making in Colonial India
Or
SEC 1: Literature and History: Bengal
Or
SEC- 1: Art Appreciation an introduction to Indian art
SEC- 2: The Making of Indian Foreign Policy
Or
SEC -2: Colonial Science in India: Institutions and Practices
Or
SEC -2: Understanding Popular Culture
Or
SEC-2: Understanding Heritage

Generic Electives (GE)

[Interdisciplinary for other Department]

GE- 1: Theories of the Modern State
GE- 2: Science and Empire
GE- 3: Some Perspectives on Women's Rights in
GE- 4: Gender & Education in India
Or
GE-4: History of Indian Journalism

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Core Courses (CC)

CC-1: Greek and Roman Historians **Credits 06**

C1T: Greek and Roman Historians

Unit – I
Greek Historiography
Module I
New form of inquiry (historia) in Greece in the sixth century BCE

1.1 Logographers in ancient Greece.
1.2 Hecataeus of Miletus, the most important predecessor of Heredotus
1.3 Charon of Lampsacus
1.4 Xanthus of Lydia

Module II
Herodotus and his Histories

2.1 A traveller's romance?
2.2 Herodotus' method of history writing – his catholic inclusiveness
2.3 Herodotus' originality as a historian – focus on the struggle between the East and the West

Module III
Thucydides: the founder of scientific history writing

3.1 A historiography on Thucydides
3.2 History of the Peloponnesian War - a product of rigorous inquiry and examination
3.3 Thucydides' interpretive ability – his ideas of morality, Athenian imperialism, culture and democratic institutions
3.4 Description of plague in a symbolic way – assessment of the demagogues
3.5 A comparative study of the two greatest Greek historians

Module IV
Next generation of Greek historians

4.1 Xenophon and his History of Greece (*Hellenica)* – a description of events 410 BCE – 362 BCE -- writing in the style of a high-class journalist – lack of analytical skill
4.5 Polybius and the "pragmatic" history
4.3 Diodorus Siculus and his *Library of History* – the Stoic doctrine of the brotherhood of man

Unit II
Roman Historiography
Module I

Development of Roman historiographical tradition

1.1 Quintus Fabius Pictor of late third century BCE and the "Graeci annals" – Rome's early history in Greek.
1.2 Marcus Porcius Cato (234 – 149 BCE) and the first Roman history in Latin – influence of Greek historiography

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

1.3 Marcus Tullius Cicero and the speculation on the theory of history – distinguishing history from poetry – the genre of moral historiography at Rome

Module II
Imperial historians

2.1 Livy and the History of Rome – a work on enormous scale - Livy's style of writing: honest but uncritical - Livy's comprehensive treatment: details of Roman religion and Roman law

2.2 Tacitus' history of the Roman empire - the greatest achievement of Roman historiography ? His moral and political judgements on the past -- a "philosophical historian"?

Module III
Historical methods in ancient Rome

3.1 Research and accuracy
3.2 Literary artistry
3.3 The use of dramatic elements

Suggested Readings:

The Oxford History of the Classical World, eds., John Boardman et al, Oxford: 1986

- *Cambridge Ancient History*, 2nd ed., Vol. 4, eds., John Boardman et al, Cambridge:1992
- Anton Powell, ed., *The Greek World*, London:1995
- F.M. Cornford, *Thucydides Mythistoricus*, London:1907
- F.E. Adcock, *Thucydides and His History*, Cambridge:1963
- Momigliano, *Studies in Historiography*, New York: 1966
- ---, *Essays in Ancient and Modern Historiography*, Chicago:1977
- H.D. Westlake, *Individuals in Thucydides*, Cambridge:1968
- T.J.Luce, *The Greek Historians*, London and New York:1997
- Stephen Usher, *The Historians of Greece and Rome*, London:1969
- Michael Grant, *The Ancient Historians*, New York:1970
- ---, *Greek and Roman Historians*, London and New York: 1995
- T.A. Dorey, ed., *Latin Historians*, London:1966
- ---, ed., *Tacitus*, London:1968
- D.C. Earl, *The Political Thought of Sallust*, Cambridge:1961
- *Civilization of the Ancient Mediterranean: Greece and Rome*, Vol. 3, eds., Michael Grant and Rachel Kitzinger, New York: 1988

CC-2: **Early Historic India (proto history to 6th century B.C)** **Credits 06**

C2T: Early Historic India (proto history to 6th century B.C)

Unit I
Module- I
Understanding early India

1.1 : Historical theories and interpretations about the Indian past

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

1.2 The idea of Bharatavarsha: Indian subcontinent with all its diversity and cultural traditions
1.3 An overview of literary and archaeological sources

Module-II
Neolithic to Chalcolithic settlements
2.1 The earliest village farming community in India—transition from pastoral life to the practice of agriculture: Mehrgarh and its various cultural phases
2.2 The first urbanization in the Indian subcontinent—Indus civilization: contemporary perspectives through a historiography
2.3 The early Harappan, Harappan and late Harappan phases: technology, architecture, religion and maritime trade.
2.4 End/transformation of the Indus civilization: different theories.

Module-III
The Aryans in India: Vedic Age

3.1 The historiography of the concept Aryan
3.2 The spread of Aryan settlements in India
3.3 The period of the Vedas, Brahmanas and Upanishads: pastoralism, agriculture and other occupations
3.4 Political development, culture and rituals

Module-IV
North India in sixth century BCE
4.1 Establishment of kingdoms, oligarchies and chiefdoms: sixteen Mahajanapadas
4.2 The autonomous clans
4.3 Rise of Magadhan imperialism

Unit II
Module I
Ideas and institutions in early India
1.1 Varna and Jati: the issue of upward mobility among the Shudras
1.2 Slavery: ancient forms and modern debates
1.3 Untouchables
1.4 Women
1.5 Forms of marriage

Module II
Cults, doctrines and metaphysics
2.1 The religion of the Vedas
2.2 The unorthodox sects – Buddhism, Jainism and the doctrine of the Ajivikas
2.3 Scepticism and materialism

Module III
Aspects of economy in the age of Buddha
3.1 Economic changes: use iron, rural economy, trade and crafts, guilds
3.2 Taxation
3.3 The second urbanization

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Module IV
The cultural milieu
4.1 Education
4.2 Language and literature
4.3 Science and technology

Suggested Readings:

- L. Basham, *The Wonder that was India*
- ---, ed., *A Cultural History of India*
- D.D. Kosambi, *An Introduction to the Study of Indian History*
- ---, *Culture and Civilization of Ancient India in Historical Outline*
- Romila Thapar, *Early India from the Origins to c. AD 1300*
- Hermann Kulke and D. Rothermund, *A History of India*
- R.C. Majumdar, ed., *The Vedic Age* (Bharatiya Vidya Bhavan series, Vol. 1)
- ---, ed., *The Age of Imperial Unity* (Bharatiya Vidya Bhavan series, Vol. 2)
- Upinder Singh, *A History of Ancient and Early Medieval India*
- Ranabir Chakravarti, *Exploring Early India: Upto c. AD 1300*
- Jean-Francois Jarrige et al, eds., *Mehrgarh: Field Reports from Neolithic Times to the Indus Civilization*
- Bridget Allchin and F.R. Allchin, *The Rise of Civilization in India and Pakistan*
- B.B. Lal and S.P. Gupta, eds., *Frontiers of the Indus Civilization*
- Gregory L. Possehl, *The Indus Civilization: A Contemporary Perspective*
- ---, ed., *Ancient Cities of the Indus*
- Shereen Ratnagar, *Encounters: The Westerly Trade of the Harappan Civilization*
- Asko Parpola, *Deciphering the Indus Script*
- Nayanjot Lahiri, ed., *The Decline and Fall of the Indus Civilization*
- R.S. Sharma, *Material Culture and Social Formations in Ancient India*
- ---, *Aspects of Political Ideas and Institutions in Ancient India*
- ---, *Sudras in Ancient India: A Social History of the Lower Order Down to c. AD 600*
- Dev Raj Chanana, *Slavery in Ancient India*
- G.S. Ghurye, *Caste, Class and Occupation*
- T.W. Rhys Davids, *Buddhist India*
- Brian K. Smith, *Classifying the Universe: The Ancient Indian Varna System and the Origins of Caste*
- Sukumari Bhattacharji, *Women and Society in Ancient India*
- Patrick Olivelle, ed., *Between the Empires: Society in India 300 BCE to 400 CE*

CC-3: Mauryan and Gupta Empire **Credits 06**

C3T: Mauryan and Gupta Empire

I. Empire Building in India- Mahajanapadas to Kingdom
II. Formation of Mauryan Empire – Polity, Economy, Socio-Cultural Aspects, Downfall
III. Post Mauryan Empire – Sungas & Kanvas, the Indo Greeks, Kushanas &Satavahanas
IV. Imperial Guptas – Classical Age, Polity, Economy, Socio-Cultural Aspects, Downfall

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Romila Thapar, *The Mauriyas Revisited*
- Radhakumud Mookerji, *Chandragupta Mauriya and His Times*,
- Romila Thapar, *Ashoka and the Decline of the Mauriyas*,
- Upindne Singh, *A History of Ancient and Early Medieval India: From the Stone Age to the 12th Century*.
- Brajadulal Chattopadhyaya, *The Making of Early Medieval India*
- Ram Sharan Sharma, *Aspects of Political Ideas and Institutions in Ancient India*
- Romila Thapar, *A History of India*
- D.N. Jha, *Ancient India: In Historical Outlines*
- ----------, *Early India: A Concise History*
- H.C. Raychowdhury, *Political History of Ancient India: From the Accession of Parikshit to the Extinction of the Gupta Dynasty*
- Ashvini Agarwal, *Rise and Fall of the Imperial Guptas*
- Dilip Kumar Ganguly, *The Imperial Guptas and their Times* the Extinction of the Gupta Dynasty.
- Parmeshwari Lal Gupta, *The Imperial Guptas: Cultural History*
- V.R. Ramachandra Dikshitar, *The Gupta Polity*
- Rama Shankar Tripathi, *History of Ancient India*

CC-4: Political History of Early Medieval India (600 AD to 1200 AD)

Credits 06

C4T: Political History of Early Medieval India (600 AD to 1200 AD)

Unit I
Module I
Understanding the 'early medieval' phase in the Indian history
1.1 Different perceptions on the early medieval situations
1.2 Literary and archaeological sources
1.3 Development of regional cultures: an overview

Module II
Shift of political power from Pataliputra to Kanauj
2.1 Gauda under Sasanka: the most formidable power in eastern India
2.2 The Gauda-Kanyakubja struggle and the emergence of Harshavardhana
2.3 Military and political supremacy of Kanauj

Module III
An overview of politics in the Deccan and south India
3.1 The Chalukyas of Badami
3.2 Chalukya-Pallava struggle
3.3 Rashtrakuta- Pratihara rivalry
3.4 Rise of the Cholas as the premier power of the south

Module IV
Eastern India
4.1 The Palas and the tripartite struggle
4.2 Expansion of Pala power towards paramountcy

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

4.3 The Senas of Bengal

Module V
The struggle for empire
5.1 The Ghaznavid raids
5.2 The Ghurids
5.3 Qutb-ud-din Aibak's conquests

Unit II
Module I
Political processes and structure of polity
1.1 Absence of vast territorial empires -- a 'dark period'?
1.2 Emergence of feudal polity -- nature and structure of Indian feudalism
1.3 Zenith of political feudalism: 1000 - 1200 CE
1.4 The concept of segmentary state and the Indian experience

Module II
The urban scenario
2.1 Debates on the decay of urban centres
2.2 A third phase of urbanization?

Module III
Administrative structures
3.1 The Chola experiment -- a centralised state?
3.2 Land revenue system
3.3 Military organisation and administration of justice

Module IV
Towards transition
4.1 Conditions in India during the pre-Sultanate period
4.2 An overview of the cultural scenario

Suggested Readings:

- A.L. Basham, *Studies in Indian History and Culture*
- Hermann Kulke and D. Rothermund, *A History of India*
- Romila Thapar, *Early India from the Origins to c. AD 1300*
- R.S. Sharma and K.M. Shrimali, eds, *A Comprehensive History of India*, Vol. IV, Part I
- K.A. Nilakanta Sastri, *The Colas*
- ---, *A History of South India from the Earliest Times to the Fall of Vijayanagar*
- Upinder Singh, *A History of Ancient and Early Medieval India*
- Ranabir Chakravarti, *Exploring Early India: Upto c. AD 1300*
- Harbans Mukhia, ed., *The Feudalism Debate*
- Brajadulal Chattopadhyaya, *The Making of early Medieval India*
- ---, *Studying Early India*
- ---, *ed., A Social History of Early India*
- ---, *Aspects of Rural Settlements and Rural Society in Early Medieval India*
- Daud Ali, *Courtly Culture and Political Life in Early Medieval India*
- Burton Stein, ed., *Essays on South India*
- ---, *Peasant State and Society in Medieval South India*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Kesavan Veluthat, *The 'Early Medieval' in South India*
- ---, *Political Structure in Early Medieval South India*
- Andre Wink, *The Making of the Indo-Islamic World: Vol. I: Early Medieval India and the Expansion of Islam 7th-11th Centuries*
- R.S. Sharma, *Indian Feudalism AD 300-1200*
- ---, *Urban Decay in India AD 300-1000*
- ---, *Early Medieval Indian Society*
- D.N. Jha, ed., *The Feudal Order*
- R.N. Nandi, *State Formation, Agrarian Growth and Social Change in Feudal South India c. AD 600-1200*

CC-5: Delhi Sultanate **Credits 06**

C5T : Delhi Sultanate

I. Interpreting the Delhi Sultanate – A Survey of Sources: literary and archaeological.

II. Foundation, Consolidation and Challenges to the Delhi Sultanate
(a) The State in the Thirteenth & Fourteenth Century – The Mameluks, Khaljis and Tughlaqs – Theories of Kingship – Ruling Elites, Ulama& the Political Authority
(b) Mongol Threat –Timur's Invasion
(c) Revival and Disintegration – Foundation of the Mughal Rule

III. Emergence of Regional States: Vijayanagara, Bahmani Kingdom, Bengal

IV.Society and Economy – Iqta System, Agricultural Production, Technology, Monetization, market, growth of urban centres; trade and commerce; Indian Ocean trade

V. Religion, Society and Culture
a) Sufism – silsilas, doctrines and practice – Socio-cultural impact
b) Bhakti movements in south and north India – Kabir, Nanak and Sant tradition
c) Art, architecture and literature – Consolidation of regional identities.

Suggested Readings:
- Mohammad Habib and K A Nizami ed. *Comprehensive History of India, Vol.V, The Delhi Sultanate*
- K A Nizami,*Some Aspects of Religion and Politics in India in the Thirteenth Century*
- A B M Habibullah, *The Foundation of Muslim Rule in India*
- Satish Chandra, *Medieval India, From the Sultanat to the Mughals, Vol.I*
- Peter Jackson, *The Delhi Sultanate. A Political and Military History*
- TapanRaychaudhuri and Irfan Habib ed. *Cambridge Economic History of India, Vol.I*
- Irfan Habib, *Medieval India. Study of A Civilization*
- MohibulHasan, *Historians of Medieval India*
- S A A Rizvi, *A History of Sufism in India, Vol.I*
- Burton Stein, *Vijaynagara* (New Cambridge History of India)
- Vipul Singh, *Interpreting Medieval India, Vol. I*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Abdul Karim, *BanglarItihas.SultaniAmal*
- Sukhamay Mukhopadhyay, *Banglar Ithaser Dusho Bachar. Swdhin Sultander Amal*
- Aniruddha Ray, *Madhya juger Bharater Itihas. SultaniAmol*
- Aniruddha Ray, *MadhyajugerBharatiyaShahar*

CC-6 : The Feudal Society **Credits 06**

C6T: The Feudal Society

1. **Muhammad and Charlemagne**: Islam and the Holy Roman Empire—coronation of Charlemagne—Frankish institutions—the Carolingian Renaissance—treaty of Verdun—dissolution of the Carolingian Empire—the Saxon Empire. (7 lectures)
2. **Europe besieged**: invasions of Norsemen, Magyars, Arabs and Saracens. (3 lectures)
3. **Feudal Society and Economy (c.800—c.1100)**: Feudalism—origin and features; manorialism—chivalry and romanticism—emergence of towns—trade and commerce—guilds. (8 lectures)
4. **Emergence of National Kingship**: Germany and Hohenstaufens—France under Valois. (4 lectures)
5. **Religion and Culture**: Cluniac Reforms—Investiture Contest—Monasticism—popular religion and heresy—Crusades—the order of 'Warrior Monks': the Knights Templar, the Knights Hospitallers and the Teutonic Knights—Schoolmen—Universities—Twelfth-century Renaissance. (8 lectures)

Suggested Readings:

- Ashton, T.H. and Philipin, C.H.E. (eds.), *The Brenner Debate: Agrarian Class Structure and Economic Development in Pre-Industrial Europe*, CUP, 2005.
- Baidya, J. *Madhyayugiya Europe* (800-1250), New Kalpana Parakashani, 2009.
- Bloch, M.L.B. *Feudal Society.* Chicago: University of Chicago Press, 1961.
- Cameron, E. (ed.), *Early Modern Europe*: *An Oxford History*, OUP, 2004 (NE)
- Chakravorty, B., Chakraborty S., Chattopadhyay, K. *Europe-e Yugantar*, Nababharati, 2007.
- Charles, A. N. *Humanism and the Culture of the Renaissance, OUP,* 1996.
- Collins, R., Early *Medieval Europe, 300-1000.* New York: St. Martin's Press, 1991.
- Collins, R. *Charlemagne,* Toronto: University of Toronto Press, 1998.
- Davis, R. H.C. *A History of Medieval Europe: from Constantine to Saint Louis.* London; New York: Longman, 1988.
- Dutta, N. *Madhyayug theke Europer Adhunikatay Uttaran*, Mitram, 2007.
- Dutta, N.C. *Madhyayuger Europe*, *Vols. 1,2* , Pashchimbanga Pustak Parshad, 1972,
- Hall, A.R. *The Scientific Revolution 1500-1800* (2nd edn.), London, 1962.
- Havighurst, A.F. (ed.), *The Pirenne Thesis: Analysis, Criticism, and Revision.* Lexington, MA: Heath, 1976.
- Hilton, R. *Transition from Feudalism to Capitalism*, Aakar Books, 2006.
- Jones, G. *A History of the Vikings.* New York: Oxford University Press, 1968.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Luscombe, David & Riley-Smith, Jonathan (eds.), *The New Cambridge Medieval History, IV, c.1024—c.1198, Part 2*, CUP, 2004.
- Mallik, S. *Yugasandhikshane Europe (1400-1700)*, Sobha, Kolkata, 2012.
- McEvedy, C. *The New Penguin Atlas of Medieval History.* New York: Penguin Books, 1992.
- Norwich, J.J. *Byzantium: the Decline and Fall*, London: Viking, 1995.
- Rice, E.F., Grafton, A. *The Foundations of Early Modern Europe, 1460-1559*, W.W. Norton & Company, 2004.
- Roy, M. *Europer Roopantar* (1500-1700), Progressive Book Forum, 2004.
- Roy, P. *Madhyayuger Europe (Rahstra, Samaj, Samskriti)*, Progressive Publishers, 1995.
- Roy, P., Das, S. *Uttoroner Pathe Europe*, Progressive Publishers, 2004.
- Thompson, J.W. Jonson, E.N. *An Introduction to Medieval Europe*, *300—1500*, New York, 1937.
- Tierney, B. *Western Europe in the Middle Ages, 300-1475.* 6th edn., Boston: McGraw-Hill College, 1999.
- Treadgold, W., T. *A History of the Byzantine State and Society.* Stanford, Calif.: Stanford University Press, 1997.

CC-7: Akbar and the Making of Mughal India **Credits 06**

C7T: Akbar and the Making of Mughal India

I. Sources and Historiography- Persian chronicles and tradition of history writing
II. Establishment of Mughal Rule in India
III. Formation of Imperial authority & Consolidation under Akbar-Campaigns and Conquests: tactics and technology-Evolution of administrative institutions: zabt, mansab, jagir, madad-i-maash-Revolts and resistance
IV. Expansion and integration- Incorporation of Rajputs and other indigenous groups in Mughal nobility- North-West frontier, Gujarat, Deccan and Bengal
V. Rural Society and Economy- Land rights and land revenue, zamindars and peasants-Agricultural production; crop patterns- Trade routes, overseas trade; Rise of Surat
VI. Religion and Culture- Religious tolerance and Sulh-i-kul, Din-i-ilahi, Sufi mystical and intellectual interventions-Development of Mughal painting and architecture

Suggested Readings:

- Vincent A. Smith, *Akbar, the Great Mogul: 1542-1605*
- George Bruce Malleson, *Akbar and the Rise of the Mughal Empire*
- Andre Wink, *Akbar*
- John F. Richards, *The Mughal Empire (The New Cambridge History of India)*
- Munis D. Faruqui, *The Princes of the Mughal Empire, 1504-1719*
- Andrew de la Garza, *The Mughal Empire at War: Babur, Akbar and the Indian Military Revolution, 1500-1605*
- Ishwari Prasad, *The Mughal Empire*
- Shireen Moosvi, *The Economy of the Mughal Empire*
- Jadunath Sarkar, *Fall of the Mughal Empire*, 3 Vols.
- Satish Chandra, *Medieval India: From Sultanat to the Mughals,* Part-II
- ----------, *Historiography, Religion, and State in Medieval India*
- ----------, *Parties and Politics at the Mughal Court, 1707-1740*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- ----------, *Essays on Medieval Indian History*
- ----------, *Mughal Religious Policies, the Rajpuths and the Deccan*
- ----------, *Social Change and Development in Medieval Indian History*
- Annemarie Schimmel, *The Empire of the Great Mughals: History, Art and Culture*
- Catherine B. Asher, *Architecture of Mughal India (The New Cambrdige History of India)*
- Michael Fisher, *A Short History of the Mughal Empire*
- Harbans Mukhia, *The Mughals of India*

CC-8: Renaissance and Reformation Credits 06

C8T: Renaissance and Reformation

1. Political and social background – political system in early modern Europe – collapse of feudalism – and the changing economic life in the 15th and 16th century – commerce and navigation – monarchies and city states – features of the early modern state – the printing revolution.
2. Italian city states, the merchants, the church and the social context of the renaissance – origins of humanism – rediscovery of the classes – the impact of humanism on art, education and political thought – Machiavelli and the idea of a modern state.
3. The background to the reformation – intellectual and popular anti-clericalism – Martin Luther and the reformation – reformation in the national context: France, Switzerland and England – the distinctiveness of the English reformation – Radical reformation – the Anabaptists, etc. - counter reformation.
4. Renaissance science and the emergence of a secular culture

Suggested Readings:

- William Roscoe Estep, *Renaissance and Reformation*
- Bard Thompson, *Humanists and Reformers: A History of the Renaissance and Reformation*
- Jo Eldridge Carmey, *Renaissance and Reformation, 1500-1620: A Biographical Dictionary*
- David L. Morse and William M. Thompson eds., *History of Political Ideas,* Vol V *(Renaissance and Reformation)*
- James A. Patrick ed. , *Renaissance and Reformation*, Vol. 1
- Steven E. Ozment, *Religion and Culture in the Renaissance and Reformation*
- Jonathan W. Zophy, *A Short History of Renaissance and Reformation Europe*
- Dorothy Mills, *Renaissance and Reformation Times*
- Tom Monaghan, *Renaissance, Reformation and the Age of Discovery, 1450-1700*
- William Gilbert, *The Renaissance and the Reformation*
- Charles G. Nauert, *Humanism and the Culture of Renaissance Europe*
- Norman F. Cantor and Michael S. Werthman, *Reniassance, Reformation and Absolutism: 1450-1650*
- Lisa Mullins, *Science in the Renaissance*
- Marie Boas Hall, *The Scientific Renaissance 1450-1630*
- Vickey Herold, *Science during the Renaissance*
- Aldo Altamore and Giobvanni Antonini, *Galileo and the Renaissance Scientific Discourse*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Stephen Pumfrey, Paolo L. Rossi, *Science, Culture and Popular Belief in Renaissance Europe*

CC-9: The French Revolution & Napoleon Bonaparte Credits 06

C9T : The French Revolution & Napoleon Bonaparte

I. Historiography of the French Revolution
II. Crisis of the Ancien Regime
III. Intellectual impetus
IV. Socio-economic background
V. Phases of the French Revolution – 1788-99
VI. Rise of Napoleon – Empire building & consolidation
VII. Impact of the French Revolution and Napoleon Bonaparte outside France
VIII. Fall of Napoleon & Restoration of old order – Vienna Congress (1815)& Metternich

Suggested Readings:

- Owen Connelly, *The Wars of the French Revolution and Napoleon, 1792-1815*
- Charles D. Hazen, *The French Revolution and Napoleon*
- Martyn Lyons, *Napoloan Bonaparte and the Legacy of the French Revolution*
- Jeremy Klar, *The French Revolution, Napoloan and the Republic*
- John C. Davenport, *The French Revolution and the Rise of Napoloan*
- David Andress, *The Oxford Handbook of the French Revolution*
- J. Holland Rose, *The Revolutionary and Napoleonic Era, 1789-1815*
- William Doyel, *The Oxford History of the French Revolution*
- Alexis de Tocqueville, *The Old Regime and the Revolution*
- Eric Hobsbawm, *Age of Revolution: 1789-1848*
- Francois Furet, *Interpreting the French Revolution*
- Gary Kates, *The French Revolution: Recent Debates and New Controversies*
- Pieter Geyl, *Napoleon: For and Against*

CC-10: 19th Century Revolutions in Europe Credits 06

C10T: 19th Century Revolutions in Europe

I. The Greek War of Independence, the Revolutions of 1830, the Revolutions of 1848 – A possible turning point?
II. The Age of Nationalism: The Second Empire in France and Louis Napoleon; Unification of Italy and Germany; The Third Republic and the Paris Commune;
III. Russia—Tsarist autocracy and reforms, the emergence of the revolutionary movement; the Eastern Question—the Crimean War, the Treaty of Paris, Balkan nationalism.
IV. Society and Economy in Nineteenth Century Europe: industrial transformation in Britain; difference in industrialisation process between England and the Continental powers – France, Germany and Russia – the emergence of the working class and its movements – The impact of ideology: Louis Blanc,
V. Nationalism in Eastern and South Western Europe: Czech, Hungarian and Serbian.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Suggested Readings:

- Kahan, *Liberalism in Nineteenth Century Europe*
- Jonathan Sperber, *The European Revolutions, 1848-1851*
- Stefan Berger, *A Companion to Nineteenth Century Europe: 1789-1914*
- Michael Rapport, *Nineteenth Century Europe*
- Linda L. Clark, *Women and Achievement in Nineteenth Century Europe*
- Harry Hearder, *Europe in the Nineteenth Century*
- Tom Kemp, *Industrialization in Nineteenth Century Europe*
- T.C.W. Blanning, *The Nineteenth Century: Europe 1789-1914*
- Hannu Salmi, *19th Century Europe: A Cultural History*

CC-11: Select Themes in the Colonial Impact on Indian Economy and Society

Credits 06

C11T: Select Themes in the Colonial Impact on Indian Economy and Society

1. Colonial State institutions and ideologies: Colonial Economic interests, Company's Commerce, Mercantilism to Free trade, Deindustrialisation and Drain of Wealth.
2. Land Settlements and agricultural change— Commercialisation of Agriculture.
3. Modern Industrialisation —- Long term Constraints
4. Census and Caste — Colonial ethnology — Sanskritisation, Westernisation and Social reform— Brahma Samaj & Parthana Samaj
5. Reformism and Revivalism:The Aryadharma and Ramkrishna Vivekananda Movement.
6. Islamic reform in India: The Reformers and the Orthodox

Suggested Readings:

- Tirthankar Roy, *Economic History of India, 1857-19147*
- K. N. Raj, *Essays on the Commercialization of Indian Agriculture*
- Sekar Bandyopadhyay, *Caste, Culture and Hegemony: Social Dominance in Colonial Bengal*
- Thomas R. Trautmann, *Aryans and British India*
- Mushirul Hasan, *Writing India: Colonial Ethnography in the Nineteenth Century*
- G. S. Ghurye, *Caste and Race in India*
- Dipankar Gupta, *Caste in Question: Identity or Hierarchy*
- Nicholas B. Dirks, *Caste of Mind: Colonialism and the Making of Modern India*
- Shriram Maheswari, *The Census Administration under the Raj and After*
- C. A. Bayly, *Indian Society and the Making of the British Empire*
- Douglas M. Peers, *India under Colonial Rule, 1700-1885*
- B. R. Tomlinson, *The Economy of Modern India, 1860-1970*
- Gurilym Beckerlegge, *The Ramakrishna Mission: The Making of Modern Hindu Movement*
- Jayasree Mukherjee, *The Ramakrishna-Vivekananda Movement: Impact on Indian Society and Politics, 1893-1922*
- Neilesh Bose, *Recasting the Region: Language, Culture and Islam in Colonial Bengal*
- Shireen Maswood, Amit Dey and Ritwika Biswas, *Between Tradition and Modernity: Aspects of Islam in South Asia*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Barbara D. Metcalf, *Islam in South Asia in Practice*
- ----------, *Islamic Revival in British India: Deoband 1860-1900*
- Kenneth W. Jones, *Socio-Religious Reform Movements in British India, Part 3, Vol. 1*
- H.O. Pearson, *Islamic Reform and Revival in Nineteenth Century India.*

CC-12: Peasant and Tribal Uprisings in Colonial India in the 19th Century

Credits 06

C12T: Peasant and Tribal Uprisings in Colonial India in the 19th Century

The Early 19th century

1. The early colonial rule and revenue operations, revenue demands and settlements – "restorative rebellions" – peasant –landlord combination against colonial rule in north and south India;
2. Peasant movements in Bengal and Malabar – religious appeal for the liberation of a region or an ethnic group under a new form of government. .
3. Tribal movements in pre-1857 western and eastern India – Ho, Tamar, (1820-1832), Kol and Bhumij (1825-1835) revolts , Kherwar movement of the Santals (1833), Santhal Revolt (1855), Bhil revolt (1819-1840), Kolis (1824-1848), Khasis (1829-30), Koyas (1840-1858), Konds (1846-1855)

The Late 19th century

4. Tribal movements – Nalkdas of Panch Mahal (1858-59), (Bokta risings of 1858-95, millenarian movement of the Mundas (1895-1900), Kuch Nagas of Kachhar (1882),
5. Peasant movements in late 19th century – conflict between landlords and tenants – resistance to taxation – emergence of substantial peasantry – the role of moneylenders and struggle against them.
6. The revolutionary potential of Indian peasantry – Barrington Moore Jr. and Eric Stokes - Classification of types of revolt and movements – Kathleen Gough, AR Desai, DN Dhanagare and Ranajit Guha.

Suggested Readings:

- Mridula Mukherjee, *Peasants in India's Non-violent Revolution: Practice and Theory*
- Ranajit Guha, *Elementary Aspects of Peasant Insurgency in Colonial India*
- Sekar Bandyopadhyay, *From Plassey to Partition: A History of Modern India*
- Binoy Bushan Choudhuri, *Peasant History of Late Pre-Colonial and Colonial India*
- Bipan Chandra, *India's Struggle for Independence, 1857-1947*
- R. Desai, *Sate and Society in India: Essays in Dissent*
- D. N. Dhanagare, *Peasant Movements in India, 1920-1950*
- D. N. Dhanagare, *Rural Transformation in India: Challenges and Prospects*
- Sugata Bose, *Peasant, Labour and Colonial Capital: Rural Bengal since 1770*
- Shyam Charan Dube, *Antiquity to Modernity in Tribal India: Tribal Movements in India*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Eric Stokes, *The Peasant and the Raj: Studies in Agrarian Society and Peasant Rebellion in Colonial India*
- Barrington Moore Jr., *Social Origins of Dictatorship and Democracy: Lord and Peasant in the making of the Modern World*
- Sanjukta Das Gupta, *Adivasi and the Raj*
- Suchibrata Sen, *The Santals Crisis: Identity and Integration*
- Sunil Kumar Sen, *Peasant Movements in India: Mid Nineteenth and Twentieth Centuries*
- David Ludden, *An Agrarian History of South Asia*, Part 4, Vol. 4.

CC–13 : International Relations after the Second World War Credits 06

C13T : International Relations after the Second World War

Unit I:
Nurnberg Trials, Germany 1945 – 46
Ruins of Europe and Japan; Charter of the United Nations at San Francisco Conference, 1945; Peace Settlement after the Second World War; Beginning of the Cold War: 1947

Unit II
Conflict between Superpowers
USA and Soviet Union; Soviet Communism and the Russian leader Joseph Stalin; Soviet Union and Europe in Cold War 1945 – 1953; Military and Defense Alliances and Peace Pacts –Berlin after 1945- Fall of the Berlin Wall & German Re-Unification---- European Coal and Steel Community (ECSC); European Economic Community & European Atomic Energy Committee (Euratom)

Unit III
Decolonization and the emergence of the Third world
National Movements in Asia & Africa---Third World Organizations-OPEC, ASEAN, SAARC; West Asian Crisis--- Palestine Problem; Suez Crisis, Iran- Iraq conflicts, Gulf War ; Arab- Israel wars- activities of the PLO, Afghan Problem

Unit IV
Disintegration and Decline of the Soviet Union
Glasnost and Perestroika – Crisis of Socialist regimes in other East European Countries: Poland, Germany, Czechoslovakia, Hungary – Response of the USA; Rise of a Unipolar World system, Globalization ---: Progress and development in science and technology--- Civil Rights Movement; Apartheid in South Africa-- Terrorism

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Suggested Readings:

1. Adam Ulam, Expansion and Coexistence: A History of Soviet Union Policy 1917 – 1973, second edition, New York: Praeger Publishers, 1974
2. J L Gaddis, The United Nations and the Origins of the Cold War. Columbia: Columbia University Press, 2000
3. L J Halle. The Cold War as History. New York: Harper and Row, 1967
4. P. Calvocoressi. World Politics since 1945. London: Rouledge, 2008
5. William R Keylor. The Twentieth Century World and Beyond: An International History since 1900. Oxford: OUP, 2001
6. Norman Lowe, Mastering Modern World History, Hampshire, Palgrave Macmillan 2013.
7. Kathleen A. Laughlin and Jacqueline L. Castledine, Breaking the wave : women, their organizations, and feminism, 1945-1985 New York : Routledge, 2011.
8. Wini Breines, Trouble Between Us: an Uneasy History of White and Black Women in the Feminist Movement New York : Oxford University Press, 2006.
9. Gail Collins, When Everything Changed: the Amazing Journey of American Women from 1960 to the Present, New York : Little, Brown and Co., 2009.
10. P. Eric Louw , The Rise, Fall, and Legacy of Apartheid, Praeger, 2004
11. Ryan M. Irwin Gordian Knot: Apartheid and the Unmaking of the Liberal World Order, Oxford University Press, 2012
12. Mark Newman , The Civil Rights Movement , Edinburgh University Press, 2004

CC- 14: Modern Nationalism in India **Credits 06**

C14T: Modern Nationalism in India

1. Emergence of Nationalism in India and its historiography.
2. Anti-partition movement in 1905.
3. Gandhian Mass Movements— Non cooperation, Civil Disobedience , Quit India, Movement.
4. Roots of Communalism and Communal Award
5. Demand for Pakistan : Pakistan Movement from Cripps Mission to Cabinet Mission Plan.
6. Partition and its Aftermath.

Suggested Readings:

- Bipan Chandra and others, *India's Struggle for Independence*.
- Sumit Sarkar, *Modern India, 1885-1947*.
- Bipan Chandra, *Nationalism and Colonialism in Modern India*.
- Sekhar Bandyopadhyay, *Plassey to Partition and after*.
- Christopher Jaffrelot, *The Hindu Nationalist Movement and Indian Politics 1925 to the 1990s*, London, 1996.
- Ayesha Jalal, *The Sole Spokesman: Jinnah, the Muslim League and the Demand for Pakistan*
- Joya Chatterjee, *Bengal Divided: Hindu Communalism and Partition, 1932-1947*.
- Ramchandra Guha, *Makers of Modern India.*
- Ramchandra Guha, *Makers of Modern Asia*.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Ishita Banerjee-Dube, *A History of Modern India*.
- Samar Kumar Mallick, *Adhunik Bharater Dersho Bachor*.
- Sumit Sarkar, *Adhunik Bharat* (Bengali Translation)
- Bipan Chandra, *Bharater Swadhinata Sangram* (Bengali Translation).
- A. R. Desai, *Social Background of Indian Nationalism* (also see the Bengali version of this book).

Discipline Centric Electives (DSE)

DSE- 1 : Europe in the Ancient Regime **Credits 06**

DSE1T : Europe in the Ancient Regime

1) Political system in 18th century Europe: The empires, monarchies and republics – the holy Roman empire and the Russian empire – constitutional monarchy in Britain – the monarchical order in Spain, Prussia, Scandinavian countries, Poland and France – the republican order in the United provinces, Switzerland and Venice.
2) The Overseas empires and the Trading Companies – Spanish, French, Dutch and English overseas settlements.
3) Enlightened Despotism – Russia under Catherine – Austria and Hungary under Joseph II – Prussia under Frederick the Great.
4) Society and the Economy – Agriculture and Commerce – Aristocracy and the Bourgeoisie – the towns and the cities – the artisans and peasants – free peasants and serfs.
5) European Enlightenment – Scientific revolution and seventeenth century origins – England and Holland – the nature of God controversy – the French enlightenment – the enlightenment public sphere – the enlightenment critique of old regime – the idea of progress.

Suggested Readings:

- M. S. Anderson, *Europe in the Eighteenth Century*
- A. Cobban, *History of Modern France*, Vol. I
- William Doyle, *The Old European Order: 1660 – 1800*
- Carlo Cipolla, *Before the Industrial Revolution: European Society and Economy, 1000–1700*
- Carlo Cipolla, *Fontana Economic History of Europe: The emergence of industrial Societies*
- J. H. Plumb, *England in the Eighteenth Century*
- Nicholas Henshall, *The Myth of Absolutism: Change & Continuity in Early Modern European Monarchy*
- Peter Gay, *The Enlightenment: An Interpretation*
- Paul Hazard, *European Thought in the Eighteenth Century*
- David Ogg, *Europe of the Ancien Regime* (Fontana History of Europe)

OR

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

DSE-1 : Modern Transformation of China (1839-1949) Credits 06

DSE1T : Modern Transformation of China (1839-1949)

1. **Pre-colonial China**: Structure of the traditional Chinese society; Taoism, Confucius, the peasantry and the gentry; State and bureaucracy, economic structure.

2. **Foreign Contact and Anglo-Chinese Relations:** The Tribute System; the Canton Trade and its collapse; Background and Impact of First and Second Anglo-Chinese Wars (Opium Wars), 'Open Door' policy.
3. **Rebellion and Restoration**: Taiping rebellion—background and causes, nature, failure; Tung-chih Restoration and the Self-strengthening Movement – causes, feature and impact.

4. **Movements**, **Reform and Restoration in China**: The Reform Movement of 1898; Boxer Rebellion—causes, nature and failure; Chinese Revolution of 1911—role of Dr. Sun Yat-sen; Yuan Shih-Kai and Warlordism; May 4th Movement; the rise of the Kuo-Min Tang Party; the First United Front; Chiang Kai-shek; financial imperialism in China.

5. **Formation of Communist Republics in China**: Foundation of the Communist Party; Mao Tse-Tung and the making of the Red Army; the Second United Front; Long March and the Yenan experiment; the Chinese Revolution (1949)—ideology, causes and significance; the establishment of the People's Republic of China.

Suggested Readings:

- Harold M. Vinacke, *History of the Far East in Modern Times*, Kalyani Publishers, New Delhi, 1985.
- R. S. McCordock, British Far Eastern Policy, 1894 – 1900, New York, 1931.
- Nathaniel Peffer, *The Far East: A Modern History*, The University of Michigan Press, 1958.
- John K Fairbank (ed.), *The Cambridge History of China vol. X,* Cambridge University Press, 1978.
- J. Chesneaux et al : *China from Opium War to 1911 Revolution,* Random House, USA, 1988.
- Imanuel Shu, *The Rise of Modern China*, Oxford University Press, USA, 1999.
- Lucien Bianco, *Origins of the Chinese Revolutions1915-1949,* Stanford University Press, 1971.
- P. H. Clyde & B. F. Beers, Far East, Prentice Hall Press, 1975.
- D. Chowdhury, *Adhunik Juge Purba Asia-r Sankhipta Itihas*
- Haraprasad Chattopadhyay, *Chiner Itihas*
- M.K Chattopadhyay, *Chin o Japaner Itihas*
- S Guharoy, *Adhunik Purba Asia : Chin o Japaner Itihas*
- Subodh Mukhopadhyay, *Adhunik Purba Asia.*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

DSE-2 : Modern Transformation of Japan **Credits 06**

DSE2T : Modern Transformation of Japan

1. **Pre-Meiji Japan**: Tokugawa Shogunate—the feudal society and the government, economic condition; encounter with the West; the Perry Mission; the opening up of Japan to the West; the crisis and fall of the Shogunate.

1. **Meiji Restoration**: Causes, Nature; Process of modernization—social, economic, political and military reforms; Meiji Constitution; rise of political parties.

3. **Popular and Democratic Movements**: Satsuma Rebellion and Popular Rights Movement. (3 lectures)
4. **Emergence of Japan as an Imperial Power**: Sino-Japanese War (1894-'95); Anglo-Japanese Alliance; the Russo-Japanese War.

5. **Japan through the two World Wars**: Japan and World War I; Twenty-One Demands; Washington Conference; Manchurian Crisis—the role of the League of Nations; the failure of the democratic system; the rise of militarism in the 1930s and 1940s; Japan and World War II – from Pearl Harbour to Hiroshima-Nagasaki.

Suggested Readings:

- Harold M. Vinacke, *History of the Far East in Modern Times*, Kalyani Publishers, New Delhi, 1985.
- R. S. McCordock, British Far Eastern Policy, 1894 – 1900, New York, 1931.
- Nathaniel Peffer, *The Far East: A Modern History*, The University of Michigan Press, 1958.
- P. H. Clyde & B. F. Beers, Far East, Prentice Hall Press, 1975.
- Y. B. Jansen, (ed.), *The Cambridge History of Japan vols. V-VI* , Cambridge University Press,
- Andrew Gordon, *A Modern History of Japan From Tokugawa Times to Present* , Oxford University Press, 2013.
- E H Norman & L T Woods, *Japan`s Emergence as Modern State,* UBC Press, 2000.
- D. Chowdhury, *Adhunik Juge Purba Asia-r Sankhipta Itihas*
- Haraprasad Chattopadhyay, *Japaner Itihas*
- M.K Chattopadhyay, *Chin o Japaner Itihas*
- S Guharoy, *Adhunik Purba Asia : Chin o Japaner Itihas*
- Subodh Mukhopadhyay, *Adhunik Purba Asia.*

OR

DSE-2 : Women and Social Change in Nineteenth Century **Credits 06**

DSE2T : Women and Social Change in Nineteenth Century

1. Introduction – Socio-economic changes and women in contemporary Europe – Women's role as wife and mother – 'Angel in the House' in mid-nineteenth century– Emergence of'New Women'–Contagious Diseases Act, 1860 –its criticism –Suffragists' movements.

2. Women Question and social reform in nineteenth century India–Tension between

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

tradition and modernity –Efforts to modernize women's role: Rammohun Roy, Ishwarchandra Vidyasagar, Keshub ChandraSen, Dayananda Saraswati, Virasalingm, M G Ranade.

3. Printing and emergence of public space –Reformed culture –Women's writing – Emergence of "new woman" in late nineteenth century –Pandita Ramabai,Sarala Devi, Begum Rokeya – Nationalism, Becoming the mothers' of the nation.

4. Female education–Traditional and Western – Debates over curriculum – Government's role –Spread of female education: Bethune School, Mahakali Pathsala.

5. Emergence of Women's organizations- associations founded by men and those founded and managed by women-Swarna kumari Debi's Sakhi Samity and Sarala Debi's Bharat Stree Mahamandal, emergence of All India Women's Conference.

6. Debate over marriage –Native Marriage Act of 1872; Age of Consent Bill, 1891, The Rukhmabai Case, Child Marriage Restraint Act of 1927.

7. Professional women: Chandramukhi Bose, Kadambini Ganguly and Anandibai Joshi.

Suggested Readings:

- Geraldine Forbes, *Women in Modern India*, New Cambridge History of India, Vol.IV.2
- KumkumSangari and SudeshVaid ed. *Recasting Women, Essays in Colonial History*
- Radaha Kumar, *The History of Doing: An Illustrated Account of Movements for Women's Rights and Feminism in India, 1800-1990*
- Meredith Borthwick, *The Changing Role of Women in Bengal*
- Meera Kosambi, *Crossing the Threshold*
- Sumit Sarkar and Tanika Sarkar ed. *Women and Social Reform*, Vol. 1 & 2
- Tanika Sarkar, *Hindu Wife Hindu Nation*
- Rachel Fuchs, *Women in Nineteenth Century Europe*
- GhulamMurshid, *Adhuniktar Abhimukhe Bangaramani*
- Ghulam Murshid, *RassundarithekeRokeyaNariPragatirEkshoBachhar*
- Bharati Ray, *Feminists of Early India: Saraladevi and Begum Rokeya*
- Bharati Ray (ed.) *Nari O Paribar: Bamabodhini Patrika*

DSE 3 : The Russian Revolution **Credits 06**

DSE 3T : The Russian Revolution

1. The Background: The Economic and Social development of Russia in the 19th century – reform of Alexander II – the evolution of serfdom: Industrialisation and the working class: the Russian intelligentsia and Slavophils, Westernisers, the populists and the social democrats.
2. Nicholas II and the Revolution of 1905 – Russian constitutionalism and modern politics.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

3. The Revolutions of 1917
4. The nature of the Bolshevik state and Soviet Democracy – war communism, the new economic policy and the rise of the planned economy.
5. Nationalities and Nationalism in Russia before and after 1917.

Suggested Readings:

1. Christopher Hill, *Lenin and the Russian Revolution*
2. Nicholas Riasanovsky, *The History of Russia*
3. E. H. Carr, *The Russian Revolution*
4. Alec Nove, *An Economic History of the USSR 1917-1991*
5. R. Suny, *Cambridge History of Russia,* Vol. III
6. Marc Ferro, *October, Birth of Society*
7. Marc Ferro, *The February Revolution*
8. D. Lieven, *Cambridge History of Russia,* Vol. II
9. R. T. Manning, *The Crisis of the Old order in Russia*

OR

DSE 3: War and Diplomacy, 1914-1945 **Credits 06**

DSE 3T: War and Diplomacy, 1914-1945

Unit I
Module I

Through war to peace 1914 - 1920

1.1 The condition of Europe in 1914
1.2 The First World War: issues and stakes - appraisals and reappraisals
1.3 The dynamics of the war: Wilson's Fourteen Points
1.4 The Versailles Settlement of 1919: context, provisions and evaluation
1.5 Other treaties
1.6 Aftermath of the war

Module II
Revolution and transformation in Russia

2.1 War- time politics in Russia
2.2 The provisional government under Kerensky
2.3 The Bolshevik Revolution: Lenin and Trotsky
2.4 The new Soviet Order
2.5 From Lenin to Stalin
2.6 Soviet foreign policy 1917-1939

Module III
The inter-war period

3.1 The new balance of power
3.2 League of Nations
3.3 Draft Treaty of Mutual Assistance, 1923
3.4 Geneva Protocol, 1924
3.5 Locarno Treaties, 1925
3.6 Pact of Paris, 1928

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Unit II
Module I
Road to another global war
1.1 Economic depression, 1929-32: prelude to the Second World War
1.2 Rise of dictatorship in Germany and Italy - a study in tyranny
1.3 Spain on fire: the Civil War, 1936-39
1.4 Diplomatic moves: the Nazi-Soviet Nonaggression Pact and the Rome-Berlin-Tokyo Axis

Module II
The gathering storm
2.1 A historiography of the Second World War
2.2 Hitler's foreign policy and origins of the war
2.3 With the Old Breed: from the Pacific Theatre to the Eastern and Western fronts
2.3 Reappraisal of the concept of appeasement

Module III
Wartime politics in Europe
3.1 Coming of the Grand Alliance and conferences at Tehran, Yalta and Potsdam
3.2 The Lend-Lease policy of the United States
3.3 The allied victory and the collapse of wartime alliance

Suggested Readings:

- David Thomson, Europe since Napoleon
- Gordon A. Craig, *Germany 1866-1945*
- Ludwig Dehio, *Germany and World Politics in the Twentieth Century*
  A. J. P. Taylor, *The Struggle for Mastery in Europe, 1848-1918*
- Stephen J. Lee, *European Dictatorships 1918–1945*
- Elizabeth Wiskemann, *The Europe of the Dictators*
- Jesse D. Clarkson, *A History of Russia*
- Christopher Hill , *Lenin and the Russian Revolution*
- J. D. White, *The Russian Revolution: 1917-1921*
- David Shub, *Lenin: A Biography*
- Sidney Fay, *The Origins of the World War I*
- Barbara Tuchman, *The Guns of August: the Outbreak of World War I*
- Margaret MacMillan, *The War that Ended Peace: How Europe Abandoned Peace for the First World War*
- John Keegan, *The First World War*
- James L. Stokesbury, *A Short History of World War I*
- Annika Mombauer, *The Origins of the First World War: Controversies and Consensus*
- Holger Herwig, ed., *The Outbreak of World War I*
- Isaac Deutscher, *Stalin: A Political Biography*
- William L. Shirer, *The Rise and Fall of the Third Reich*
- Alan Bullock , *Hitler: A Study in Tyranny*
- Albert Speer, Inside The Third Reich
- J. P. Taylor, *The Origins of the Second World War*
- Antony Beevor, *The Second World War*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

DSE4: Pre-colonial South East Asia **Credits 06**

DSE4T: Pre-colonial South East Asia

1. The state system – mainland SE Asia in the ancient period – early kingdoms and cultural diversity – Indian influence and the Hindu-Khmer of Cambodia, Mons of Burma and Buddhism, Indianised kingdom of Champa in Vietnam, the Chinese in Malaya and Vietnam, Srivijaya kingdom of Sumatra, the Majapahits of Java, Chola-Srivijaya struggle; the intervention of the Cholas (11th century)
2. Economy – wet rice cultivation, upland shifting and cultivation ib the plains and seafaring – sawah agriculture and household based production; trade and markets; structural changes in SE Asian economy between 1st century CE to 1500 CE- Funan (Cambodia), Srivijaya maritime empire, Java. SE Asian maritime economy, international trade and commercial expansion in the mainland, Arabs and Chinese (1100-1300)
3. Religion: Theravada and Mahayana Buddhism in mainland SE Asia – Mon kingdoms and dissemination of Theravada Buddhism; links with Sri Lanka (12th century onwards); Islam in the 9th century in Malayan and Indonesian archipelago – Sufi mystical influence – Indonesian *tarekat* - toleration of non-Muslim practices and beliefs.
4. Europeans – Portuguese in the 16th century; Dutch and English in the 17th century.

Suggested Readings:

- Norman G. Owen, *Routledge Handbook of Southeast Asian History*
- Muthiah Alagappa, *Political Legitimacy in Southeast Asia: The Quest for Moral Authority*
- Peter Church, *A Short History of South East Asia*
- Nicholas Tarling, *The Cambridge History of Southeast Asia,* Vol.2
- Jonathan Rigg, *South East Asia: A Region in Transition*
- Ooi Keat Gin, Hoang Auh Tuan, *Early Modern Southeast Asia, 1350-1800*
- Anthony Reid, *Charting the Shape of Early Modern Southeast Asia*
- ----------, *A History of South East Asia: Critical Crossroads*
- Amitav Acharya, *The Making of Southeast Asia*
- Michael Arthur Aung-Thwin, Kenneth R. Hall, *New Perspectives on the History and Historiographies of South East Asia: Continuing Explorations*
- David G. Marr, Anthony Crothers Milner, *Southeast Asia in the 9th to 14th Centuries*
- Barabara Watson Andaya, Leonard Y. Andaya, *A History of Early Modern Southeast Asia, 1400-1830.*

OR

DSE-4: Environmental History of India (Early India and Medieval Period) **Credits 06**

DSE4T: Environmental History of India (Early India and Medieval Period)

Unit-I

a) Environmental history—Definition, Varieties and Sources
b) India's Ecological Profile-Varied and Vast Landscape

Unit-II

a) Social Uses of Natural Resources

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

b) Resources- Renewable and Non-renewable Resources
c) Mode of Resource Use in Gathering, Nomadic, Pastoralism, Agriculture and Industrial Mode

Unit-III

a) Eclectic Belief Systems – Sacred Groves – Conservation from Above – Conservation from Below
b) Indus Valley Civilization – Climatic factors for its rise and decline
c) Agricultural Expansion and Deforestation in the Gangetic Valley
d) Changing Perception of Forests in Early India

Unit-IV

a) Expansions of Agrarian Frontiers, establishment of new settlements and trade networks in hilly, jungle and marshland regions during medieval period
b) Changing Human Relations with animals-royal hunts
c) Forest Dwellers and the pastoral communities in the medieval period

Suggested Readings:

1. Cederlof, Gunnel and Sivaramakrishnan, K. Ed. Ecological Nationalisms: Nature, Livelihoods, and Identities in South Asia. New Delhi: Permanent Black, 2005.
2. Chakrabarti, Ranjan. Ed.Situating Environmental History. New Delhi: Manohar, 2007.
3. Gadgil, Madhav and Ramachandra Guha. The Fissured Land: An Ecological History of India. Berkeley: University of California Press, 1993.
4. Rangarajan, Mahesh and Sivaramakrishnan, K. Ed. India`s Environmental History: From Ancient times to the Colonial Period: A Reader. Vol. 1 and 2. Ranikhet: Permanent Black
5. Samuel P. Hays, Explorations in Environmental History, Pitsburg U.S.A,1998
6. Guha Ramachandra and J. Martinez-Alier, Varieties of Environmentalism: Essays - North and South, OUP, New Delhi, 1998.
7. Guha, Ramachandra, Environmentalism: A Global History, OUP, New Delhi, 2000.
8. Odum, Eugene P., Fundamentals of Ecology, London, 1971.
9. Saxena, H.M., Environmental Studies, Rawat Publication, Jaipur & New Delhi, 2006.
10. Smith, G.H. (ed.), Conservation of Natural Resources, New York, 1965.
11. Turk, J. Introduction to Environmental Studies, Chicago, 1985.

Skill Enhancement Course (SEC)

SEC- 1: Archaeology and Museum Making in Colonial India Credits 02

1. The development of archaeological knowledge – early archaeological explorations: Establishment of the Archaeological Survey of India: the archaeological mapping by Alexander Cunningham –Curzon and the new impetus for archaeological conservation: Sir John Marshall and the development of Indian archaeology in the early twentieth century
2. Archaeology as the new foundation for an authentic history of India – Archaeological explorations, excavations and conservation and the creation of heritage sites - A few major sites of archaeological excavations: Public archaeology and popularization of archaeological sites – Archaeology in travel writings – Competing cultural visions around a few major heritage sites.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

3. Archaeology and culture – Local historians and archaeological knowledge – the culture of collection and valorization of artifacts-----Collecting and museum making-----the profiles of a few prominent collectors and museum makers
4. Archaeology and the Museum Movement in India-----the Indian Museum----the Provincial museums and the local museums----Background to the formation of the National Museum

Suggested Readings:

- Basham, A. L. (ed.) *A Cultural History of India* (Delhi, 1975).
- Chakrabarty, Dilip, *A History of Indian Archaeology from the Beginning to 1947* (Delhi, 1988).
- Guha Thakurta, Tapati, *Monuments, Objects, Histories: Institutions of Art in Colonial and Post-Colonial India* (Delhi, 2004).
- Guha Thakurta, Tapati, 'The Endangered Yakshi: Careers of an Ancient Art Object in Modern India' in Partha Chatterjee and Anjan Ghosh, eds, *History and the Present*, New Delhi, 2002.
- Kejariwal, O. P., *The Asiatic Society of Bengal and the Discovery of India's Past,* 1784-1813, Delhi, 1988
- Lahiri, Nayanjot, *Marshalling The Past: Ancient India and its Modern Histories*, Permanent Black, 2012
- Roychowdhruy, Madhuparna, Displaying India's Heritage: Archaeology and Museum Movement in Colonial India, Orient Blackswan Publications, Delhi, 2015
- Singh, Upinder, *The Discovery of Ancient India: Early Archaeologists and the Beginnings of Archaeology,* Delhi, 2004

OR

SEC - 1 : Literature and History: Bengal **Credits 02**

1. History and Literature : An Overview
2. Dichotomy between *Itihasa* and History- sense of *itihasa*in pre-colonial period as part of literature. Concept of 'mythic time' and 'historical time'. Beginning of history-writing in Bengal. Elements of literature in it.
3. Novel as a new literary genre – looking at past through literature. Ramesh Chandra Majumdar, Akshay Kumar Maitreya, Raman Pillai, ChanduMenon, PhakirmohanSenapati.
4. Power and Patriotism: Bankim's Nationalism:BandeMataram, Anandamath
   Tagore's Nationalism and Universalism: His Novels: GhareBaire and Char Adhyay
5. Sarat Chandra Chattopadhyay and the Indian Women of Early 20th Century: Some reflections in the novels- Charitrahin and Pother Dabi;
   Difference of Perspective between Bankim and Tagore
5. Narratives of Suffering - Economic and Caste discrimination: Tarashankar and the Social milieu in the pre Independent Bengal with special reference to Ganadevata and Hansuli Banker Uakatha
6. SatinathBhaduri& the Gandhian Movement:DhoraiCharitManas.

Suggested Readings

- Ashin Dasgupta, *Itihas O Sahitya*
- Arabinda Samanta,
- Meenakshi Mukhopadhyay, *UpanyaseAtitItihas O Kalpaitihas*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Priyadarsee Chakraborty ed., *History in Literature - Literature As History, The Issue Revisited*
- Rabindrab Rochonabali
- Romila Thapar, *Time as a Metaphor of History: Early India*
- Yan Watt, *Rise of the Novel*
- Sisir Kumar Das,*History of Indian Literature: 1911-1956, struggle for freedom : triumph and tragedy*
- *Satinath Bhadurir NirbachitaRochonaboli*
- Sarat Sahitya Samagra, *Vol 1&2*
- Tarasankar Bandyopadhyay,*Hansuli Banker Upakotha*,
- Tarasankar Bandyopadhyay, *Ganadevata*

OR

SEC- 1: Art Appreciation an introduction to Indian art **Credits 02**

I. Prehistoric and protohistoric art: _Rock art; Harappan arts and crafts

II. Indian art (c. 600 BCE – 600 CE):
World Heritage Site Managers, UNESCO World Heritage Manuals [can be downloaded/ accessed at www.unesco.org]. Notions of art and craft_Canons of Indian paintings_Major developments in stupa, cave, and temple art and architecture Early Indian sculpture: style and iconography_Numismatic art

III. Indian Art (c. 600 CE – 1200 CE) :
Temple forms and their architectural features_Early illustrated manuscripts and mural painting traditions Early medieval sculpture: style and iconography_Indian bronzes or metal icons

IV. Indian art and architecture (c. 1200 CE – 1800 CE) :

Sultanate and Mughal architecture_Miniature painting traditions:
ughal, Rajasthani,Pahari Introduction to fort, palace and haveli architecture

V. Modern and Contemporary Indian art and Architecture:
The Colonial Period_Art movements: Bengal School of Art, Progressive Artists Group, etc. Major artists and their artworks_Popular art forms (folk art traditions)

Suggested Readings:

- Neumayer, Erwin, Lines of Stone: The pre-historic rock-art of India, South Asia Books, 1993
- Goswamy, B.N., Essence of Indian Art, Asian Art Museum of San Francisco, 1986
- Huntington, Susan, The Art of Ancient India: Hindu, Buddhist, Jain, Weatherhill, 1985
- Guha-Thakurta, Tapati, The making of a new modern Indian art: Aesthetics and nationalism in Bengal, 1850-1920, Cambridge University Press, 1992
- Mitter, Partha, Indian Art, Oxford History of Art series, Oxford
- University Press, 2001 Dhar, Parul Pandya, ed., 2011, Indian Art History Changing Perspectives, New Delhi: D.K. Printworld and National Museum Institute (Introduction).
- Beach, M.C., The New Cambridge History of India I: 3, Mughal and Rajput Painting, Cambridge University Press, 1992.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- Ray, Niharranjan, An Approach to Indian Art, Calcutta, 1970

SEC- 2 : The Making of Indian Foreign Policy **Credits 02**

1. Historical Factors in India's foreign policy priorities – pan Asianism
2. The State India and the Third World – Non-alignment – Regional Cooperation
3. India and South Asia: Relationship with the Neighbours
4. India and the Great Powers – (a) United States (b) Soviet Union (c) China
5. India and Globalisation – Economic Diplomacy – The Look East Policy and the European Union
6. India's Nuclear Policy

Suggested Readings:

- A. Appadorai, *Domestic Roots of India's Foreign Policy 1947-1972*
- U. S. Bajpai (ed.), *Indian Foreign Policy: The Indira Gandhi Years*
- Jayantanuja Bandyopadhyay, *The Making of Indian Foreign Policy*
- Verinder Grover (ed.), *International Relations and Foreign Policy of India*
- Linda Racioppi, *Soviet Policy Towards South Asia since 1970*

OR

SEC- 2 : Colonial Science in India: Institutions and Practices **Credits 02**

1: Science in Colonial India: Problems and Perspectives
2: Science and Colonial Explorations: Science and Orientalism-Early European Scientists: Surveyors, Botanists, Doctors under the East India Company Service
3: Science in Practice: Botanical Garden, Geological Survey of India, Medical College, Indian Association for the Cultivation of Science.
4: Science and Indigenous Personality: Prafulla Chandra Ray, Jagadish Bose, Mahendra Lal Sarkar, Maghnad Saha, C.V. Raman- Emergence of National Science
5: Colonial Science in India: Science and Indian Nationalism-Response and Resistance-Ideas of Mahatma Gandhi and other Indian Nationalists.

Suggested Readings :

- Deepak Kumar, *Science and the Raj: A Study of British India*, Oxford University Press, New Delhi, 2006
- David Arnold, *Science, Technology and Medicine in Colonial India*, Cambridge University Press, Cambridge, 2000
- Uma Das Gupta ed., *Scienceand Modern India: An Institutional History, c. 1784-1947*, Pearson-Longman, New Delhi, 2011
- Arun Bandyopadhyay, *Science and Society in India, 1750-2000*, Manohar, New Delhi, 2006
- Pratik chakrabarti, *Western Science in Modern India; Metropolitan Methods, Colonial Practices,* Permanent Black, New Delhi, 2004
- S. Irfan Habib,Dhruv Raina and Zaheer Baber, eds., *Social History of Science in Colonial India,* Oxford University Press, New Delhi, 2007
- Satpal Sanwan, Science, *Technology and Colonisation: An Indian Experience, 1757-1857*, Anamika Prakashan, New Delhi, 1991

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

- J. B. Lourdusamy, *Science and National Consciousness in Bengal: 1870-1930*, Orient Longman, New Delhi, 2004
- Deepak Kumar, *Science and Empire: Essays in Indian Context, 1700-1947*, Anamika Prakashan, New Delhi, 1991
- Chittabrata Palit, *Scienceand Nationalsim in Bengal, 1876-1947*, Institute of Historical Studies, Kolkata, 2004

OR

SEC - 2: Understanding Popular Culture **Credits 02**

I : Introduction: Defining popular culture and understanding it historically

II: Visual expressions Folk art, calendar art, photography

III: Performance: Theatre; music; folk tales/songs/swang and Nautanki: Identifying themes, functionality, anxieties

IV: The audio-visual: cinema and television:
Indian cinema: Mapping the influence of the national struggle for independence (1930s and 40s); Idealized nationalism (1950s), disillusionment and the anti-establishment mood (1970s and 80s); documentary films Expressions of popular culture in television

V: Fairs, Festivals and Rituals:
Disentangling mythological stories, patronage, regional variations

VI: Popular culture in a globalized world:
The impact of the Internet and audio-visual media

Suggested Readings:

- Dissanayake, W. and K. M. Gokul Singh, Indian Popular Cinema, Trentham Book, London, 2004
- John Storey, Cultural Theory and Popular Culture, London, 2001
- Oberoi, Patricia, Freedom and Destiny: Gender, Family and Popular Culture in India, Delhi, 2009
- Christopher Princy, Camera Indica: The Social Life of Indian Photographs, Chicago, 1998
- Pankaj Rag, Dhuno ke Yatri, Rajkamal, New Delhi, 2006 (Hindi)
- Ramanujan, A.K. Folktales from India A Selection of Oral Tales from Twenty-two Languages (Only Introduction

OR

SEC- 2 : Understanding Heritage

I. Defining Heritage
Meaning of ‘antiquity’, ‘archaeological site’, ‘tangible heritage’, 'intangible heritage' and ‘art treasure’

II. Evolution of Heritage Legislation and the Institutional

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Framework:
Conventions and Acts— national and international_Heritage-related government departments, museums, regulatory bodies etc. Conservation Initiatives

III. Challenges facing Tangible and Intangible Heritage
Development, antiquity smuggling, conflict (to be examined through specific case studies)

IV. Evolution of Heritage Legislation and the Institutional Framework:
Conventions and Acts — national and international Heritage - related government departments, museums, regulatory bodies etc. Conservation Initiatives

V. Challenges facing Tangible and Intangible Heritage:
Development, antiquity smuggling, conflict (to be examined through specific case studies)

VI. Heritage and Travel:
Viewing Heritage Sites_The relationship between cultural heritage, landscape and travel recent trends

Suggested Readings:

- David Lowenthal, Possessed By The Past: The Heritage Crusade and The Spoils of History, Cambridge, 2010
- Layton, R. P. Stone and J. Thomas. Destruction and Conservation of Cultural Property. London: Rutledge, 2001
- Lahiri, N. Marshaling the Past - Ancient India and its Modern Histories.Ranikhet: Permanent Black. 2012, Chapters 4 and 5.
- S.S. Biswas, Protecting the Cultural Heritage (National Legislations and International Conventions). New Delhi: INTACH, 1999.
- Acts, Charters and Conventions are available on the UNESCO and ASI websites (www.unesco.org; www.asi.nic.in)
- Agrawal, O.P., Essentials of Conservation and Museology, Delhi,2006
- Chainani, S. 2007. Heritage and Environment. Mumbai: Urban Design Research Institute, 2007

Generic Electives (GE)

[Interdisciplinary for other Department]

GE-1: Theories of the Modern State **Credits 06**

GE1T: Theories of the Modern State

1. The State Definitions and Elementary Concepts – Sovereignty and autonomy – state and the community – the nation state
2. The Absolutist State: Bodin, Hobbes and Hegel: the state, class and civil society

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

3. The Liberal State – the state, individualism and citizenship – the constitutional and the contractual state: John Locke – liberalism and the democratic order: Rousseau and the General Will
4. The Liberal State – the utilitarian version: Bentham and John Stuart Mill – John Mill and democracy: the tyranny of the majority
5. The state and class Marxist perspective – the problem of Bonapartism – Max Weber and the bureaucratic order
6. The ideological basis of the Welfare State and its comparison with Communism – John Rawls and the theory of justice

Suggested Readings:

- Perry Anderson, *Lineages of the Absolutist State*
- H. Dickinson, *Liberty and Property*
- C. B. Macpherson, *The Political Theory of Possessive Individualism*
- C. B. Macpherson, *The Life and Times of Liberal Democracy*
- C. B. Macpherson, *Democratic Theory*
- Ralph Miliband, *The State in Capitalist Society*
- Harold Laski, *A Short History of Liberalism*
- Shirley Robin Letwin, *The Pursuit of Certainty: David Hume, Jeremy Bentham, John Stuart Mill and Beatrice Webb*
- James Steintrager, *Bentham*
- R. J. Halliday, *John Stuart Mill*
- Raymond Plant, *Hegel*
- Amy Gutmann, *Liberal Equality*

GE- 2: Science and Empire **Credits 06**

GE 2T: Science and Empire

1. History and Development of Science under the Colonial Empire-Perspectives and Recent Historical Debates/ Discourse/ Trajectories.

2. Science and Colonial Empire: Concepts and Contours-Different Colonial Experiments in India-Fundamental Research in Science in India.

3. Colonial Science: Indian and Western Interaction-Role of Institutions in Promoting Scientific Knowledge (Botanical Garden, Medical Colleges, Calcutta School of Tropical Medicine, Bose Institute, Indian Institute of Science etc.)

4. Science and Empire-Indian Responses and Resistance-Ideas of Mahatma Gandhi and Jawaharlal Nehru.

5. Scientific Activities under the Empire-Social, Political and Cultural Implication and Historical Debates.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Suggested Reading:

- Deepak Kumar, *Science and the Raj: A Study of British India*, Oxford University Press, New Delhi, 2006
- David Arnold, *Science, Technology and Medicine in Colonial India*, Cambridge University Press, Cambridge, 2000
- Deepak Kumar, *Science and Empire: Essays in Indian Context, 1700-1947*, Anamika Prakashan, New Delhi, 1991
- Chittabrata Palit, *Science and Nationalsim in Bengal, 1876-1947*, Institute of Historical Studies, Kolkata, 2004
- Uma Das Gupta ed., *Science and Modern India: An Institutional History, c. 1784-1947*, Pearson-Longman, New Delhi, 2011
- Sumit Sarkar, *Modern Times: Environment, Economy and Culture*, Permanent Black, New Delhi, 2014
- Douglas M. Peers and Nandini Gooptu, *India and the British Empire*, Oxford University Press, New Delhi, 2012
- Michael Mann, *South Asia's Modern History: Thematic Perspectives,* Routledge, London/New Delhi, 2014

GE 3 : Some Perspectives on Women's Rights in India **Credits 06**

GE 3T : Some Perspectives on Women's Rights in India

I. Definition of Human Rights

Human Rights and Women, a survey of the Charter
Interrogating Human Rights vis-à-vis personal laws in India
UN Convention and Indian Context

II. Indian Constitution and Women's Rights

Fundamental Rights and Women
Directive Principles and Women
Major legal cases defending women's rights vis-à-vis the Constitution

III. Preventive Acts

Minimum Wage Act 1948, Family Courts Act 1986, PNDT Act 1994, Latest Measures

IV. Issues of Violence against Women and Remedial Measures

Domestic Violence Act, Prevention of Sexual Harassment at Workplace
Practical application and Problems, Remedial Measures

V. Role of Non-Government Institutions

Non-Government Organizations and Human Rights
Women and Non-Government Organizations – Participations

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

VI. Present Status
Issues of enabling and empowering modalities – Debate on uniform civil code

Suggested Readings:

- Urvashi Butalia & Tanika Sarkar, (ed.), Women & Hindu Rights, New Delhi, Kali for Women, 1996
- Zoya Hasan (ed.), Forging Identities, Communities & Patriarchies, EPW, December 1995
- Bina Agarwal, Field of Her Own, New Delhi, Kali for Women,

GE - 4 : Gender & Education in India **Credits 06**

GE4T : Gender & Education in India

I. Historiographical Trends

a. Pre-colonial historiographical trends in women's education
b. colonial historiographical trends in women's education
c. Post-colonial historiographical trends in women's education

II. Education in Early and Medieval Times

a. Women's Education in Medieval times
b. Regional trends of Women's education in pre-colonial India
c. Instances of women's education, obstacles

III. Colonial Period

a. Socio-religious reforms
b. Role of Christian missionaries in spreading female education, recent debates
c. Indigenous initiatives at women's education

IV. Role of Schools and Colleges in colonial and post-colonial period

a. Girls School and Colleges, development towards co-education
b. Expansion of infrastructural facilities in education
c. Technical and vocational education for women

V. Contours of female literacy since 1950

a. Interrogating literacy for women
b. Government policies and Schemes
c. Disparities in Literacy: Region, Community, Social and Eco-factors

VI. Present Scenario
a. Education as a tool of Empowerment

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

Suggested Readings:

- Aparna Basu, Growth of Education and Political Development in India, 1898 – 1920
- Usha Sharma, Women Education in Modern India
- Ramnath Sharma & Rajender Sharma, History of Education in India, Atlantic Publishers, 1996
- Aparna Basu & Bharati Ray (ed.), Women's Struggle. A History of the All India Women's Conference 2002

OR

GE-4 : History of Indian Journalism **Credits 06**

GE4T: History of Indian Journalism

I. History of Indian Journalism: Colonial & Post Colonial Period.
II. Pre-colonial History of written records & modalities of Dissemination
III. Advent of Print media: Imperialist Ideologies
IV. Nationalism & Print Culture: Selective study of prominent newspapers: Tribune, Amrita Bazar Patrika, and Hindustan Times
V. Writing & Reporting Experiences

Suggested Readings:

- Natrajan.J, History of Indian Journalism, Vol. –ii of Press Commission Report, New Delhi, 1954
- Natrajan. J, A history of the Press in India, Asian Publishing House, Bombay, 1962
- Ghosh,Hamendra Prasad, Newspapers in India, University of Calcutta,1952
- Ananda. Prakash, A History of the Tribune, A Centenary Publication by the Tribune Trust, 1986

END

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:08:18; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/History_Hons_Revised.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (General)
in
HISTORY

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

VIDYASAGAR UNIVERSITY

BA (General) in History

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I			**SEMESTER-I**			**CA**	**ESE**	**TOTAL**
		Core-1 (DSC-1A)		**Ancient India**	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-1 (Core)		English-I	6	5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
				SEMESTER-II					
	II	Core-3 (DSC-1B)		**Medieval India**	6	5-1-0	15	60	75
		Core-4 (DSC-2B)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-2 (Core)		MIL-I	6	5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-5 (DSC-1C)		**Selected themes in the Colonial impact on Indian Economy and Society**	6	5-1-0	15	60	75
		Core-6 (DSC-2C)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-3 (Core)		English-II	6	5-1-0	15	60	75
		SEC-1		SEC- 1 : The Making of Indian Foreign Policy Or SEC-1 : Archaeology and Museum Making in Colonial India	2	1-1-0	10	40	50
				Semester - 3 : Total	**20**				**275**
		SEMESTER-IV							
	IV	Core-7 (DSC-1D)		**Modern nationalism in India**	6	5-1-0	15	60	75
		Core-8 (DSC-2D)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-4 (Core)		MIL-II	6	5-1-0	15	60	75
		SEC-2		SEC- 2 : Literature and History: Bengal Or SEC- 2 :Understanding Heritage	2	1-1-0	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Any one from Discipline -1(History) (**DSE-1A**:Renaissance and Reformation **Or** Europe in the Ancient Regime **Or** Environmental issues in India)	6	5-1-0	15	60	75
		DSE-2A		Other Discipline(Discipline -2) / TBD	6		15	60	75
		GE-1		TBD	6		15	60	75
		SEC-3		SEC- 3 : Colonial Science in India: Institutions and Practices	2	1-1-0	10	40	50
				Semester - 5 : Total	**20**				**275**
				SEMESTER-VI					
	VI	DSE-1B		Any one from Discipline -1(History) (**DSE-1B:** Modern Europe **Or** Post World War-II Politics **Or** Research Methodology in History)	6	5-1-0	15	60	75
		DSE-2B		Other Discipline (Discipline -2) / TBD	6		15	60	75
		GE-2		TBD	6		15	60	75
		SEC-4		SEC- 4: Art Appreciation An introduction to Indian art Or SEC - 4: Understanding Popular Culture	2	1-1-0	10	40	50
				Semester - 6 : Total	**20**				**275**
				Total in all semester:	**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

List of Core Course

DSC-1A (CC-1): Ancient India
DSC-1B(CC-2): Medieval India
DSC-1C (CC-3): Select themes in the Colonial impact on Indian Economy and Society
DSC-1D (CC-4): Modern Nationalism in India

Discipline Specific Electives (DSE)

DSE-1A: Renaissance and Reformation
Or
DSE-1A: Europe in the Ancient Regime
Or
DSE-1A: Environmental issues in India
DSE-1B: Modern Europe
Or
DSE-1B: Post World War-II Politics
Or
DSE-1B: Research Methodology in History

Skill Enhancement Course(SEC)

SEC- 1 : The Making of Indian Foreign Policy
Or
SEC- 1 : Archaeology and Museum Making in Colonial India.
SEC- 2 : Literature and History: Bengal
Or
SEC- 2 : Understanding Heritage
SEC- 3 : Colonial Science in India: Institutions and Practices
SEC- 4: Art Appreciation An introduction to Indian art
Or
SEC - 4: Understanding Popular Culture

Generic Elective(GE)
[Interdisciplinary for other department]

GE- 1: Life and thoughts of Rabindranath Tagore
Or
GE- 1: Theories of the Modern State
Or
GE- 1: Science and Empire
Or
GE- 1: History of Indian Journalism
GE- 2: Gender & Education in India
Or
GE- 2: Visual and Performative Culture in Modern Bengal
Or
GE- 2 : Some Perspectives on Women's Rights in India

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Core Courses (CC)

DSC-1A: (CC-1): Ancient India **Credits 06**

DSC1AT: Ancient India

Course Contents:

1. Harappan Civilisation: Features & Town Planning, Decline
2. Vedic Age: Corpus of Vedic Literature, Society, Economy and Polity in Early & Later Vedic Period
3. State Formation in Early India: Mahajanapadas
4. Mauryan Empire: Chandragupta Maurya to Asoka: Polity, Administration, Society, Culture and Mauryan decline
5. Gupta Empire: Chandragupta I to Skandagupta: Polity, Administration, Society, Culture and Downfall
6. India after the Guptas

Suggested Readings:

1. Allchin, Bridget and Raymond, *The Rise of Civilization in India and Pakistan*.
2. Basham, A.L., *The Wonder that was India.*
3. Bhattacharjee, Sukumari, *Women and Society in Ancient India.*
4. Chakrabarty, Ranabir, *Exploring Early India upto A.D. 1300.*
5. *Habib, Irfan (General Editor), A Peoples.*
   (a) Vol. I –Pre History.
   (b) Vol. II –The Indus Civilization.
   (c) Vol. III – The Vedic Age.
   (d) Vol. IV –The Mauryas.
6. Jha, D.N., *Ancient India in Historical Outline*
7. Jha, D.N., *AncientIndia : An Introduction.*
8. Kochar,R., *The Vedic People.*
9. Kosambi, D.D., *An Introduction to the Study of Indian History.*
10. Kulke, H., *The State in India (1000-1700).*
11. Lahiri, Naianjyot, *The Decline and Fall of the Indus Civilization.*
12. Ratnagar, Shireen, *The End of the Great Harappan Tradition*.
13. Sastri, K.A., *A History of South India from Pre-historic Times to the fall of Vijaynagar*,
14. Sharma, R.S., *India's AncientPast.*
15. Singh, Upinder, *A History of Ancient and Early Medieval India*.
16. Thapar, Romila, *From Lineage to State.*
17. Thapar, Romila, *Early India: From the Origins to A.D. 1300.*
18. Thapar, Romila, *TheMauryas Revisited.*
19. Romila, Thapar, *Asoka and the Decline of the Mauryas.*
20. RanabirChakraborty, Bharat ItihaserAdiparba

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

DSC-1B (CC- 2) : Medieval India **Credits 06**

DSC1BT: Medieval India

Course Contents:

1. Arab Conquest of Sindh: Nature and Impact
2. Causes and Consequences of Early Turkish invasion
3. MahmudofGhazni and Shihab-ud-din of Ghur
4. Establishment and consolidation of the Sultanate: Qutb-ud-din AibaktoFiruz Shah Tughluqs, polity, economy, culture
5. Emergence of regional powers: Vijaynagar and Bahamani Kingdoms, HussainShahi and IlliyasShahi Dynasties.
6. Mughal Imperialism: Establishment and consolidation - Greater Mughals; Polity, economy, culture
7. Socio-cultural syncretism, Bhakti & Sufi movements.

Suggested Readings:

1. Ahmed, Bashir, *Akbar, The Mughal Emperor.*
2. Chandra, S., *History of Medieval India.*
3. Habib, Irfan, *Medieval India: The Study of a Civilization.*
4. Habib, Irfan, *Economic History of Medieval India: A Survey.*
5. Habib, Irfan, *The Agrarian System of Mughal India.*
6. Habibullah, A.B.M., *The Foundation Of Muslim Rule in India.*
7. Hasan A. Mahdi, *The Tughlaq Dynasty.*
8. Hasan, S. Nurul, *Thoughts on Agrarian Relations in Mughal India.*
9. Jackson, Peter, *The Delhi Sultanate: A Political and Military History.*
10. Kulke , H. (ed.), *The State in India(1000-1700).*
11. Kumar, Sunil, *The Emergence of the Sultanate of Delhi.*
16. Raychaudhuri, T.K and Habib, I. (ed.), The *Cambridge Economic History of India.*
17. Stein, Burton, *Vijayanagara.*
18. Alam, Muzaffar and Subhramanyan, Sanjoy (eds.), *The Mughal State.*
19. Ali, M. Athar, *Mughal India, Studies in Polity, Ideas, Society and Culture.*
20. Ali,M. Athar, *The Mughal Nobility under Aurangazeb.*
21. Chandra, Satish, *A History of Medieval India.*
22. Richards, J.F., *The Mughal Empire*.
23. Tripathi, R.P., *The Rise and fall of Mughal India.*
24. Tripathi, R.P., *Some Aspects of Muslim Administration.*

DSC-1C (CC- 3): Select themes in the Colonial impact on Indian Economy and Society
Credits 06

DSC1CT: Select themes in the Colonial impact on Indian Economy and Society

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Course Contents:

1. Colonial State institutions and ideologies: Colonial Economic interests, Company's Commerce, Mercantilism to Free trade, Deindustrialisation and Drain of Wealth.
2. Land Settlements and agricultural change— Commercialization of Agriculture.
3. Modern Industrialisation — Long term Constraints
4. Census and Caste — Colonial ethnology — Sanskritisation, Westernisation and Social Reform - Young Bengal, Brahma Samaj&PrarthanaSamaj
5. Reformism and Revivalism: The Aryadharma and Ramkrishna Vivekananda Movement.
6. Islamic reform in India : The Reformers and the Orthodox.

Suggested Readings:

1. Tirthankar Roy, *Economic History of India, 1857-19147*
2. K. N. Raj, *Essays on the Commercialization of Indian Agriculture*
3. SekarBandyopadhyay, *Caste, Culture and Hegemony: Social Dominance in Colonial Bengal*
4. Thomas R. Trautmann, *Aryans and British India*
5. Mushirul Hasan, *Writing India: Colonial Ethnography in the Nineteenth Century*
6. G. S. Ghurye, *Caste and Race in India*
7. Dipankar Gupta, *Caste in Question: Identity or Hierarchy*
8. Nicholas B. Dirks, *Caste of Mind: Colonialism and the Making of Modern India*
9. Shriram Maheswari, *The Census Administration under the Raj and After*
10. C. A. Bayly, *Indian Society and the Making of the British Empire*
11. Douglas M. Peers, *India under Colonial Rule, 1700-1885*
12. B. R. Tomlinson, *The Economy of Modern India, 1860-1970*
13. GurilymBeckerlegge, *The Ramakrishna Mission: The Making of Modern Hindu Movement*
14. Jayasree Mukherjee, *The Ramakrishna-Vivekananda Movement: Impact on Indian Society and Politics, 1893-1922*
15. Neilesh Bose, *Recasting the Region: Language, Culture and Islam in Colonial Bengal*
16. ShireenMaswood, AmitDey and RitwikaBiswas, *Between Tradition and Modernity: Aspects of Islam in South Asia*
17. Barbara D. Metcalf, *Islam in South Asia in Practice*
18. ----------, *Islamic Revival in British India: Deoband 1860-1900*
19. Kenneth W. Jones, *Socio-Religious Reform Movements in British India, Part 3, Vol. 1*
20. H.O. Pearson, *Islamic Reform and Revival in Nineteenth Century India.*

DSC-1D (CC- 4): Modern Nationalism in India **Credits 06**

DSC1DT: Modern Nationalism in India

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

1. Emergence of Nationalism in India and its historiography.
2. Economic Nationalism and Cultural Nationalism
3. Rise of the Indian National Congress
4. Anti-partition movement in 1905- Concept of Swadeshi and atmashakti
5. Gandh's Rise to power; Gandhian Mass Movements—Non-cooperation,Civil Disobedience , Quit India Movement.
6. Roots of Communalism and Communal Award
7. Demand for Pakistan : Pakistan Movement from Cripps Mission to Cabinet Mission Plan.
8. Partition and its Aftermath

Suggested Readings:

1. Bandyopadhyay, Sekhar, From Plassey to Partition.
2. Sarkar Sumit, *Modern India* .
3. Chandra Bipan , *India's Struggle for Independence/ India after Independence.*
4. Desai A.R., *Social Background of Indian Nationalism.*
5. Datta K.K., *Social History of Modern India*.
6. Mukherji H.N., *India's Struggle for Freedom.*
7. Chatterji Jaya, *Bengal Divided: Hindu Communalism and partition.*
8. Tripathy Amalesh, *SwadinataSangrameBharaterJatiyo Congress.*
9. Wolpert Stanly, *A new History of India.*
10. Chattopadhyay Pranab Kumar, *Adhunik Bharat.*
11. Chattopadhyay, Mrinal Kanti, *Jyatiyotabadi Jinnah :Chintar Kromobibartan.*
12. Mallik Samar, *Adhunik Bharater Rupantar : Raj Theke Swaraj*.
13. Pahadi, Gopalkrishna, *Adhunik Bharat Charcha*.

Discipline Specific Electives (DSE)

DSE-1A: Renaissance and Reformation **Credits 06**

DSE1AT: Renaissance and Reformation

Course Contents:

1) Political and social background – political system in early modern Europe – collapse of feudalism – and the changing economic life in the 15th and 16th century – commerce and navigation – monarchies and city states –features of the early modern state –the printing revolution.
2) Italian city states, the merchants, the church and the social context of the renaissance – origins of humanism – rediscovery of the classes –the impact of humanism on art, education and political thought –Machiavelli and the idea of a modern state.
3) The background to the reformation –intellectual and popular anti-clericalism – Martin Luther and the reformation –reformation in the national context: France, Switzerland and

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

England – the distinctiveness of the English reformation –Radical reformation – the Anabaptists, etc. - counter reformation.

4) Renaissance science and the emergence of a secular culture

Suggested Readings:

1. William Roscoe Estep, *Renaissance and Reformation*
2. Bard Thompson, *Humanists and Reformers: A History of the Renaissance and Reformation*
3. Jo Eldridge Carmey, *Renaissance and Reformation, 1500-1620: A Biographical Dictionary*
4. David L. Morse and William M. Thompson eds., *History of Political Ideas,* Vol V *(Renaissance and Reformation)*
5. James A. Patrick ed. ,*Renaissance and Reformation,* Vol. 1
6. Steven E. Ozment, *Religion and Culture in the Renaissance and Reformation*
7. Jonathan W. Zophy, *A Short History of Renaissance and Reformation Europe*
8. Dorothy Mills, *Renaissance and Reformation Times*
9. Tom Monaghan, *Renaissance, Reformation and the Age of Discovery, 1450-1700*
10. William Gilbert, *The Renaissance and the Reformation*
11. Charles G. Nauert, *Humanism and the Culture of Renaissance Europe*
12. Norman F. Cantor and Michael S. Werthman, *Reniassance, Reformation and Absolutism: 1450-1650*
13. Lisa Mullins, *Science in the Renaissance*
14. Marie Boas Hall, *The Scientific Renaissance 1450-1630*
15. Vickey Herold, *Science during the Renaissance*
16. Aldo Altamore and Giobvanni Antonini, *Galileo and the Renaissance Scientific Discourse*
17. Stephen Pumfrey, Paolo L. Rossi, *Science, Culture and Popular Belief in Renaissance Europe*

OR

DSE-1A: Europe in the Ancient Regime **Credits 06**

DSE1AT: Europe in the Ancient Regime

Course Contents :

1) Political system in 18th century Europe: The empires, monarchies and republics – the holy Roman empire and the Russian empire – constitutional monarchy in Britain – the monarchical order in Spain, Prussia, Scandinavian countries, Poland and France – the republican order in the United provinces, Switzerland and Venice.
2) The Overseas empires and the Trading Companies – Spanish, French, Dutch and English overseas settlements.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

3) Enlightened Despotism – Russia under Catherine – Austria and Hungary under Joseph II – Prussia under Frederick the Great.
4) Society and the Economy – Agriculture and Commerce – Aristocracy and the Bourgeoisie – the towns and the cities – the artisans and peasants – free peasants and serfs.
5) European Enlightenment – Scientific revolution and seventeenth century origins – England and Holland – the nature of God controversy – the French enlightenment – the enlightenment public sphere – the enlightenment critique of old regime – the idea of progress.

Suggested Readings:

1. M. S. Anderson, *Europe in the Eighteenth Century*
2. A. Cobban, *History of Modern France*, Vol. I
3. William Doyle, *The Old European Order: 1660 – 1800*
4. Carlo Cipolla, *Before the Industrial Revolution: European Society and Economy, 1000–1700*
5. Carlo Cipolla, *Fontana Economic History of Europe: The emergence of industrial Societies*
6. J. H. Plumb, *England in the Eighteenth Century*
7. Nicholas Henshall, *The Myth of Absolutism: Change & Continuity in Early Modern European Monarchy*
8. Peter Gay, *The Enlightenment: An Interpretation*
9. Paul Hazard, *European Thought in the Eighteenth Century*
10. David Ogg, Europe of the Ancient Regime (Fontana History of Europe)

OR

DSE-1A: Environmental issues in India **Credits 06**

DSE1AT: Environmental issues in India

Course Contents:

1. The importance of Environment.

2. Geography, Ecology and Cultures in Pre-Colonial India -
Land, Forests, Dams, Water, Pastures, Ecology of Hills and Mountains

3. Colonialism and developments in the Environment –
New Regimes of land, Forests, Water and Irrigation
Resistance: Peasants, Tribals and Pastoralists.

4. Environmental Issues in Independent India
Forests, Dams, Displacement, Pollution, Degradation.

5. Environmental Movements in Independent India

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Forests, Dams, Displacement, Pollution.

6. Enviornmental concerns in a Globalizing World.

Suggested Readings:

1. Mahesh Rangarajan, et al, Environmental Issues in India
2. Anil Agarwal, et al, The State of India's Environment, The Second Citizens' Report, Delhi, 1985
3. Madhav Gadgil & Ramchandran Guha, This Fissured Land, An Ecological History of India, Delhi, OUP,1990
4. -------Ecology and Equity, the use &abuse of nature in contemporary India, 1995
5. David Arnold & Ramchandran Guha(eds,) Nature, Culture, Imperiaism, Delhi, OUP, 1995
6. Salim Ali, The Fall of a Sparrow, 1985

DSE-1B: Modern Europe **Credits 06**

DSE1BT: Modern Europe

Course Contents:

1. French Revolution and Napoleon: Crisis of Ancient Regime: Socio-Political and Economic Condition, Intellectual Impetus: The Revolution in the making, Phases of the French Revolution: the Aristocratic Revolution, The rise of Napoleon Bonaparte: Napoleonic Empire and Europe, Fall of Napoleon: Continental System, Impact of Napoleon in Europe

2. Restoration and reaction in Europe: Vienna Congress, Metternich Era.

3. Movements of National Aspirations: Unification of Italy, Unification of Germany, The Third Republic and the Paris Commune, The Eastern Question.

4. Causes of the two World Wars

Suggested Readings:

1. Fisher H.A.L., History *of Europe.*
2. Thomson David, *Europe since Napoleon.*
3. Lipson E., *Europe in the 19thand 20thCenturies.*
4. Hazen C D., *Europe since 1815.*
5. Ketelby, *History of Modern Times*.
6. Cipolla (ed.), *Fontana Economic History of Europe*.
7. Taylor A.J.P., Origins *of the Second World War.*
8. Taylor AJP, *The struggle for Mastery in Europe.*
9. Carr E.H., *International Relations between the Two World Wars.*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

10. Hobsbawm E.J., *Age of Revolution/ Age of Empire.*
11. Roberts J.M., *Europe 1880-1945.*
12. Lefebvre G., *Coming of the French Revolution.*

OR

DSE-1B: Post World War - II Politics **Credits 06**

DSE1BT: Post World War - II Politics

Course Contents:

1. A New World Order and the Origin of the Cold War
2. Cold War - Its Ideology and emergence of American and Soviet Block
3. Economic and military alliance: NATO, SEATO, COMECON, Warsaw
4 Crisis in Hungary, Polish question, Suez crisis, Palestine problem, Iran-Iraq conflict, Gulf War of 1990 - 91, Arab - Israel War
5. Third World and Its ideology, organizations: OPEC, SAARC, ASEAN
6. Détente
7 Collapse of Soviet Bloc: Process of disintegration

Suggested Readings:

1. Taylor, A.J.P., Origins of the Second world War
2. Carr, E.H
   a)International Relations between the two World Wars
   b) The twenty years crisis 1919-39: An Introduction to the Study of the International relations
3. Calvocoressi. P. , World since 1945
4. Kaushik, K., History of Communist Russia 1917-1991 , New Delhi, Macmillan 2006
5. Williams, W.C., H. Piotrowski, The World since 1945—A History of the International Relations

OR

DSE-1B: Research Methodology in History

Credits 06

I Time, space, human agency

[a] Sources as authority and sources in context: written, oral, visual, and archaeological
[b] Facts and historical facts; interpretation and meaning
[c] Hypothesis, argumentation, problematique
[d] Objectivity, causality, generalization, historical imagination
[e] Narrative and history

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

II History as interdisciplinary practice:

[a] History and Archaeology
[b] History and Anthropology
[c] Quantitative Methods in History
[d] History and Psychology
[e] History and Literature

III Historians at work:

Representative writings of any two major historians are to be critically evaluated on the parameters of the research methodology with an emphasis on the use of the sources, methodology, arguments and conclusion.

Suggested Readings:

1. E. H. Carr, What is History, Penguin, 2008
2. Marc Bloch, The Historian's Craft (Introduction and Chapter I: History,
3. Men and Time), Manchester University Press, 1992.
4. E. Sreedharan, A Text-book of Historiography 500 BC to AD 2000, Orient Longman, 2004
5. Arthur Marwick, New Nature of History: Knowledge, Evidence, Language (Chapter V: The Historian at work: Forget 'facts', Foreground Sources), Lyceum Books Incorporated, 2001.
6. Habib, Irfan. Interpreting Indian History. North Eastern Hill University Publications, Shillong, 1988
7. Arthur Marwick, The Nature of History (Chapter IV: History, Science and Social Science), London: Macmillan, 1989

Skill Enhancement Course (SEC)

SEC- 1 : The Making of Indian Foreign Policy **Credits 02**

Course Contents:

1. Historical Factors in India's foreign policy priorities –pan Asianism
2. The State India and the Third World –Non-alignment –Regional Cooperation
3. India and South Asia: Relationship with the Neighbours
4. India and the Great Powers –(a) United States (b) Soviet Union (c) China
5. India and Globalisation–Economic Diplomacy –The Look East Policy and the European Union
6. India's Nuclear Policy

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Suggested Readings:

1. A. Appadorai, *Domestic Roots of India's Foreign Policy 1947-1972*
2. U. S. Bajpai (ed.), *Indian Foreign Policy: The Indira Gandhi Years*
3. JayantanujaBandyopadhyay, *The Making of Indian Foreign Policy*
4. Verinder Grover (ed.), *International Relations and Foreign Policy of India*
5. Linda Racioppi, *Soviet Policy Towards South Asia since 1970*

OR

SEC- 1: Archaeology and Museum Making in Colonial India. Credits 02

Course Contents:

1. The development of archaeological knowledge – early archaeological explorations: Establishment of the Archaeological Survey of India: the archaeological mapping by Alexander Cunningham – Curzon and the new impetus for archaeological conservation: Sir John Marshall and the development of Indian archaeology in the early twentieth century
2. Archaeology as the new foundation for an authentic history of India –Archaeological explorations, excavations and conservation and the creation of heritage sites - A few major sites of archaeological excavations: Public archaeology and popularization of archaeological sites –Archaeology in travel writings –Competing cultural visions around a few major heritage sites.
3. Archaeology and culture – Local historians and archaeological knowledge –the culture of collection and valorization of artifacts- Collecting and museum making - the profiles of a few prominent collectors and museum makers
4. Archaeology and the Museum Movement in India- the Indian Museum- the Provincial museums and the local museums- Background to the formation of the National Museum

Suggested Readings:

1. Basham, A. L. (ed.) *A Cultural History of India* (Delhi, 1975).
2. Chakrabarty, Dilip, *A History of Indian Archaeology from the Beginning to 1947* (Delhi, 1988).
3. GuhaThakurta, Tapati, *Monuments, Objects, Histories: Institutions of Art in Colonial and Post-Colonial India* (Delhi, 2004).
4. GuhaThakurta, Tapati, 'The Endangered Yakshi: Careers of an Ancient Art Object in Modern India' in ParthaChatterjee and AnjanGhosh, eds, *History and the Present*, New Delhi, 2002.
5. Kejariwal, O. P., *The Asiatic Society of Bengal and the Discovery of India's Past*, 1784-1813, Delhi, 1988
6. Lahiri, Nayanjot, *Marshalling The Past: Ancient India and its Modern Histories*, Permanent Black, 2012

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

7. Roychowdhruy, Madhuparna, Displaying India's Heritage: Archaeology and Museum Movement in Colonial India, Orient Blackswan Publications, Delhi, 2015
8. Singh, Upinder, *The Discovery of Ancient India: Early Archaeologists and the Beginnings of Archaeology*, Delhi, 2004 .

SEC- 2: Literature and History: Bengal **Credits 02**

Course Contents:

1. History and Literature: An Overview
2. Dichotomy between Itihasa and History- sense of itihasain pre-colonial period as part of literature. Concept of 'mythic time'and 'historical time'.Beginning of history-writing in Bengal.Elements of literature in it.
3. Novel as a new literary genre –looking at past through literature. Ramesh Chandra Majumdar, Akshay Kumar Maitreya, Raman Pillai, ChanduMenon, Phakirmohan Senapati.
4. Power and Patriotism: Bankim'sNationalism:BandeMataram, Anandamath
Tagore's Nationalism and Universalism: His Novels: GhareBaire and Char Adhyay
5. Sarat Chandra Chattopadhyay and the Indian Women of Early 20th Century: Some reflections in the novels- Charitrahin and Pother Dabi; Difference of Perspective between Bankim and Tagore .
6. Narratives of Suffering - Economic and Caste discrimination: Tarashankar and the Social milieu in the pre Independent Bengal with special reference to Ganadevata and Hansuli Banker Uakatha
7. Satinath Bhaduri & the Gandhian Movement: Dhorai Charit Manas.

Suggested Readings:

1. Ashin Dasgupta, Itihas O Sahitya
2. Arabinda Samanta, MeenakshiMukhopadhyay, Upanyase AtitItihas O Kalpaitihas
3. Priyadarsee Chakraborty ed., History in Literature - Literature As History,The Issue Revisited
4. Rabindra Rochonabali
5. Romila Thapar, Time as a Metaphor of History: Early India
6. Sisir Kumar Das, History of Indian Literature: 1911-1956, struggle for freedom : triumph and tragedy
7. Satinath Bhadurir Nirbachita Rochonaboli
8. Sarat Sahitya Samagra, Vol 1&2
9. Tarasankar Bandyopadhyay, Hansuli Banker Upakotha,
10. Tarasankar Bandyopadhyay,Ganadevata.

OR

SEC- 2 : Understanding Heritage

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Course Contents:

I. Defining Heritage
Meaning of ‘antiquity’, ‘archaeological site’, ‘tangible heritage’, 'intangible heritage' and ‘art treasure’

II. Evolution of Heritage Legislation and the Institutional Framework:
Conventions and Acts - National and International Heritage related government departments, museums, regulatory bodies etc. Conservation Initiatives

III. Challenges facing Tangible and Intangible Heritage
Development, antiquity smuggling, conflict (to be examined through specific case studies)

V. Challenges facing Tangible and Intangible Heritage:
Development, antiquity smuggling, conflict (to be examined through specific case studies)

VI. Heritage and Travel:
Viewing Heritage Sites - The relationship between cultural heritage, landscape and travel recent trends

Suggested Readings:

1. David Lowenthal, Possessed By The Past: The Heritage Crusade and The Spoils of History, Cambridge, 2010
2. Layton, R. P. Stone and J. Thomas. Destruction and Conservation of Cultural Property. London: Rutledge, 2001
3. Lahiri, N. Marshaling the Past - Ancient India and its Modern Histories. Ranikhet: Permanent Black. 2012, Chapters 4 and 5.
4. S.S. Biswas, Protecting the Cultural Heritage (National Legislations and International Conventions). New Delhi: INTACH, 1999.
5. Acts, Charters and Conventions are available on the UNESCO and ASI websites (www.unesco.org; www.asi.nic.in)
6. Agrawal, O.P., Essentials of Conservation and Museology, Delhi,2006
7. Chainani, S. 2007. Heritage and Environment. Mumbai: Urban Design Research Institute, 2007

SEC- 3 : Colonial Science in India: Institutions and Practices **Credits 02**

Course Contents:

1: Science in Colonial India: Problems and Perspectives
2: Science and Colonial Explorations: Science and Orientalism-Early European Scientists: Surveyors, Botanists, Doctors under the East India Company Service

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

3: Science in Practice: Botanical Garden, Geological Survey of India, Medical College, and Indian Association for the Cultivation of Science.
4: Science and Indigenous Personality: Prafulla Chandra Ray, Jagadish Bose, MahendraLal Sarkar, Maghnad Saha, C.V. Raman- Emergence of National Science
5: Colonial Science in India: Science and Indian Nationalism-Response and Resistance-Ideas of Mahatma Gandhi and other Indian Nationalists.

Suggested Reading :

1. Deepak Kumar, *Science and the Raj: A Study of British India*, Oxford University Press, New Delhi, 2006
2. David Arnold, *Science, Technology and Medicine in Colonial India*, Cambridge University Press, Cambridge, 2000
3. Uma Das Gupta ed., *Science and Modern India: An Institutional History, c. 1784-1947*, Pearson-Longman, New Delhi, 2011
4. Arun Bandyopadhyay, *Science and Society in India, 1750-2000*, Manohar, New Delhi, 2006
5. Pratik chakrabarti, *Western Science in Modern India; Metropolitan Methods, Colonial Practices*, Permanent Black, New Delhi, 2004
6. S. Irfan Habib,Dhruv Raina and Zaheer Baber, eds., *Social History of Science in Colonial India*, Oxford University Press, New Delhi, 2007
7. Satpal Sanwan, *Science, Technology and Colonisation: An Indian Experience, 1757-1857*, AnamikaPrakashan, New Delhi, 1991
8. J. B. Lourdusamy, *Science and National Consciousness in Bengal: 1870-1930*, Orient Longman, New Delhi, 2004
9. Deepak Kumar, *Science and Empire: Essays in Indian Context, 1700-1947*, Anamika Prakashan, New Delhi, 1991
10. Chittabrata Palit, *Science and Nationalsim in Bengal, 1876-1947*, Institute of Historical Studies, Kolkata, 2004

SEC- 4: Art appreciation an introduction to Indian art **Credits 02**

Course Contents:

I. Prehistoric and proto historic art: Rock art; Harappan arts and crafts

II. Indian art (c. 600 BCE – 600 CE):
World Heritage Site Managers, UNESCO World Heritage Manuals [can be downloaded/ accessed at www.unesco.org]. Notions of art and craft - Canons of Indian paintings - Major developments in stupa, cave, and temple art and architecture Early Indian sculpture: style and iconography - Numismatic art

III. Indian Art (c. 600 CE – 1200 CE) :

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Temple forms and their architectural features - Early illustrated manuscripts and mural painting traditions Early medieval sculpture: style and iconography - Indian bronzes or metal icons

IV. Indian art and architecture (c. 1200 CE – 1800 CE):

Sultanate and Mughal architecture - Miniature painting traditions: Mughal, Rajasthani, Pahari Introduction to fort, palace and Haveli architecture

V. Modern and Contemporary Indian art and Architecture:

The Colonial Period - Art movements: Bengal School of Art, Progressive Artists Group, etc. Major artists and their art works - Popular art forms (folk art traditions)

Suggested Readings:

1. Neumayer, Erwin, Lines of Stone: The pre-historic rock-art of India, South Asia Books, 1993
2. Goswamy, B.N., Essence of Indian Art, Asian Art Museum of San Francisco, 1986
3. Huntington, Susan, The Art of Ancient India: Hindu, Buddhist, Jain. Weather Hill, 1985
4. Guha-Thakurta, Tapati, The making of a new modern Indian art: Aesthetics and nationalism in Bengal, 1850-1920, Cambridge University Press, 1992
5. Mitter, Partha, Indian Art, Oxford History of Art series, Oxford
6. University Press, 2001 Dhar, Parul Pandya, ed., 2011, Indian Art History Changing Perspectives, New Delhi: D.K. Print world and National Museum Institute (Introduction).
7. Beach, M.C., The New Cambridge History of India I: 3, Mughal and Rajput Painting, Cambridge University Press, 1992.
8. Ray, Nihar Ranjan, An Approach to Indian Art, Calcutta, 1970

OR

SEC - 4: Understanding Popular Culture **Credits 02**

Course Contents :

I : Introduction:

Defining popular culture and understanding it historically

II : Visual expressions - Folk art, calendar art, photography

III: Performance: Theatre, music, folk tales/songs/swang and Nautanki: Identifying themes, functionality, anxieties

IV: The audio-visual:

Cinema and television:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Indian cinema: Mapping the influence of the national struggle for independence (1930s and 40s); Idealized nationalism (1950s), disillusionment and the anti-establishment mood (1970s and 80s); documentary films Expressions of popular culture in television

V. Fairs, Festivals and Rituals:
Disentangling mythological stories, patronage, regional variations

VI: Popular culture in a globalized world:
The impact of the Internet and audio-visual media

Suggested Readings:

1. Dissanayake, W. and K. M. Gokul Singh, Indian Popular Cinema, Trentham Book, London, 2004
2. John Storey, Cultural Theory and Popular Culture, London, 2001
3. Oberoi, Patricia, Freedom and Destiny: Gender, Family and Popular Culture in India, Delhi, 2009
4. Christopher Princy, Camera Indica: The Social Life of Indian Photographs, Chicago, 1998
5. Pankaj Rag, Dhuno ke Yatri, Rajkamal, New Delhi, 2006 (Hindi)
6. Ramanujan, A.K. Folktales from India A Selection of Oral Tales from Twenty-two Languages (Only Introduction).
7. Ramaswamy, V. 'Women and the 'Domestic' in Tamil Folk Songs' in Kumkum Sangari and Uma Chakravarti, eds., From Myths to Markets: Essays on
8. Gender, Shimla, 1999
9. Singh, Lata (ed.), Theatre in Colonial India: Playhouse of Power, New Delhi, 2009

Generic Elective (GE)
[Interdisciplinary for other department]

GE- 1 : Life and Thought of Rabindranath Tagore **Credits 06**

GE1T : Life and Thought of Rabindranath Tagore

Course Contents :

1. Tagore's experience of growing up – recollections of his childhood in *Jeevan Smriti* – the visit to England as a young man – comparing the East and the West in the context of the larger impact of the westernization in Indian society – *Europe Pravasir Patra.*

2. The poet as a public figure – nationalism and swadeshi – *SwadeshiSamaj* essays: the notion of *atmasakti* – rural reconstruction and *samabaya* – the search for a distinctive Indian history and assimilationist civilization: *Itihasa, Bharat BarsherItihasa* and *Bharat Barsher Itihasher Dhara.*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

3. Temporary withdrawal from public life and concentration on Shantiniketan Ashram – winning the Nobel Prize - the experience of the First World War and the growingly critical mood about western nationalism – the distinction between the western and eastern nationalism: Tagore's essays on Nationalism

4. Jalianwalabag massacre, renunciation of Knighthood and the return to the engagement of national politics – Tagore and Gandhi, friendships and differences – the religion of man and Tagore's universalism – travels in Russia and new intellectual engagements – search for India's place in Asia – the vision of Greater India: *Parasye and Java Yatrir Diary.*

5. The Second World War on the poet's predicament – the crisis of civilization – the *Kalantar*essays

Suggested Readings:

1. Sabyasachi Bhattacharya, *Rabindranath Tagore: An Interpretation*
2. ----------, *Talking Back: The Idea of Civilization in the Indian Nationalist Discourse*
3. Prabhat Kumar Mukhopadhyay, *RabindraJeevani O Rabindra Sahitya Prabeshak*, 1-4
4. Krishna Kripalani, *Rabindranath Tagore: A Biography*
5. Krishna Dutta and Andrew Robinson, *Rabindranath Tagore: The Myriad-Minded Man*
6. Sisir Kumar Das (ed.), *The English Writings of Rabindranath Tagore* [relevant writings]
7. *Rabindra Rachanabali*(West Bengal Government and Visva-Bharati) [relevant writings]
8. Prasanta Kumar Pal, *Rabi Jivani*, Vol. 1-9 [relevant sections]
9. Debajyoti Bandyopadhyay, *RabindranatherJatiyatabad- Birodhi Swadeshprem*

OR

GE- 1 : Theories of the Modern State **Credits 06**

GE1T : Theories of the Modern State
Course Contents :

1. The State Definitions and Elementary Concepts – Sovereignty and autonomy – state and the community – the nation state.

2. The Absolutist State: Bodin, Hobbes and Hegel: the state, class and civil society.

3. The Liberal State – the state, individualism and citizenship – the constitutional and the contractual state: John Locke – liberalism and the democratic order: Rousseau and the General Will.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

4. The Liberal State – the utilitarian version: Bentham and John Stuart Mill – John Mill and democracy: the tyranny of the majority.

5. The state and class Marxist perspective – the problem of Bonapartism – Max Weber and the bureaucratic order.

6. The ideological basis of the Welfare State and its comparison with Communism – John Rawls and the theory of justice.

Suggested Readings:

1. Perry Anderson, *Lineages of the Absolutist State*
2. H. Dickinson, *Liberty and Property*
3. C. B. Macpherson, *The Political Theory of Possessive Individualism*
4. C. B. Macpherson, *The Life and Times of Liberal Democracy*
5. C. B. Macpherson, *Democratic Theory*
6. Ralph Miliband, *The State in Capitalist Society*
7. Harold Laski, *A Short History of Liberalism*
8. Shirley Robin Letwin, *The Pursuit of Certainty: David Hume, Jeremy Bentham, John Stuart Mill and Beatrice Webb*
9. James Steintrager, *Bentham*
10. R. J. Halliday, *John Stuart Mill*
11. Raymond Plant, *Hegel*
12. Amy Gutmann, *Liberal Equality*

OR

GE-1 : Science and Empire **Credits 06**

GE1T: Science and Empire

Course Contents :

1: History and Development of Science under the Colonial Empire-Perspectives and Recent Historical Debates/ Discourse/ Trajectories.

2: Science and Colonial Empire: Concepts and Contours-Different Colonial Experiments in India-Fundamental Research in Science in India.

3: Colonial Science: Indian and Western Interaction-Role of Institutions in Promoting Scientific Knowledge (Botanical Garden, Medical Colleges, Calcutta School of Tropical Medicine, Bose Institute, Indian Institute of Science etc.)

4: Science and Empire-Indian Responses and Resistance-Ideas of Mahatma Gandhi and Jawaharlal Nehru.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

5: Scientific Activities under the Empire-Social, Political and Cultural Implication and Historical Debates.

Suggested Readings:

1. Deepak Kumar, *Science and the Raj: A Study of British India*, Oxford University Press, New Delhi, 2006
2. David Arnold, *Science, Technology and Medicine in Colonial India*, Cambridge University Press, Cambridge, 2000
3. Deepak Kumar, *Science and Empire: Essays in Indian Context, 1700-1947*, Anamika Prakashan, New Delhi, 1991
4. Chittabrata Palit, *Science and Nationalsim in Bengal, 1876-1947*, Institute of Historical Studies, Kolkata, 2004
5. Uma Das Gupta ed., *Science and Modern India: An Institutional History, c. 1784-1947*, Pearson-Longman, New Delhi, 2011
6. Sumit Sarkar, *Modern Times: Environment, Economy and Culture*, Permanent Black, New Delhi, 2014
7. Douglas M. Peers and Nandini Gooptu, *India and the British Empire*, Oxford University Press, New Delhi, 2012
8. Michael Mann, *South Asia's Modern History: Thematic Perspectives*, Routledge, London/New Delhi, 2014

OR

GE-1 : History of Indian Journalism **Credits 06**

GE1T : History of Indian Journalism

Course Contents :

I. History of Indian Journalism: Colonial & Post Colonial Period.
II. Pre-colonial History of written records & modalities of Dissemination
III. Advent of Print media: Imperialist Ideologies
IV. Nationalism & Print Culture: Selective study of prominent newspapers: Tribune, Amrita Bazar Patrika, and Hindustan Times
V. Writing & Reporting Experiences

Suggested Readings:

1. Natrajan. J, History of Indian Journalism, Vol. –ii of Press Commission Report, New Delhi, 1954
2. Natrajan. J, A history of the Press in India, Asian Publishing House, Bombay, 1962
3. Ghosh, Hamendra Prasad, Newspapers in India, University of Calcutta,1952
4. Ananda. Prakash, A History of the Tribune, A Centenary Publication by the Tribune Trust, 1986

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

GE-2 : Gender & Education in India **Credits 06**

GE2T : Gender & Education in India

Course Contents :

I. Historiographical Trends

a. Pre-colonial historiographical trends in women's education
b. colonial historiographical trends in women's education
c. Post-colonial historiographical trends in women's education

II. Education in Early and Medieval Times

a. Women's Education in Medieval times
b. Regional trends of Women's education in pre-colonial India
c. Instances of women's education, obstacles

III. Colonial Period

a. Socio-religious reforms
b. Role of Christian missionaries in spreading female education, recent debates
c. Indigenous initiatives at women's education

IV. Role of Schools and Colleges in colonial and post-colonial period

a. Girls School and Colleges, development towards co-education
b. Expansion of infrastructural facilities in education
c. Technical and vocational education for women

V. Contours of female literacy since 1950

a. Interrogating literacy for women
b. Government policies and Schemes
c. Disparities in Literacy: Region, Community, Social and Eco-factors

VI. Present Scenario

a. Education as a tool of Empowerment

Suggested Readings:

1. Aparna Basu, Growth of Education and Political Development in India, 1898 –1920
2. Usha Sharma, Women Education in Modern India
3. Ramnath Sharma & Rajender Sharma, History of Education in India, Atlantic Publishers, 1996
4. Aparna Basu & Bharati Ray (ed.), Women's Struggle. A History of the All India Women's Conference 2002

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

OR

GE- 2 : Visual and Performative Culture in Modern Bengal **Credits 06**

GE2T : Visual and Performative Culture in Modern Bengal

Course Contents :

1. Definition of Visual and Performative Culture.
2. Mapping out entertainment sites: the coming of public entertainment –art, aesthetics, cinema and drama.
3. The theatre culture sites with Jatra culture.
4. Physical culture movement in Bengal . Circus as a form of Physical Culture in Bengal. New space of performing art –the case of Bengali songs and dance.
5. The domain of marginalised and middle-class –modernity, colonial state, distortion and indigenous culture.

Suggested Readings:

1. Tapati GuhaThakurta, *The Making of a New 'Indian'Art: Artists, Aesthetics and Nationalism in Bengal, c. 1850-1920*, Cambridge University Press, New Delhi, 2007
2. ArchanaVerma, *Performance and Culture: Narrative, Image and Enactment in India*, Cambridge Scholars Publishing, New Delhi, 2011
3. GayatriSinha, *Art and Visual Culture, 1857-2007*, Marg Publications, New Delhi, 2009
4. Catherine B. Asher, Cynthia Talbot, *India before Europe*, Cambridge University Press, New York, 2006
5. AmitavaChatterjee ed., *People at Play: Sport, Culture and Nationalism*, SetuPrakashani, Kolkata
6. AmitavaChatterjee, ed., *People at Large: Popular Culture in Modern Bengal*, SetuPrakashani, Kolkata
7. AmitavaChatterjee, *Exhibiting Masculine Identity through Circus in Colonial Bengal*, Studies in People's History, Vol. 2, No. 2, 2015

OR

GE- 2: Some Perspectives on Women's Rights in India **Credits 06**

GE2T: Some Perspectives on Women's Rights in India

Course Contents:

I. Definition of Human Rights

1. Human Rights and Women, a survey of the Charter
2. Interrogating Human Rights vis-à-vis personal laws in India
3. UN Convention and Indian Context

II. Indian Constitution and Women's Rights

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

1. Fundamental Rights and Women
2. Directive Principles and Women
3. Major legal cases defending women's rights vis-à-vis the Constitution

III. Preventive Acts

Minimum Wage Act 1948, Family Courts Act 1986, PNDT Act 1994, Latest Measures

IV. Issues of Violence against Women and Remedial Measures

1. Domestic Violence Act, Prevention of Sexual Harassment at Workplace
2. Practical application and Problems, Remedial Measures

V. Role of Non-Government Institutions

1. Non-Government Organizations and Human Rights
2. Women and Non-Government Organizations – Participations

VI. Present Status

Issues of enabling and empowering modalities – Debate on uniform civil code

Suggested Readings :

1. Urvashi Butalia & Tanika Sarkar, (ed.), Women & Hindu Rights, New Delhi, Kali for Women, 1996
2. Zoya Hasan (ed.), Forging Identities, Communities & Patriarchies, EPW, December 1995
3. Bina Agarwal, Field of Her Own, New Delhi, Kali for Women,

END

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:07:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/History_General.pdf

Vidyasagar University

Dept. of SANSKRIT

Syllabus (DRAFT)

For

M.A. in SANSKRIT

Under Choice Based Credit System (CBCS)
(Semester Programme)

[w. e. f. 2022-23 session]

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Vidyasagar University

Revised New Syllabus for M.A. in Sanskrit, 2022

Proposed Syllabus for P. G. Course

The Department of Sanskrit, Vidyasagar University is offering M. A. course in Sanskrit under the Semester CBCS system with the following syllabus.

The syllabus assumes in the students an interest in higher learning and aims at equipping them for an academic career.

The Post graduate programme in this system will be divided into 18 (eighteen) Core Courses and 2(two) Extra Departmental Courses (CBCS) and will consist of Four Semesters to be covered in two years: the First and Second Semester in the first year, and the Third and Fourth semester in the Second year. Each Semester consist five courses with equal Marks: For each course Total Marks: 50(Theoretical Exam-40, Internal Assessment-10). We offer two extra departmental Courses as a part of Choice Based Credit System (CBCS) one each in Second semester (SAN-204) and in the Third semester (SAN-304).

At present four optional groups (Group-A: LITERATURE, Group-B: PĀṆINĪYA VYĀKARAṆA, GROUP- C: INDIAN PHILOSOPY and GROUP- D: NYĀYA-VAIŚEṢIKA PHILOSOPHY) will be offered in the 3rd & 4th Semester. There will be restriction in opting these courses.

PROGRAMME OUTCOME

After having completed Masters Degree in Sanskrit, the Students will become experts in different fields of Vedic as well as classical Sanskrit language and literature. The programme mast have important role to enhance ethical, psychological, historical, philosophical, cultural learning at individual, social and national level which is more essential now a days. Those who are experts in Vedic literature both of Karmakāṇḍa and Jñānakaṇḍa will be able to utilize their skills in the field of social engagement like Yajña, Pujā, Śrāddha, Marriage etc. Those who are specialized in Sanskrit Grammar and Linguistics will be able to work as interpreters, translators and even they can work at IITs for National Language Processing (NLP), Programming (being Computer talking language) etc. apart from their teachership. Those who are experts in Indian Philosophy will be privileged to work at Judicial Court as a lawyer. This will not be enough to say that the students digested this programme can utilize their skills in the field of social work, environmental at protection, human & animal rights and many issues related to present-day globalizing world.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Course Structure

SEMESTER	COURSE NO.	COURSE TITLE	FULL MARKS	CREDIT
I	SAN-101	**Veda-Saṃhitā & Brāhmaṇa**	50	5
	SAN-102	**Grammar**	50	5
	SAN-103	**Elements of Literary Criticism**	50	5
	SAN-104	**Nyāya-Vaiśeṣika Darśana**	50	5
	SAN-105	**Sāmkhya and Vyākaraṇa Darśana**	50	5
	Total		**250**	**25**
II	SAN-201	**Analytical Study of the Veda, Upaniṣada & Vedānga**	50	5
	SAN-202	**Grammar, Linguistics and Manuscriptology**	50	5
	SAN-203	**Poetry**	50	5
	SAN-204(CBCS)	**History of Sanskrit Literature & Śrimadbhagavadgītā**	50	4
	SAN-205	**Purvottarmīmāṃsādarśana**	50	5
	Total		**250**	**24**
III	SAN-301A	**History of Poetics, Metrics and Modern Sanskrit Literature**	50	5
	SAN-302A	**Drama-I**	50	5
	SAN-303A	**Poetics-II**	50	5
	SAN-304(CBCS)	**Sanskrit Fable and Drama**	50	4
	SAN-305A	**Dramaturgy & Poetics-I**	50	5
	Total		**250**	**24**
	SAN-301B	**History and Philosophy of Grammar**	50	5
	SAN-302B	**Old tradition of Pāṇinian School**	50	5
	SAN-303B	**Theoretical Part of New tradition**	50	5
	SAN-304(CBCS)	**Sanskrit Fable and Drama**	50	4
	SAN-305B	**Practical Part of the new tradition**	50	5
	Total		**250**	**24**
	SAN-301C	**Logic & History of Indian Philosophy**	50	5
	SAN-302C	**Nyāya-Vaiśeṣikadarśana**	50	5
	SAN-303C	**Sāṃkhya-yogadarśana**	50	5
	SAN-304(CBCS)	**Sanskrit Fable and Drama**	50	4
	SAN-305C	**Purvottarmīmāṃsādarśana**	50	5

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

	Total		**250**	**24**
	SAN-301D	**Logic & History of Indian Philosophy**	50	5
	SAN-302D	**Nāstika School of Indian Philosophy**	50	5
	SAN-303D	**Nyāya-Vaiśeṣikadarśana**	50	5
	SAN-304(CBCS)	**Sanskrit Fable and Drama**	50	4
	SAN-305D	**Navya-Nyāya**	50	5
	Total		**250**	**24**
IV	SAN-401A	**Poetics-III**	50	5
	SAN-402A	**Prose & Poetry**	50	5
	SAN-403A	**Drama-II**	50	5
	SAN-404A	**Modern Sanskrit Literature**	50	5
	SAN-405A	**Project/ Dissertation**	50	5
	Total		**250**	**25**
	SAN-401B	**Text on Philosophy of the Grammar and Śābdabodha**	50	5
	SAN-402B	**New tradition of Sanskrit Grammar**	50	5
	SAN-403B	**Selection from the new tradition**	50	5
	SAN-404B	**Śikṣā and Different meaning of the same Dhātu**	50	5
	SAN-405B	**Project/ Dissertation**	50	5
	Total		**250**	**25**
	SAN-401C	**Nāstika School of Indian Philosophy**	50	5
	SAN-402C	**Nyāya-Vaiśeṣikadarśana**	50	5
	SAN-403C	**: Sāṃkhya-yogadarśana**	50	5
	SAN-404C	**Purvottarmīmāṃsādarśana**	50	5
	SAN-405C	**Project/ Dissertation**	50	5
	Total		**250**	**25**
	SAN-401D	**Nyāya-Vaiśeṣikadarśana-I**	50	5
	SAN-402D	**Nyāya-Vaiśeṣikadarśana-II**	50	5
	SAN-403D	**Nyāya-Vaiśeṣikadarśana-III**	50	5
	SAN-404D	**Nyāya-Vaiśeṣikadarśana-IV**	50	5
	SAN-405D	**Project/ Dissertation**	50	5
	Total		**250**	**25**
	Grand Total		**1000**	**98**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

SYLLABUS OF THE M. A. GENERAL COURSE

SEMESTER-I

Paper : SAN-101 : Veda-Saṃhitā & Brāhmaṇa **50**

Course Outcome: For its excellence and depth in the ancient Vedic literature of India is generally recognized. Its study is invaluable for mental development. Later Vedic literature, Brāhmaṇa repositories of wisdom. It deserves our attention. A Study of such texts will enrich the readers with human values and ethics.

Unit-I-Selected Vedic Hymns- 40

(i) Eulogical Hymns-Agni(ṚV 1.1), Indra(ṚV 2.12), Śivasaṃkalpa –(ŚYV-adhyāya34), Bhūmisūkta(AV 12.1).
(ii) Dialogue Hymns - Visvāmitranadī-Saṃvāda(ṚV3.33)
(iii) Philosophical Hymns- Puruṣasūkta (ṚV 10.90), Nāsadīyasūkta –(ṚV-10.129), Kālasūkta – (AV 19.53)

Unit-II- Brāhmaṇa- Aitareya: Śunaḥśepa ākhyān(AB 7.33)/ Śatapatha: Pañcamahāyajña(ŚB 11.5.6.1-9)

Paper : SAN-102 : Grammar **50**

Course Outcome: Pāṇini as a grammarian is recognized all over the world. His sutras on saṃjña and paribhāṣā are worthy of serious study. To learn and understand Sanskrit properly we have to study the rules of Sandhi and nominal declension. Panini's text needs to be studied. This may be a thrust area of research project.

Unit-I - Siddhāntakoumudī (Samjñā & Paribhāṣā) 20
Unit-II - Siddhāntakoumudī (Ac Sandhi with Prakṛtibhāva) 15
Unit-III- Siddhāntakoumudī (Ajantapuṃliṃga). 15

Paper :SAN 103 : Elements of Literary Criticism **50**

Course Outcome: The tradition of theories on poetics is both ancient and rich. There are many masterpieces on poetics. A study of these theories and views is essential. This may be a thrust area of research project.

Unit- I - Kāvyaprakāśa -Chapter-I&II 20
Unit- II - Kāvyaprakāśa –Chapter-IX&X (following Figures of Speech only): 20
Yamaka, Anuprāsa, Śleṣa, Vakrokti, Upamā, Rūpaka, Utprekṣā, Samāsokti, Apahnuti, Nidarśanā, Dṛṣṭānta, Prativastūpamā, Arthāntaranyāsa, Dīpaka Tulyayogitā, Aprastutapraśaṃsā, Vibhāvanā, Viśeṣokti, Saṃsṛṣṭi, Saṃkara.
Unit-III- Nāṭyaśastra -Chapter-I 10

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Paper : SAN 104 : **Nyāya-Vaiśeṣika Darśana** **50**

Course Outcome: The advocates of Nyāya Vaiśeṣika produced some good texts explaining their metaphysics and epistemology. A study, in this regard, on the basis of selected texts is beneficial. It can be very useful to develop the writing skill of the Students.

Unit-I- Tarkabhāṣa 25
Unit-II- Bhāṣāpariccheda - Kārikavalī(Pratyakṣa) 25

Paper : SAN 105 : **Sāmkhya and Vyākaraṇa Darśana** **50**

Course Outcome: One important Astika systems in Indian philosophy, admitting the validity of the Veda, is Sāṃkhya . Original texts of the systems deserve proper study. Indian philosophy is marked by its lofty ideas and depth of wisdom. One can be enriched specially by a study of Sāṃkhya and philosophy of language. This may be a thrust area of research project.

Unit-I -Sāṃkhyakārikā with Sāṃkhyatattvakoumudī (Upto 25th kārikā) 25
Unit-II- Mahābhāṣya (Paspaśāhnika) 25

SEMESTER-II

Paper : SAN 201 : Analytical Study of the Veda, Upaniṣada & Vedānga **50**

Course Outcome: A general knowledge of the characteristics of the Vedic lore is desirable, and rules of interpreting Vedic mantras also are to be learnt. A Study of such texts will enrich the readers with human values and ethics. This may be a thrust area of research project.

Unit-I- Ṛgvedabhāṣyabhūmikā by Sāyaṇa (Upto pauruśeya-apauruśeya) 20
Unit-II- Kaṭhopaniṣada - Chapter –I 10
Unit-III- Nirukta - Chapter –I & II 20

Four fold division of Padas, Concept of Nāma & Ākhyāta, Meening of Upasarga, Meening and categories of Nipātas, Ṣaḍbhāvavikāra, Purposes of study of Nirukta, Principles of Etymologies of the following words: Ācārya, Vīra, Go, Samudra, Vṛtra, Āditya, Uṣā, Megha, Vāk, Udaka, Nadī, Aśva, Jātavedas, Vaiśvanara, Nighanṭu.

Paper : SAN 202 : **Grammar, Linguistics and Manuscriptology** 50

Course Outcome: To learn and understand Sanskrit properly we have to study the rules of nominal conjugation of verbs. A study has to be made on the basis of a suitable Pāṇini's text. For acquiring mastery over a language a study of linguistics is essential. We should also proudly preserve our national wealth of manuscripts. This may be a thrust area of research project.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Unit-I- Siddhāntakoumudī - Tiṃanta (Bhū & Edh) 20
Unit-II- Historical development of OIA 15
Unit-III- Elementary knowledge of Manuscriptology- 15
Manuscript, Manuscript materials, Manuscriptology, Archetype, Colophon, Recession, Important discoveries, C.C. N.C.C., Descriptive Catalogue, Causes of variant readings, Preservation and Conservation of Manuscripts.

Paper : SAN 203 : **Poetry** **50**

Course Outcome: The excellences of Sanskrit Kāvya literature is an established fact. Some of its masterpieces deserve special study. A Study of such texts will enrich the readers with human values and ethics.

Unit-I: Naiṣadhacarita – Canto –I 25
Unit-II -: Meghadūta 25

Paper : SAN 204 (CBCS): **History of Sanskrit Literature & Śrimadbhagavadgītā** **50**

Course Outcome: Sanskrit literature has developed through many stages. A study of all these is important. A Study of such texts will enrich the readers with human values and ethics. This may be a thrust area of research project.

Unit-I- History of Sanskrit Literature 35
i. History of Vedic Literature
ii. History of Classical Literature
iii. History of Scientific and Technical Literature

Unit-II- Śrimadbhagavadgītā- Chapter-I (Arjuna's Speech only) 15

Paper : SAN 205: **Purvottarmīmāṃsādarśana** **50**

Course Outcome: The Mīmāmsā and the Vedānta systems of Indian philosophy are held in high esteem by scholars. A study of their basic texts can hardly be dispensed with. A Study of such texts will enrich the readers with human values and ethics.

Unit-I- : Arthasaṃgraha 25
Unit-II -: Vedāntasāra 25

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

SYLLABUS OF THE SPECIAL PAPER – GROUP -A: LITERATURE

SEMESTER-III

SAN-301: History of Poetics, Metrics and Modern Sanskrit Literature **50**

Course Outcome: Modern Sanskrit literature has developed through many stages. A study of all these and history of Poetics & Metrics is important. A Study of such texts will enrich the readers with human values and ethics. This may be a thrust area of research project.

Unit-I- History of Poetics	20
Unit-II- History of Metrics	15
Unit-III- History of Modern Sanskrit Literature	15

SAN-302: Drama-I **50**

Course Outcome: Indians excelled in dramatic compositions. Their study makes us conscious about our rich heritage. A Study of such texts will enrich the readers with human values and Students aware about the environment.

Unit- Uttararāmacarita	25
Unit-II- Ratnāvalī	25

SAN-303: Poetics-II **50**

Course Outcome: In Sanskrit there is a long and rich tradition on the theories of literary compositions. A few important examples out of them are highly rewarding. This may be a thrust area of research project.

Unit-I - Kāvyaprakāśa (IV & V)	25
Unit-II - Rasagangādhara (1st Ānana upto Rasanirupana)	25

SAN-304(CBCS) : Sanskrit Fable and Drama **50**

Course Outcome: Dramatic compositions and Fable Lit. of a high quality are written in Sanskrit. An acquaintance with some of them is valuable. A Study of such texts will enrich the readers with human values and Students aware about the environment.

Unit-I- Pañcatantra(Mitrabheda)- Dharmabuddhi-pāpabuddhi-kathā, Jīrnavaṇikaputra-kathā, Bhasuraka-singha-kathā and Paribrājakdevasarmā-kathā	15
Unit-II-Hitopadeśa(Mitralābha-Katha 1-3)	15
Unit-III- :Abhijñānaśakuntala (Act-I-4)	20

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

SAN-305: Dramaturgy & Poetics-I **50**

Course Outcome: A few notable works on the rules for composing a drama are available in Sanskrit. The remarkable literary theory of dhvani, verbal power of suggestion, developed in Sanskrit. A study of all these is relevant. It can be very useful to develop the writing skill of the Students.

Unit-I- Daśarūpaka –I & III	25
Unit-II- Dhvanyāloka –I	25

SEMESTER-IV

SAN-401: Poetics-III **50**

Course Outcome: In Sanskrit there is a long and rich tradition on the theories of literary compositions. A few important examples out of them are highly rewarding. A Study of such texts will enrich the readers with human values.

Unit-I- Vakroktijivitam -Chapter –I	25
Unit-II- Kāvyamīmāṃsā –Chapter-4-6	25

SAN-402: Prose & Poetry **50**

Course Outcome: In classical Sanskrit we have literary compositions of excellence in both prose and poetry. Selections from them may be studied with profit. A Study of such texts will enrich the readers with human values. This may be a thrust area of research project.

Unit-I- Harsacarita-V	25
Unit-II- Buddhacarita-III	25

SAN-403: Drama-II **50**

Course Outcome: We have in Sanskrit a few dramas conspicuous for their unique subject-matter. A study of such uncommon dramas enriches the reader. A Study of such texts will enrich the readers with human values. It can be very useful to develop the writing skill of the Students.

Unit-I- Mudrārākṣasa	25
Unit-II- Mṛcchakaṭika	25

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

SAN-404: Modern Sanskrit Literature **50**

Course Outcome: Sanskrit is also rich in a variety of modern compositions, especially excellent dramas and Fable by traditional scholars. Their study is sure to be of benefit. This is gender related Course. This may be a thrust area of research project.

Unit-I- Kāvya- Rukmiṇīharaṇa (Upto canto-III) by Haridāsasiddhāntavāgīśa 20
Unit-II- Nātya- Amaramaṃgala (Upto IV) by Pañcānanatarkaratna 20
Unit-III- Kathā- Aparājitā by Vīṇāpaṇipāṭanī 10

SAN-405: Project/ Dissertation **50**

Course Outcome: This Course helps the students to get interest in research work and acquire very basic idea about the method of writing research papers.

CANDIDATE WILL PREPARE DISSERTATION /PROJECT PAPER ON ANY TOPIC FROM THE OTHER EIGHT PAPERS OFFEREDIN SEMESTER- III & IV (GROUP- **A: LITERATURE**)

SYLLABUS OF THE SPECIAL PAPER – GROUP-B: PĀṆINĪYA VYĀKARAṆA

SEMESTER-III

SAN-301: History and Philosophy of Grammar **50**

Course Outcome: This Course helps the students to know about the History and Philosophy of Grammar in details. It can be very useful to develop the writing skill of the Students.

Unit-I- History of Pre-Pāṇinian and Post Pāṇinian School of Grammarian 25
Unit-II- Sarvadarśanasaṃgraha- Pāṇinidarśana 25

SAN-302: Old tradition of Pāṇinian School **50**

Course Outcome: This Course helps the students to know about the Paninian Grammar as per the old tradition. It can be very useful to develop the writing skill of the Students.

Unit-I- Aṣṭādhyāyī- Pratyāhāraprakaraṇa with Kāśikāand Nyāsa 25
Unit-II- Mahābhāṣya with Pradīpa and Uddyota – 1.4.23-54 25

SAN-303: Theoretical Part of New tradition **50**

Course Outcome: This Course helps the students to know about the theoretical part of Paninian Grammar as per the new tradition of Paninian School of Sanskrit Grammar. It can be very useful to

Downloaded from Vidyasagar University by 106.77.180.15 on 28 July 2023 at 12:40:12, Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

develop the writing skill of the Students.

Unit-I- Vaiyākaraṇabhūṣaṇasāra- Dhātvarthaprakaraṇa 25

Unit-II- Paribhāṣenduśekhara- Śāstratvasampādakaprakarana 25

SAN-304(CBCS) : Sanskrit Fable and Drama 50

Course Outcome: Dramatic compositions and Fable Lit. of a high quality are written in Sanskrit. An acquaintance with some of them is valuable. A Study of such texts will enrich the readers with human values and Students aware about the environment

Unit-I- Pañcatantra(Mitrabheda)- 15
Dharmabuddhi-pāpabuddhi-kathā, Jīrnavaṇikaputra-kathā,
Bhasuraka-singha-kathā and Paribrājakdevasarmā-kathā

Unit-II-Hitopadeśa((Mitralābha-Katha 1-3))
15

Unit-III- :Abhijňānaśakuntala (Act-1-4) 20

SAN-305: Practical Part of the new tradition 50

Course Outcome: This Course helps the students to know about the practical part of Paninian Grammar as per the new tradition of Paninian School of Sanskrit Grammar. It can be very useful to develop the writing skill of the Students.

Unit-I- Siddhāntakoumudī with Vālamanoramā and Tattvabodhinī- Strīpratyayaprakaraṇa 25

Unit-II- Siddhāntakoumudī with Vālamanoramā and Tattvabodhinī - Taddhitaprakaraṇa
(Sādhāraṇa, Śaiṣika, Matvarthīya) 25

SEMESTER-IV

SAN-401: Text on Philosophy of the Grammar and Śābdabodha 50

Course Outcome: This course helps the Students to know about the Philosophy of Grammar and inspires the students to do research work on Paninian Grammar and Śābdabodha theories in comparison with the Nyāya**.** It can be very useful to develop the writing skill of the Students.

Unit-I- Vākyapadīya-Brahmakāṇḍa 25

Unit-II- Sāramanjarī 25

SAN-402: New tradition of Sanskrit Grammar 50

Course Outcome: This Course helps the students to know about the theoretical part of Paninian Grammar as per the new tradition of Paninian School of Sanskrit Grammar. It can be very useful to develop the writing skill of the Students.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Unit-I- Laghuśabdenduśekhara- Saṃjñāprakaraṇa 25
Unit-II- Paramalaghumanjūṣā-Upto Sphoṭaprakaraṇa 25

SAN-403: Selection from the new tradition 50

Course Outcome: This Course helps the students to know about the practical part of Paninian Grammar as per the new tradition of Paninian School of Sanskrit Grammar. It can be very useful to develop the writing skill of the Students.

Unit-I- Siddhāntakoumudī with Vālamanoramā and Tattvabodhinī - Ātmanepada-Parasmaipada-prakaraṇa 25
Unit-II- Siddhāntakoumudī with Vālamanoramā and Tattvabodhinī - Kridantaprakaraṇa(Kṛtya & Purva) 25

SAN-404: Śikṣā and Different meaning of the same Dhātu 50

Course Outcome: This Course helps Students to acquire the knowledge of Vedic Sandhi, Varṇa and application of different meaningful verbs. It can be very useful to develop the writing skill of the Students.

Unit-I- Ṛkprātiśākhya (Patal-I) 15
Unit-II- Pāṇinīyaśikṣā 15
Unit-III- Kavirahasyam 20

SAN-405: Project/ Dissertation 50

Course Outcome: This Course helps the students to get interest in research work and acquire very basic idea about the method of writing research papers.

CANDIDATE WILL PREPARE DISSERTATION /PROJECT PAPER ON ANY TOPIC FROM THE OTHER EIGHT PAPERS OFFEREDIN SEMESTER- III & IV (GROUP- **B: PĀṆINĪYA VYĀKARAṆA)**

SYLLABUS OF THE SPECIAL PAPER – GROUP- C: INDIAN PHILOSOPHY

Course Outcome for all courses except course no.SAN-304:

Indian Philosophy is marked by its lofty ideas and depth of wisdom. One can be enriched in logic, speaking etc. studying this Indian Philosophy. The advocates of Indian Philosophy produced some good texts explaining their metaphysics and epistemology. A study in this regard on the basis of selected texts in beneficial.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

SEMESTER-III

SAN-301: Logic & History of Indian Philosophy

Unit-I- Indian logic and western logic 25
Unit-II- History of Indian Philosophy 25

SAN—302: Nyāya-Vaiśeṣikadarśana 50
Unit-I -Nyāyasūtra- 1/1 (upto 8th Sūtra with Bātsāyana Bhāṣya) 25
Unit-II- Bhāṣapariccheda with Nyāyasiddhāntamuktāvalī- Anumānkhaṇḍa 25

SAN—303: Sāṃkhya-yogadarśana 50
Unit-I- Sāṃkhyakārikā with Sāṃkhyatattvakoumudī (From 26th kārikā to Rest) 25
Unit-II –Yogasāra 25

SAN-304(CBCS) : Sanskrit Fable and Drama 50
Course Outcome: Dramatic compositions and Fable Lit. of a high quality are written in Sanskrit. An acquaintance with some of them is valuable.

Unit-I- Pañcatantra(Mitrabheda)- 15
Dharmabuddhi-pāpabuddhi-kathā, Jīrnavaṇikaputra-kathā,
Bhasuraka-singha-kathā and Paribrājakdevasarmā-kathā
Unit-II-Hitopadeśa((Mitralābha-Katha 1-3) 15
Unit-III- :Abhijňānaśakuntala (Act-1-4) 20

SAN-305: Purvottarmīmāṃsādarśana 50

Unit-I- Mānameyodaya (Pratyakṣa & Anumāna) 25
Unit-II- Vedāntaparibhāṣā 25

SEMESTER-IV

SAN-401: Nāstika School of Indian Philosophy 50

Unit-I- Cārvāka 15
Unit-II- Bouddha 20
Unit-III- Arhat 15

SAN-402: Nyāya-Vaiśeṣikadarśana 50

Unit-I- Nyāyasūtra-1/2 (with bātsāyana bhāṣya) 25
Unit-II- Praśastapādabhāṣya (Dravyaprakaraṇa with general acquaintance of Nyāyakandalī) 25

SAN-403: Sāṃkhya-yogadarśana 50

Unit-I- Sāṃkhyapravachanbhāṣya (upto Prakṛti) 25
Unit-II- Yogasūtra- Samādhipāda, Sādhanapāda (with Vyāsabhāṣya) 25

Downloaded from Vidyasagar University Website. Subject to Terms & Condition. Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

SAN—404: Purvottarmīmāṃsādarśana **50**
Unit-I- Mīmāmsānyāyaprakāśa 25
Unit-II- Bramhasūtra-Catussūtrī (with Śāṃkarabhāṣya) 25

SAN-405: Project/ Dissertation **50**
Course Outcome: This Course helps the students to get interest in research work and acquire very basic idea about the method of writing research papers.

CANDIDATE WILL PREPARE DISSERTATION /PROJECT PAPER ON ANY TOPIC FROM THE OTHER EIGHT PAPERS OFFEREDIN SEMESTER- III & IV (GROUP- **C: INDIAN PHILOSOPHY**)

SYLLABUS OF THE SPECIAL PAPER – GROUP- D: NYĀYA-VAIŚEṢIKA PHILOSOPHY

Course Outcome for all courses except course no.SAN-304:

Without the knowledge of Indian logic exhibited by the Nyāya-Vaiśeṣika system of Indian Philosophy, one cannot penetrate into the Sanskrit Śāstras. Therefore this special paper will be the most useful for the beginners of Nyāya-Vaiśeṣika. This special paper of Nyāya-Vaiśeṣika can be helpful for the Students to acquire the basic knowledge of Nyāya-Vaiśeṣika Philosophy and to apply the method of argument and technique of using appropriate language in order to understand and demonstrate the theories of different Śāstras.

SEMESTER-III

SAN-301: Logic & History of Indian Philosophy **50**

Unit-I- Indian logic and western logic 25
Unit-II- History of Indian Philosophy 25

SAN-302 : Nāstika School of Indian Philosophy **50**

Unit-I- Cārvāka 10
Unit-II- Bouddha 15
Unit-III- Arhat 15
Unit-IV- Yoga 10

SAN-303: **Nyāya-Vaiśeṣikadarśana** **50**

Unit-I- Nyāyasūtra-1/1 (upto 8th Sūtra with Bātsāyana Bhāṣya) 25
Unit-II-Praśastapādabhāṣya – Dravya Prakaraṇa (with general acquaintance of Nyāyakandalī).25

SAN-304(CBCS) : Sanskrit Fable and Drama **50**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Course Outcome: Dramatic compositions and Fable Lit. of a high quality are written in Sanskrit. An acquaintance with some of them is valuable.

Unit-I- Pañcatantra(Mitrabheda)- 15
Dharmabuddhi-pāpabuddhi-kathā, Jīrnavaṇikaputra-kathā,
Bhasuraka-singha-kathā and Paribrājakdevasarmā-kathā
Unit-II-Hitopadeśa((Mitralābha-Katha 1-3) 15
Unit-III-:Abhijňānaśakuntala (Act-1-4) 20

SAN-305: **Navya-Nyāya** **50**

Unit-I- Bhāṣāpariccheda – Anumān khaṇḍa With Muktāvalītīkā 25
Unit-II- Vyaptipañcaka 25

SEMESTER-IV

SAN-401: **Nyāya-Vaiśeṣikadarśana-I** **50**
Sarvadaśansaṃgraha
Unit-I- Nyāya 25
Unit-II- Vaiśeśika 25

SAN-402: **Nyāya-Vaiśeṣikadarśana-II** **50**

Unit-I-Nyāyasūtra-1/2 (with bātsāyana bhāṣya) 25
Unit-II-Saptapadārthī- With Mitabhāṣiṇīṭīkā(upto Guṇaprakaraṇa) 25

SAN-403: **Nyāya-Vaiśeṣikadarśana-III**

Unit-I- Nyāyamañjarī- (Upto Pratyakṣaprakaraṇa) 25
Unit-II- Vaiśeṣikasūtropaskār-(1st chapter) 25

SAN-404: **Nyāya-Vaiśeṣikadarśana-IV**

Unit-I- Nyāyakusumāñjalī (Chapter-5) 25
Unit-II- Praśastapādabhāṣya – Dravya Prakaraṇa (with general acquaintance of Nyāyakandalī).

SAN-405:Project/Dissertation **50**
Course Outcome: This Course helps the students to get interest in research work and acquire very basic idea about the method of writing research papers.

CANDIDATE WILL PREPARE DISSERTATION /PROJECT PAPER ON ANY TOPIC FROM TE OTHER EIGHT PAPERS OFFEREDIN SEMESTER- III & IV (GROUP- **D: NYĀYA-VAIŚEṢIKA PHILOSOPHY**)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Reference Books:

Semester-I

1. Srautapatha: CU Publication
2. The New Vedic Selection : K. N. Sastri and BB Choubey
3. Rgveda Samhita: Vaidik Sams'odhan Mandal, Poona(Vol. IV)
4. Vaidic Sankalan: Ed. By Bhabani Prasad Bhattacharya and Taraknath Adhikari
5. Vedic Selections(Vol-I&II)- Khitish Ch. Chaterjee
6. Aitareya Brahmana: Ananda Asram, Poona
7. Kathopanisad: Ed. By Brahachari Medhachaitanya
8. Vaiyakaranasiddhantakoumudi-(Samjna & Paribhasa)-Ed. By Ajodhyanath Sannal Sastri
9. Vaiyakaranasiddhantakoumudi-(Samjna & Paribhasa)-Ed. By Mrinal KantiGangopadhyay
10. Vaiyakaranasiddhantakoumudi-(Valamanorama & Tattvabodhini)-Ed. By Gopal Dutta Pandeya
11. Vaiyakaranasiddhantakoumudi-(Ajanta Punlinga)-Ed. By Asoke Kr. Panda
12. Vaiyakaranasiddhantakoumudi-(Ajanta Punlinga)-Ed. By Bipadbhanjan Pal
13. Kavyaprakash(Upto 5th Chapt.) Ed. By Ramananda Acharya
14. Kavyaprakash(Upto 6th Chapt.) Ed. By Bipadbhanjan Pal
15. Kavyaprakash(1st Chapt..) Ed. By Sumita Basu
16. Kavyaprakash- Ed. By RD Karmakar
17. Kavyaprakash- Ed. By B. Bhattacharya and JSL Tripathy
18. Kavyaprakash- Ed. By Sunil Kr. Jana
19. Natyasastra- RS Nagar
20. Bharata Natyasastra- SC Bandyopadhyay
21. Tarkabhasa- Ed. By Gangadhar Kar
22. Tarkabhasa- Ed. By Sarbani Ganguli
23. Tarkabhasa- Ed. By Anamika Ray Chowdhuri
24. Tarkabhasa- Ed. By Vadarinath Sukla
25. Tarkabhasa- Ed. By Satyajit Layek
26. Tarkabhasa- Ed. By Sri Shobhit Mishra
27. Tarkabhasa-Ed. By S.R.I.R
28. Bhasaparicched- Ed. By Panchanan Sastri
29. Bhasaparicched- Ed. By Anamika Ray Chowdhuri
30. Bhasaparicched Samiksha- Ed. By Dipak Ghosh
31. Bhasaparicched- Ed. By Gopal Ch. Mukhopadhyay
32. Mahabhasyam (Paspasahnikam)- Ed. By Dandiswami Damodar Ashram
33. Mahabhasyam (Paspasahnikam)- Ed. By Sanghamitra Sengupta
34. Mahabhasyam (Paspasahnikam)- Ed. By Gurunath Vidyanidhi
35. Sankhyakarika- Ed. By Narayan Ch. Goswami
36. Sankhyakarika- Ed. By Amit Bhattacharya
37. Sankhyakarika- Ed. By Bipadbhanjan Pal

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Semester-II

38. Kathopanisad: Ed. By Brahachari Medhachaitanya
39. Kenopanisad: Ed. By Sitanath Goswami
40.Kenopanisad: Ed. By Swami Justananda
41. Rgbhasyabhumika – Ed. By Gurusankar Mukhopadhyay
42. Niruktam- Ed. By Amareswar Thakur
43. Niruktam- Ed. By Medhachaitanya
44. Niruktam- Ed. By Jamuna Pathak
45. Vaiyakaranasiddhantakoumudi-(Timantaprakaran)-Ed. By Parbati Chakraborty
46. Vaiyakaranasiddhantakoumudi-(Timantaprakaran)-Ed. By Krishnananda Tirtha
47. Elements of the Science of Language-IJS Taraporewala
48. The Sanskrit Language- T. Burrow
49. A Handbook of Sanskrit Philology- Satyaranjan Banerjee
50. Sankrita o Prakrita Bhasar Kramavikash- Paresh ch. Majumdar
51. An Introduction to thenIndian Textual criticism - SM Katre
52. Aspects of Manuscriptology- Ratna basu & Karunasindhu Das
53. Tulanamulak Bhasatattva O Sanskrit- Bijaya Goswami
54. Sanskrita Pnuthividya : Tattva O prayoga- SubuddhiCharan Goswami
55. Pnuthividyar Prathamik Dharana- Puripriya Kundu
56. Naisadhacarita- a critical Study – AN Jani
57. Naisadhacarita- KK. Handiqui
58. Naisadhacarita-(-(Canto-I) Ed. By Naranarayan Dash
59. Naisadhacarita-(Canto-I) Ed. By Samir K. Dutta
60. The Meghaduta of Kalidasa- SK De
61. Meghaduta-MR Kale
62. Meghaduta Parichay- Parbati Charan Bhattacharya
63. A History of Indian Literature- M. Winterniz
64. History of Sanskrit Literature- De & Dasgupta
65. History of Classical Sanskrit Literature- M. Krishnamachariar
66. Survey of Sanskrit Literature- C. Kunhan Raja
67. Sanskrta Sahither Ruprekha- Biman Chandra Bhattacharya
68. Sanskrita Sahityer Itihas – Santi Bandyopadyay
69. Sanskrita Sahityer Itihas- Debkumar Das
70. Sanskrita Sahityer Itihas- Dhirendranath Bandyopadhyay
71. History of Sanskrit Literature- AB Keith
72. Hitopades-Ed. Satyanarayan Chakraborty
73. Hitopades-Ed. Tarakumar Kaviratna
74. Panchatantra- Ed. Tarakanta Kavyatirtha Bhatacharya
75. Panchatantra- Ed Shyamacharan Pandey
76. Panchatantra- Ed Sukla Sen
77. Srimadbhagabadgita- Ed by Swami Premesananda
78. Sadhaksanjibani- Ed.By Swami Ramsukha Das
79. Arthasamgraha- Ed. By Vachaspati Upadhyay
80. Arthasamgraha- Ed. By Swami Bhargananda
81. Arthasamgraha- Ed. By swami Alokananda
82. Arthasamgraha- Ed. By Guru Shankar Mukhopadhyay
83. Arthasamgraha- Ed. By Biswarup Saha
84. Arthasamgraha- Ed. By Raju Shastri Musalgankar
85. Vedantasara- Ed. By Kalibara Vedantavagish85. Vedantasara- Ed. By Brahmachari Medhachaitanya
86. Vedantasara- Ed. By Bipadbhanjan Pal

Downloaded from Vidyasagar University by 103.77.136.15 on 28 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

87. Vedantasara- Ed. By Swami Justananda

SEMESTER-III : LITERATURE

1. A History of Indian Literature- M. Winterniz
2. History of Sanskrit Literature- De & Dasgupta
3. History of Sanskrit Literature- AB Keith
4. Sanskrita Sahityer Itihas- Debkumar Das
5. Sanskrita Sahityer Itihas- Dhirendranath Bandyopadhyay
6. Sanskrita Sahitya ka Itihas- Judhistir Mimansak
7. Adhunik Sanskrit Sahitya – Rita Chattopadhyay
8. Sanskritasahitye Paschimabangasyavadanam- Narayan Dash
9. Uttararamacarita-Ed. By Haridas Siddhantavagisa
10. Uttararamacarita- Ed. By GK Bhat
11. Uttararamacarita- Ed. By Sitanath Acharya & D.K. Das
12. Uttararamacarita Alamkara- ed. By KC Khatua
13. Uttararamacarita Alamkara- ed. By Shyamapada Bhattacharya
14. Ratnavali- Ed. By Jyoti Sen
15. Ratnavali- Ed by Sris Chandra Chakravarti
16. Kavyaprakash(Upto 5th Chapt.) Ed. By Ramananda Acharya
17. Kavyaprakash(Upto 6th Chapt.) Ed. By Bipadbhanjan Pal
18. Kavyaprakash- Ed. By RD Karmakar
19. Kavyaprakash- Ed. By B. Bhattacharya and JSL Tripathy
20. Kavyaprakas-Ed. By Sunil Kumar Jana
21. Rasagangadhar(1st Ananam)-Sandhya Bhaduri
22. Rasagangadhar(1st Ananam)-Bidyut Baran Ghosh
23. Rasagangadhar(1st Ananam)-Madan Mohan Jha
24. Rasagangadhar(1st Ananam)-Chinmayee Chaterjee
25. Rasagangadhar- Ed. By Narayan Mishra & Shasinath Jha Vidyavachaspati
26. Rasasamiksha- Ramaranjan Mukherjee
27. Dasarupak(Chapt. I,II,III)- Ed. By Sitanath Acharya & DK Das
28. Dasarupak – RS Tripathy
29. Dasarupak – Anil Ch. Basu
30. Dasarupak – Baijanath Pandeya
31. Dhvanyalok- Bishnupada Bhattacharya
32. Dhvanyalok- B. Mukhopadhyay
33. Dhvanyalok- Satyanarayan Chakraborty
34. Dhvanyalok o Anandabardhan-K. Krishnamurty
35. Dhvanyalok O Lochan- S. Sengupta & K. Bhattacharya
36. Uttararamacarita- Ed. By GK Bhat
37. Uttararamacarita- Ed. By Sitanath Acharya & D.K. Das
38. Uttararamacarita Alamkara- ed. By KC Khatua
39. Uttararamacarita Alamkara- ed. By Shyamapada Bhattacharya
40. Ratnavali- Ed. By Jyoti Sen
41. Ratnavali- Ed by Sris Chandra Chakravarti

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

42. Uttararamacarita- Ed. By GK Bhat
43. Uttararamacarita- Ed. By Sitanath Acharya & D.K. Das
44. Uttararamacarita Alamkara- ed. By KC Khatua
45. Uttararamacarita Alamkara- ed. By Shyamapada Bhattacharya
46. Ratnavali- Ed. By Jyoti Sen
47. Ratnavali- Ed by Sris Chandra Chakravarti
48. Kavyaprakash(Upto 5th Chapt.) Ed. By Ramananda Acharya
49. Kavyaprakash(Upto 6th Chapt.) Ed. By Bipadbhanjan Pal
50. Kavyaprakash- Ed. By RD Karmakar
51. Kavyaprakash- Ed. By B. Bhattacharya and JSL Tripathy
52. Kavyaprakas-Ed. By Sunil Kumar Jana
53. Rasagangadhar(1st Ananam)-Sandhya Bhaduri
54. Rasagangadhar(1st Ananam)-Bidyut Baran Ghosh
55. Rasagangadhar(1st Ananam)-Madan Mohan Jha
56. Rasagangadhar(1st Ananam)-Chinmayee Chaterjee
57. Rasagangadhar- Ed. By Narayan Mishra & Shasinath Jha Vidyavachaspati
58. Rasasamiksha- Ramaranjan Mukherjee
59. Dasarupak(Chapt. I,II,III)- Ed. By Sitanath Acharya & DK Das
60. Dasarupak – RS Tripathy
61. Dasarupak – Anil Ch. Basu
62. Dasarupak – Baijanath Pandeya
63. Dhvanyalok- Bishnupada Bhattacharya
64. Dhvanyalok- B. Mukhopadhyay
65. Dhvanyalok- Satyanarayan Chakraborty
66. Dhvanyalok o Anandabardhan-K. Krishnamurty
67. Dhvanyalok O Lochan- S. Sengupta & K. Bhattacharya

SEMESTER-IV: LITERATURE

1. Vakroktijibitam- Ed. By K. Krishnamoorthy
2. Vakroktijibitam- Ed. By SK De
3. Vakroktijibitam- Ed. By Anjalika Mukhopadyay
4. Vakroktijibitam- Ed. By Rabisankar Bandyopadhyay
5. Vakroktijibitam- Ed. By Parameswaradin Pandeya
6. Vakroktijibitam- Ed. By Radheshyam Misra
7. History of Sanskrit Poetics- P.V. Kane
8. History of Sanskrit Poetics- SK De
9. Kavyamimasa- S. Acharya
10. Rajshekhar O kavyamimamsa- Nagendranath Chakraborty
11. Sahityamimamsa- Bishnupada Bhattacharya
12. Nandantattva Jijnasa- Tarun Mukherjee
13. Harsacarit- Ed. By P. V. Kane
14. Harsacarit- Ed. By Jibanananda Sagar
15. Buddhacarita- E.H. Jhonston
16. Buddhacarit- (Canto-III)- Ed. By Jayashree Chattopadhay
17. Mudrarakshasa- Ed. By M.R. Kale
18. Mudrarakshasa- Sitanath Acharya & Debkumar Das
19. Mrcchakatika- M.R. Kale

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

20. Mrcchakatika- Haridas Siddhantavagish
21. King Sudraka and His Drama- Biswanath Mukherjee
22. Mrcchakatikam- Ed. By Jagadish Mishra
23. Mrcchakatikam- Ed. By Udaychandra Bandyopadhyay
24. Amaramangalam-Ed. By Annada Sankar Pahari
25. Rukminiharanam – Ed. By Hemachandra Siddhantavagish
26. Aparajita- Binapani Patani

SEMESTER-III: PĀṆINĪYA VYĀKARAṆA

1. Vyakaran Darsaner Itihas-Gurupada Haldar
2. Sabda Sastrer Itihas – Kalijiban Deb Sharma
3. An Account of the Different Existing System of Sanskrit Grammar- Shripad Krishna Belvalkar
4. Sanskrita Vyakaraner Sanksipta Itibritta- Amiya Kumar Bhattachary
5. Sanskrita Vyakaran o Bhasaprasanga- Karuna Sindhu Das
6. A Glimpse of the History of Sanskrit Grammar- BN Jha
7. Bengal's Contribution to Sanskrit Grammar in the Paninian and Chandra System- Kali Charan Shastri
8. Sarvadarshanasamgraha- Umasankar Sharma
9. Sarvadarshanasamgraha- Basudev Shastri Abhyankar
10. Kashika – Jayaditya and Vamana (with Commentary Nyasa, Padamanjari and Bhavabodhini)
11. Kashika vritti Ed. By Ishwar Chandra Mishra
12. Vyakaranamahabhasyam- Ed. By Bhargav Shasri Joshi
13. Vyakaranamahabhasyam- Ed. By Sriguruprasad Shastri
14. Vyakaranamahabhasyam- Ed. By Harinarayan Tiwari
15. Patanjal Mahabhasya (pratyaharanik)- Ed. By Ajodhyanath Sanyal Shastri
16. Vaiyakaranabhusanasara(Darpana & Subodhini)-Ed. By Chandrika Prasad Dvivedi
17. Vaiyakaranabhusanasara(Darpana & Kashika)-Ed. By N. Shasri, S. Shasri & B. Shastri
18. Vaiyakaranabhusanasara(Bhaimi)-Ed. By Bhim Sen Shasri
19. Vaiyakaranabhusanasara(Prabhakari)-Ed. By Sri Prabhakar Mishra
20. Vaiyakaranabhusanasara- Ed. By Deva Dutta Sharma Upadhyay
21. Paribhasendushekhara- Ed. By Bishwanath Mishra
22. Paribhasendushekhara- Ed. By Sripad Satyanarayanmurti
23. Paribhasendushekhara-(Tattvaprakashika) Ed. By Sri Basudev Shastri Patavardhan
24. Paribhasendushekhara- Ed. By Jaydev Sharma Mishra
25. Paribhasendushekhara- Ed. By Sri Narayan Mishra
26. Vaiyakaranasiddhantakoumudi-(Valamanorama & Bhavabodhini)-Ed. By Gopal Dutta Pandeya
27. Vaiyakaranasiddhantakoumudi-(Valamanorama & Tattvabodhini)-Ed. By Gopal Dutta Pandeya
28. Vaiyakaranasiddhantakoumudi-(Valamanorama & Tattvabodhini)-Ed. By Balakrishna Pancholi
29. Vaiyakaranasiddhantakoumudi-(Sripratyaya)- Ed. By R. Sharma& Rambilas Choudhari
30. Vaiyakaranasiddhantakoumudi-(Sripratyaya)- Ed. By Balagobinda Jha
31. Vaiyakaranasiddhantakoumudi-(Stripratyay)-Ed. By Asoke Kr. Bandyopadhyay
32. Vaiyakaranasiddhantakoumudi-(Stripratyay)-Ed. By Tapan Sankar Bhattacharyya

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

SEMESTER-IV: PĀṆINĪYA VYĀKARAṆA

1. Vakyapadiyam- Ed. By Raghunath Sharma
2. Vakyapadiyam- (Brahmakandam) Ed. By Bishnupada Bhattacharyya
3. Vakyapadiyam- (Brahmakandam) Ed. By Mrinal Kanti Gangopadhyay
4. Vakyapadiyam- (Brahmakandam) Ed. By Satyanarayan Shastri Khandudi
5. Vakyapadiyam- (Brahmakandam) Ed. By Shiv Shankar Avasthi
6. Vakyapadiyam- (Brahmakandam) Ed. By Vedananda Jha
7. Saramanjari of Jaykrishna Ed. By Saroj Gupta
8. Saramanjari of Jaykrishna Ed. By Rabindranath Sastri
9. Saramanjari of Jaykrishna Ed. By Panchanan Tarkapanchanan
10. Laghusabdendushekhara- Ed.By Tejpal Sharma
11. Laghusabdendushekhara- Ed.By Panchanan Panda Sharsri
12. Paramalaghumanjusa- Ed. By Lokamani Dahal
13. Paramalaghumanjusa- Ed. By Jaysankarlal Tripathy
14. Paramalaghumanjusa- Ed. By Bijaya Goswami
15. Paramalaghumanjusa-Ed. By Kalika aprasad Sukla
16. Paramalaghumanjusa- - Ed. By Udaynath Jha
17. Vaiyakaranasiddhantakoumudi(Atmanepad & Parasmaipada)- Rambilas Choudhari
18. Rikpratishakhya- Ed. By Birendra Kr. Barma
19. Rikpratishakhya- Ed. By Amar Kr. Chattopadhyay
20. Rikpratishakhya- Ed. By Jugalkishor Vyas and Debdutta Sarma
21. Paniniyasikksha-Ed. By Manomohan Ghosh
22. Paniniyasikksha-Ed. By Shivraj Acharya
23. Paniniyasikksha-Ed. By Rakesh Sastri
24. Kavirahasya- Ed. By Harish Chandra Mitra
25. Kavirahasya- Ed. By Sourindro Mohun Tagore

SEMESTER-III: INDIAN PHILOSOPHY & NYĀYA-VAIŚEṢIKA PHILOSOPHY

1. History of Indian Logic- Satish Ch. Vidyabhusana
2. Sanskrita Sahityer Itihas- Dhirendra Nath Bandyopadhyay
3. Vange Navya Nyaya Charcha- Dinesh Ch. Bhattacharya
4. History of Indian Philosophy- Surendra Nath Dasgupta
5. Nyayadarshana- Ed. By Phanibhushan Tarkavagish
6. Nyayadarshana- Ed. By Taranath Tarka Tirtha & Amarendra Mohan Tarkatirtha
7. Nyayadarshana- Ed. By Dvaroka Nath Sastri
8. Nyayadarshana- Ed. By Sk. Sabir Ali
9. Bhasaparicched- Ed. By Panchanan Sastri
10. Bhasaparicched- Ed. By Anamika Ray Chowdhuri
11. Bhasaparicched Samiksha- Ed. By Dipak Ghosh
12. Bhasaparicched- Ed. By Gopal Ch. Mukhopadhyay
13. Bhasaparicched- Ed. By Rajendra Sukla
14. Bhasaparicched- Ed. By asutosh Bhattacharya
15. Sankhyakarika- Ed. By Narayan Ch. Goswami
16. Sankhyakarika- Ed. By Amit Bhattacharya
17. Sankhyakarika- Ed. By Bipadbhanjan Pal

Downloaded from Vidyasagar University IP:103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

18. Yogasar- Adinath Upadyay
19. Manameyoday- Dinanath Tripathy
20. Vedantaparibhasa- Panchanan Shastri
21. Vyaptipanchaka- Ed. By Shailajapati Mukhopadhyaya
22. Vyaptipanchaka- Ed. By Gangadhar Kar

SEMESTER-IV: INDIAN PHILOSOPHY & NYĀYA-VAIŚEṢIKA PHILOSOPHY

1. Sarvadarsanasamgraha- Ed. By Basudev Abhyankar Sastri
2. Sarvadarsanasamgraha- Ed. By Satyajyoti Chakraborty
3. Sarvadarsanasamgraha(Carvaka)- Ed. By Pancanan Sastri
4. Sarvadarsanasamgraha-(Bouddha) Ed. By Panchanan Sastri
5. Sarvadarsanasamgraha- (Bouddha & Jaina)Ed. By Sanjit Kr. SandhuKhan
6. Sarvadarsanasamgraha- Ed. By Umasankar Sharma
7. Sarvadarsanasamgraha- (Carvak, Bouddha, Jaina)Ed. By Amit Bhattacharya
8. Prasastapadabhasyam- Ed. By Medhachaitanya
9. Vaisesikdarsanam- Ed. By Amit Bhattacahrya
10. Vaisesiksutropaskar- Ed by Sk. Sabir Ali

11.Sankhyapravachanabhasya- Sri Narayan Mishra

12.Yogadarshanam- Swami Bhargananda

13. Patanjaladarshana- Ed. By Purna Chandra Vedanta Chanchu

14. Patanjalayogadarshana- Ed. By Swami Hariharananda

15. Vedantadarsana-(Chapt.-I)- Ed. By Gurucharan Samkhya-Vedantatirtha
16. Vedantadarsana(Chapt.-I) Ed. By Swami Biswarupananda
17. Brahmasutra- Ed. By Kalibar Vedanta Bagish
18. Saptapadarthi-Ed. By Tapan Sankar Bhattacharyya
19 .Saptapadartha- ed.By Jay Bhattacharya
20. Saptapadartha-Ed. By Amarendra Mohan Tarkatirtha & Narendra Ch. Vedantatirtha
21.Vaishesikasutropaskar- Narayan Mishra
22 Nyayamanjari- Ed. By Surja Narayan Sukla
23. Nyayakusumanjali- Ed. By Srimohan Bhattacharya
24. Nyayakusumanjali- Ed. By Chandan Bhattachary

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Sanskrit_2022_23.pdf

VIDYASAGAR UNIVERSITY
MIDNAPORE-721102

The SYLLABUS for
POST- GRADUATE Courses
in
SANSKTRIT

Under Choice Based Credit System (CBCS)
(Semester Programme)

[w. e. f. 2018-19 session]
Department of Sanskrit

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Proposed Syllabus for P. G. Course

The Department of Sanskrit, Vidyasagar University is offering M. A. course in Sanskrit under the Semester CBCS system with the following syllabus.

The syllabus assumes in the students an interest in higher learning and aims at equipping them for an academic career.

The Post graduate programme in this system will be divided into 18 (eighteen) Core Courses and 2(two) Extra Departmental Courses (CBCS) and will consist of Four Semesters to be covered in two years: the First and Second Semester in the first year, and the Third and Fourth semester in the Second year. Each Semester consist five courses with equal Marks: For each course Total Marks: 50(Theoretical Exam-40, Internal Assessment-10). We offer two extra departmental Courses as a part of Choice Based Credit System (CBCS) one each in Second semester (SAN-204) and in the Third semester (SAN-304).

In the Fourth Semester five courses will consist of two optional groups (Group-A: Literature and Group-B: Philosophy). A Candidate can choose any one group among two.

PROGRAMME OUTCOME

After having completed Masters Degree in Sanskrit, the Students will become experts in different fields of Vedic as well as classical Sanskrit language and literature. The programme mast have important role to enhance ethical, psychological, historical, philosophical, cultural learning at individual, social and national level which is more essential now a days. Those who are experts in Vedic literature both of Karmakanda and Jnanakanda will be able to utilize their skills in the field of social engagement like Yajna, Puja, Sraddha, Marriage etc. Those who are specialized in Sanskrit Grammar and Linguistics will be able to work as interpreters, translators and even they can work at IITs for National Language Processing (NLP), Programming (being Computer talking language) etc. apart from their teachership. Those who are experts in Indian Philosophy will be privileged to work at Judicial Court as a lawyer. This will not be enough to say that the students digested this programme can utilize their skills in the field of social work, environmental at protection, human & animal rights and many issues related to present-day globalizing world.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Course Structure of **M.A.** in **Sanskrit**:

SEMESTER	COURSE NO.	COURSE TITLES	FULL MARKS	Credit
I	SAN 101	VEDIC HYMNS	50	6
	SAN 102	BRĀHMAṆAS & UPANIṢADAS	50	6
	SAN 103	GRAMMAR-I	50	6
	SAN 104	DRAMA AND DRAMATURGY	50	6
	SAN 105	LINGUISTICS & MANUSCRIPTOLOGY	50	6
	TOTAL		250	30
II	SAN 201	VEDIC STUDIES	50	6
	SAN 202	GRAMMAR-II	50	6
	SAN 203	POETRY-I	50	6
	C-SAN 204	HISTORY OF SANSKRIT LITERATURE AND GENERAL GRAMMAR (CBCS)	50	4
	SAN 205	PHILOSOPHY-I	50	6
	TOTAL		250	28
III	SAN 301	GRAMMAR-III	50	6
	SAN 302	POETICS -I	50	6
	SAN 303	POETICS -II	50	6
	C-SAN 304	DRAMA AND MODERN SANSKRIT SHORT STORIES (CBCS)	50	4
	SAN 305	PHILOSOPHY-II		
	TOTAL		250	28
	SPECIAL PAPER			
IV	**LITERATURE(A)**			
	SAN 401A	POETICS -III	50	6
	SAN 402A	POETICS-IV	50	6
	SAN 403A	POETRY-II	50	6
	SAN 404A	DRAMA	50	6
	SAN 405A	MODERN SANSKRIT LITERATURE	50	6
	TOTAL		250	30
	PHILOSOPHY(B)			
	SAN 401B	SARVADARŚANASAṂGRAHA	50	6
	SAN 402B	SĀṂKHYA-YOGADARŚANA	50	6
	SAN 403B	NYĀYAVAIŚEṢIKADARŚANA	50	6
	SAN 404B	PURVOTTARAMĪMĀṂSĀDARŚANA	50	6
	SAN 405B	VYĀKARAṆADARŚANA	50	6
	TOTAL		250	30
	GRAND TOTAL		1000	116

Full Marks = 50 ; END SEMESTER EXAMINATION=40 & INTERNAL ASSESSMENT =10

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

SEMESTER-I

Paper : SAN 101 : Vedic Hymns Total Marks- 50

Course Outcome: For its excellence and depth the ancient Vedic literature of India is generally recognized. Its study is invaluable for mental development.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I	: Ṛgveda -1.1-2, Visvāmitranadī-Saṃvāda 111.33,	
	Puruṣasūkta 10.90, Nāsadīya -10.129.	30
Unit-II	:Yajurveda - śivasaṃkalpa -1.6.	10
Unit-III	:Atharvaveda - pṛthvīsūkta – 12.1.1-10,	
	Kālasūkta – 19.53	10

Reference Books:

1. Srautapatha: CU Publication
2. The New Vedic Selection : K. N. Sastri and BB Choubey
3. Rgveda Samhita: Vaidik Sams'odhan Mandal, Poona(Vol. IV)
4. Vaidic Sankalan: Ed. By Bhabani Prasad Bhattacharya and Taraknath Adhikari
5. Vedic Selections(Vol-I&II)- Khitish Ch. Chaterjee

Paper : SAN 102 : Brāhmanas & Upanisadas Total Marks- 50

Course Outcome: Later Vedic literature, Brahmanas and Upanisads, are repositories of wisdom. It deserves our attention.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I	: Śatapatha – Pancamahāyajňa	10
Unit-II	: Aitareya- śunahśepa Ākhyāna	10
Unit-III	: Kathopaniṣada - Chapter –I (Valli –I& II)	
	: Kenopaniṣada - Chapter –I & II	30

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Reference Books:

1. Aitareya Brahmana: Ananda Asram, Poona
2. Kathopanisad: Ed. By Brahachari Medhachaitanya
3. Kenopanisad: Ed. By Sitanath Goswami
4. Kenopanisad: Ed. By Swami Justananda

Paper : SAN 103 : **Grammar -I** **Total Marks- 50**

Course Outcome: Panini as a grammarian is recognized all over the world. His sutras on samjna and paribhasa are worthy of serious study.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I -	: Siddhāntakoumudī (Samjňā)	30
Unit-II -	: Siddhāntakoumudī (Paribhāṣā)	20

Reference Books:

1. Vaiyakaranasiddhantakoumudi-(Samjna & Paribhasa)-Ed. By Ajodhyanath Sannal Sastri
2. Vaiyakaranasiddhantakoumudi-(Samjna & Paribhasa)-Ed. By Mrinal Kanti Gangopadhyay
3. Vaiyakaranasiddhantakoumudi-(Valamanorama & Tattvabodhini)-Ed. By Gopal Dutta Pandeya

Paper : SAN 104 : **Drama & Dramaturgy** **Total Marks- 50**

Course Outcome: Indians excelled in dramaturgy and dramatic compositions. Their study makes us conscious about our rich heritage.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I -	: Uttararāmacarita	25
Unit-II -	:Nāṭyaśastra - Chapter –I & II	25

Reference Books:

1. Uttararamacarita- Haridas Siddhantavagisa

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

2. Uttararamacarita- GK Bhat
3. Uttararamacarita- Sitanath Acharya & D.K. Das
4. Uttararamacarita Alamkara- KC Khatua
5. Natyasastra- RS Nagar
6. Bharata Natyasastra- SC Bandyopadhyay

Paper : SAN 105 : Linguistics & Manuscriptology Total Marks- 50

Course Outcome: For acquiring mastery over a language a study of linguistics is essential. We should also proudly preserve our national wealth of manuscripts.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Theoretical basis of historical linguistics,

Historical development of OIA. 30

Unit-II - : Elementary knowledge of Manuscriptology

Manuscript, Manuscriptology, Archetype, Colophon,

Critical Apparatus, Recession, Catalogus Catalogorum,

New Catalogus Catalogorum, Descriptive Catalogue,

Gilgit Manuscript, Bower Manuscript,

Causes of Variant readings. 20

Reference Books:

1. Elements of the Science of Language-IJS Taraporewala
2. The Sanskrit Language- T. Burrow
3. A Handbook of Sanskrit Philology- Satyaranjan Banerjee
4. Sankrita o Prakrita Bhasar Kramavikash- Paresh ch. Majumdar
5. An Introduction to thenIndian Textual criticism - SM Katre
6. Aspects of Manuscriptology- Ratna basu & Karunasindhu Das
7. Tulanamulak Bhasatattva O Sanskrit- Bijaya Goswami
8. Sanskrita Pnuthividya : Tattva O prayoga- SubuddhiCharan Goswami
9. Pnuthividyar Prathamik Dharana- Puripriya Kundu

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

SEMESTER-II

Paper: SAN 201: Vedic Studies Total Marks- 50

Course Outcome: A general knowledge of the characteristics of the Vedic lore is desirable, and rules of interpreting Vedic mantras also are to be learnt.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Ṛgvedabhāṣyabhūmikā by Sāyaṇa 25

Unit-II - : Nirukta - Chapter –I & II 25

Four fold division of Padas, Concept of Nama & Akhyata, Meaning of Upasarga, Meaning and categories of Nipatas, Sadbhavavikara, Purposes of study of Nirukta, Principles of Etymologies of the following words: Acarya, Vira, Go, Samudra, Vrtra, Aditya, Usa, Megha, Vak, Udaka, Nadi, Asva, Jatavedas, Vaisvanara, Nighantu.

Reference Books:

1. Rgbhasyabhumika – Ed. By Gurusankar Mukhopadhyay
2. Niruktam- Ed. By Amareswar Thakur
3. Niruktam- Ed. By Medhachaitanya
4. Niruktam- Ed. By Jamuna Pathak

Paper : SAN 202 : Grammar-II Total Marks- 50

Course Outcome: To learn and understand Sanskrit properly we have to study the rules of sandhi and nominal declension. Panini's text needs to be studied.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Siddhāntakoumudī -Ac Sandhi with prakṛtibhāva 25

Unit-I - : Siddhāntakoumudī- Ajantapunlinga 25

Reference Books:

1. Vaiyakaranasiddhantakoumudi-(Ac Sandhi)-Ed. By Mrinal Kanti Gangopadhyay
2. Vaiyakaranasiddhantakoumudi-(Ac Sandhi)-Ed. By Karunasindhu Das

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

3. Vaiyakaranasiddhantakoumudi-(Ajanta Punlinga)-Ed. By Asoke Kr. Panda
4. Vaiyakaranasiddhantakoumudi-(Ajanta Punlinga)-Ed. By Bipadbhanjan Pal
5. Vaiyakaranasiddhantakoumudi-(Valamanorama & Tattvabodhini)-Ed. By Gopal Dutta Pandeya
6. Vaiyakaranasiddhantakoumudi-(Ajanta Punlinga)-Ed. By Ajodhyanath Sannal Sastri

Paper : SAN 203 : Poetry-I Total Marks- 50

Course Outcome: The excellences of Sanskrit Kavya literature is an established fact. Some of its masterpieces deserve special study.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Naiṣadacarita – Canto –I 25

Unit-I - : Meghadūta 25

Reference Books:

1. Naisadhacarita- a critical Study – AN Jani
2. Naisadhacarita- KK. Handiqui
3. Naisadhacarita-(-(Canto-I) Ed. By Naranarayan Dash
4. Naisadhacarita-(Canto-I) Ed. By Samir K. Dutta
5. The Meghaduta of Kalidasa- SK De
6. Meghaduta-MR Kale
7. Meghaduta Parichay- Parbati Charan Bhattacharya

Paper: C- SAN 204: **History of Sanskrit literature. & General Grammar (CBCS)**

Total marks- 50

Course Outcome: Sanskrit literature has developed through many stages. Besides, a student of Sanskrit cannot do without an understanding of elementary grammar. A study of all these is important.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : History of Sanskrit literature. , 25

- Vedic history
- Classical history
- Scientific & Technical history

Unit-II - : General Grammar 25

- Construction of Sentence
- Application

Reference Books:

1. A History of Indian Literature- M. Winterniz
2. History of Sanskrit Literature- De & Dasgupta
3. History of Classical Sanskrit Literature- M. Krishnamachariar
4. Survey of Sanskrit Literature- C. Kunhan Raja
5. Sanskrta Sahither Ruprekha- Biman Chandra Bhattacharya
6. Sanskrita Sahityer Itihas – Santi Bandyopadyay
7. Sanskrita Sahityer Itihas- Debkumar Das
8. Sanskrita Sahityer Itihas- Dhirendranath Bandyopadhyay
9. History of Sanskrit Literature- AB Keite
10. Paniniyam- Lahiri Sastri
11. Paniniya Sabdasastra- Satyanarayan Chakraborty
12. Samagra-vyakaran-koumudi- Ishwar Chandra Vidyasagar

Paper: SAN 205: Philosophy - I **Total Marks- 50**

Course Outcome: Indian philosophy is marked by its lofty ideas and depth of wisdom. One can be enriched specially by a study of Vedanta and philosophy of language.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Vedāntasāra 25

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Reference Books:

1. Vedantasara- Ed. By Kalibara Vedantavagish
2. Vedantasara- Ed. By Brahmachari Medhachaitanya
3. Vedantasara- Ed. By Bipadbhanjan Pal
4. Vedantasara- Ed. By Swami Justananda
5. Mahabhasyam (Paspasahnikam)- Ed. By Dandiswami Damodar Ashram
6. Mahabhasyam (Paspasahnikam)- Ed. By Sanghamitra Sengupta
7. Mahabhasyam (Paspasahnikam)- Ed. By Gurunath Vidyanidhi

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

SEMESTER-III

Paper: SAN-301 : Grammar -III Total Marks- 50

Course Outcome: A student of Sanskrit cannot dispense with a sound knowledge of Panini's sutras on feminine forms and conjugation of verbs. A study has to be made on the basis of a suitable text.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Siddhāntakoumudī - Tiṃanta (Bhū & Edh) 30

Unit-II - : Siddhāntakoumudī – Stripratyaya 20

Reference Books:

1. Vaiyakaranasiddhantakoumudi-(Timantaprakaran)-Ed. By Parbati Chakraborty
2. Vaiyakaranasiddhantakoumudi-(Timantaprakaran)-Ed. By Krishnananda Tirtha
3. Vaiyakaranasiddhantakoumudi-(Stripratyay)-Ed. By Asoke Kr. Bandyopadhyay
4. Vaiyakaranasiddhantakoumudi-(Stripratyay)-Ed. By Tapan Sankar Bhattacharyya

Paper : SAN 302 : Poetics –I Total Marks- 50

Course Outcome: The tradition of theories on poetics is both ancient and rich. There are many masterpieces on poetics. A study of these theories and views is essential.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I – kāvyaprakāśa – Chapter-I & II 25

Chapter- IX &X 25

Reference Books:

1. Kavyaprakash(Upto 5th Chapt.) Ed. By Ramananda Acharya
2. Kavyaprakash(Upto 6th Chapt.) Ed. By Bipadbhanjan Pal
3. Kavyaprakash(1st Chapt..) Ed. By Sumita Basu
4. Kavyaprakash- Ed. By RD Karmakar
5. Kavyaprakash- Ed. By B. Bhattacharya and JSL Tripathy

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

6. Kavyaprakash- Ed. By Satyavrata Singha
7. Kavyaprakash(Balabodhini)- Choukhamba Surabharati Prakasan.
8. Kavyaprakash(9^{th} & 10^{th} Chapt..) Ed. By Bijaya Goswami

Paper : SAN 303 : **Poetics -II** **Total Marks- 50**

Course Outcome: A few notable works on the rules for composing a drama are available in Sanskrit. The remarkable literary theory of dhvani, verbal power of suggestion, developed in Sanskrit. A study of all these is relevant.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Daśarūpaka –I & III 25

Unit-II - : Dhvanyaloka –I 25

Reference Books:

1. Dasarupak(Chapt. I,II,III)- Ed. By Sitanath Acharya & DK Das
2. Dasarupak – RS Tripathy
3. Dasarupak – Anil Ch. Basu
4. Dasarupak – Baijanath Pandeya
5. Dhvanyalok- Bishnupada Bhattacharya
6. Dhvanyalok- B. Mukhopadhyay
7. Dhvanyalok- Bishnupada Bhattacharya
8. Dhvanyalok- Satyanarayan Chakraborty
9. Dhvanyalok o Anandabardhan-K. Krishnamurty
10. Dhvanyalok O Lochan- S. Sengupta & K. Bhattacharya

Paper : C-SAN 304: **Drama & Modern Sanskrit short stories. (CBCS)** **Total Marks- 50**

Course Outcome: Dramatic compositions and modern short stories of a high quality are written in Sanskrit. An acquaintance with some of them is valuable.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Abhijňānaśakuntala 1-4 25

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Unit-II - : Aparājitā by Vīṇāpaṇipāṭanī 25

Reference Books:

1. Abhijnanasakuntalam-Ed. By Satyanarayan Chakraborty
2. Abhijnanasakuntalam-Ed. By Anil Ch. Basu
3. Abhijnanasakuntalam-Ed. By MR. Kale
4. Aparajita- Binapani Patani

Paper: SAN 305 : Philosophy-II **Total Marks- 50**

Course Outcome: The advocates of Nyaya Vaisesika produced some good texts explaining their metaphysics and epistemology. A study, in this regard, on the basis of selected texts is beneficial.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - :Tarkabhāṣa 25

Unit-II - : Bhāṣāpariccheda (Vyāpti) 25

Reference Books:

1. Tarkabhasa- Ed. By Gangadhar Kar
2. Tarkabhasa- Ed. By Sarbani Ganguli
3. Tarkabhasa- Ed. By Anamika Ray Chowdhuri
4. Tarkabhasa- Ed. By Vadarinath Sukla
5. Tarkabhasa- Ed. By Satyajit Layek
6. Tarkabhasa- Ed. By Sri Shobhit Mishra
7. Tarkabhasa-Ed. By S.R.I.R
8. Bhasaparicched- Ed. By Panchanan Sastri
9. Bhasaparicched- Ed. By Anamika Ray Chowdhuri
10. Bhasaparicched Samiksha- Ed. By Dipak Ghosh
11. Bhasaparicched- Ed. By Gopal Ch. Mukhopadhyay

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

SEMESTER –IV

Special Paper: Group A: Literature *or* Group B: Philosophy

Group A: Literature

Paper : SAN-401A : Poetics -III Total Marks- 50

Course Outcome: In Sanskrit there is a long and rich tradition on the theories of literary compositions. A few important examples out of them are highly rewarding.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Kāvyaprakāśa (IV & V) 25

Unit-II - : Rasagangādhara (1st Ānana upto Rasanirupana) 25

Reference Books:

1. Kavyaprakash(Upto 5th Chapt.) Ed. By Ramananda Acharya
2. Kavyaprakash(Upto 6th Chapt.) Ed. By Bipadbhanjan Pal
3. Kavyaprakash- Ed. By RD Karmakar
4. Kavyaprakash- Ed. By B. Bhattacharya and JSL Tripathy
5. Rasagangadhar(1st Ananam)-Sandhya Bhaduri
6. Rasagangadhar(1st Ananam)-Bidyut Baran Ghosh
7. Rasagangadhar(1st Ananam)-Madan Mohan Jha
8. Rasagangadhar(1st Ananam)-Chinmayee Chaterjee
9. Rasagangadhar- Ed. By Narayan Mishra & Shasinath Jha Vidyavachaspati
10. Rasasamiksha- Ramaranjan Mukherjee

Paper : SAN 402A : Poetics IV Total Marks- 50

Course Outcome: With reference to literary compositions some novel texts were written in Sanskrit. A study of some advanced theories is beneficial.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Vakroktijivitam -Chapter -I 25

Unit-I - :Kāvyamīmāṃsā –Chapter-4-6 25

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Reference Books:

1. Vakroktijibitam- Ed. By K. Krishnamoorthy
2. Vakroktijibitam- Ed. By SK De
3. Vakroktijibitam- Ed. By Anjalika Mukhopadyay
4. Vakroktijibitam- Ed. By Rabisankar Bandyopadhyay
5. Vakroktijibitam- Ed. By Parameswaradin Pandeya
6. Vakroktijibitam- Ed. By Radheshyam Misra
7. History of Sanskrit Poetics- P.V. Kane
8. History of Sanskrit Poetics- SK De
9. Kavyamimasa- S. Acharya
10. Rajshekhar O kavyamimamsa- Nagendranath Chakraborty
11. Sahityamimamsa- Bishnupada Bhattacharya
12. Nandantattva Jijnasa- Tarun Mukherjee

Paper : SAN 403A : Poetry-II Total Marks- 50

Course Outcome: In classical Sanskrit we have literary compositions of excellence in both prose and poetry. Selections from them may be studied with profit.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Harṣacarita –V 25

Unit-I - :Buddhacarita- III 25

Reference Books:

1. Harsacarit- Ed. By P. V. Kane
2. Harsacarit- Ed. By Jibanananda Sagar
3. Buddhacarita- E.H. Jhonston
4. Buddhacarit- (Canto-III)- Ed. By Jayashree Chattopadhay

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Paper : SAN 404A : Drama Total Marks- 50

Course Outcome: We have in Sanskrit a few dramas conspicuous for their unique subject-matter. A study of such uncommon dramas enriches the reader.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Mudrārākṣasa 25

Unit-II - :Mṛcchakatika 25

Reference Books:

1. Mudrarakshasa- Ed. By M.R. Kale
2. Mudrarakshasa- Sitanath Acharya & Debkumar Das
3. Mrcchakatika- M.R. Kale
4. Mrcchakatika- Haridas Siddhantavagish
5. King Sudraka and His Drama- Biswanath Mukherjee
6. Mrcchakatikam- Ed. By Jagadish Mishra
7. Mrcchakatikam- Ed. By Udaychandra Bandyopadhyay

Paper : SAN 405A : Modern Sanskrit literature Total Marks- 50

Course Outcome: Sanskrit is also rich in a variety of modern compositions, especially excellent dramas by traditional scholars. Their study is sure to be of benefit.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Amaramaṃgala by Paňcananatarkaratna 25

Unit-II - : Rukminiharana by Haridāsasiddhantavāgīśa 25

Reference Books:

1. Amaramangalam-Ed. By Annada Sankar Pahari
2. Rukminiharanam – Ed. By Hemachandra Siddhantavagish

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Group B : Philosophy

Paper : SAN 401B : Sarvadarśanasaṃgraha Total Marks- 50

Course Outcome: The three Nastika systems which do not believe in the authority of the Veda also make important contribution to the general fund of Indian philosophical thought. Their study is indispensible.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I -	: Cārvāka	15
Unit-II -	: Bouddha	20
Unit-III -	: Arhat	15

Reference Books:

1. Sarvadarsanasamgraha- Ed. By Basudev Abhyankar Sastri
2. Sarvadarsanasamgraha- Ed. By Satyajyoti Chakraborty
3. Sarvadarsanasamgraha(Carvaka)- Ed. By Pancanan Sastri
4. Sarvadarsanasamgraha-(Bouddha) Ed. By Panchanan Sastri
5. Sarvadarsanasamgraha- (Bouddha & Jaina)Ed. By Sanjit Kr. SandhuKhan
6. Sarvadarsanasamgraha- Ed. By Umasankar Sharma
7. Sarvadarsanasamgraha- (Carvak, Bouddha, Jaina)Ed. By Amit Bhattacharya

Paper : SAN 402B : Sāṃkhya-yogadarśana Total marks- 50

Course Outcome: Two important Astika systems in Indian philosophy, admitting the validity of the Veda, are Samkhya and Yoga. Original texts of the systems deserve proper study.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I -	: Sāṃkhyakārikā with Sāṃkhyatattvakoumudī	25
Unit-II -	: Yogasūtra with vyāsabhāṣya (Samādhipāda)	25

Reference Books:

1. Sankhyakarika- Ed. By Narayan Ch. Goswami
2. Sankhyakarika- Ed. By Amit Bhattacharya
3. Sankhyakarika- Ed. By Bipadbhanjan Pal
4. Yogadarsanam-Ed. By Swami Bhargananda

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

5. Patanjaladarshana- Ed. By Purna Ch. Vedanta Chanchu
6. Patanjalayogadarshana- Ed. By Swami Hariharananda

Paper : SAN 403B : Nyāyavaiśeṣikadarśana Total Marks- 50

Course Outcome: The Nyaya –Vaisesika system occupies a prominent position among the systems of Indian philosophy. Their texts are worthy of study for a knowledge of metaphysics and epistemology.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Nyāyasūtra with Vātsyanabhāṣya
(upto Apavargasūtra 1.1.22) 25

Unit-II :Praśastapādabhāṣya (Dravya section and Nyāyakandalī
on uddeśaprakaraṇa only) 25

Reference Books:

1. Nyayadarshana- Ed. By Phanibhushan Tarkavagish
2. Nyayadarshana- Ed. By Taranath Tarka Tirtha & Amarendra Mohan Tarkatirtha
3. Nyayadarshana- Ed. By Dvaroka Nath Sastri
4. Nyayadarshana- Ed. By Sk. Sabir Ali
5. Prasastapadabhasyam- Ed. By Medhachaitanya
6. Vaisesikdarsanam- Ed. By Amit Bhattacahrya
7. Vaisesiksutropaskar- Ed by Sk. Sabir Ali

Paper : SAN 404B : Purvottarmīmāṃsādarśana Total Marks- 50

Course Outcome: The Mimamsa and the Vedanta systems of Indian philosophy are held in high esteem by scholars. A study of their basic texts can hardly be dispensed with.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Arthasaṃgraha 20

Unit-II - : Brahmasūtra with śāṃkarbhāṣya –Catussūtrī (1.1.4) 30

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Reference Books:

1. Arthasamgraha- Ed. By Vachaspati Upadhyay
2. Arthasamgraha- Ed. By Swami Bhargananda
3. Arthasamgraha- Ed. By swami Alokananda
4. Arthasamgraha- Ed. ByGuru Shankar Mukhopadhyay
5. Arthasamgraha- Ed. By Biswarup Saha
6. Arthasamgraha- Ed. By Raju Shastri Musalgankar
7. Vedantadarsana-(Chapt.-I)- Ed. By Gurucharan Samkhya-Vedantatirtha
8. Vedantadarsana(Chapt.-I) Ed. By Swami Biswarupananda

Paper : SAN 405B : Vyākaraṇadarśana Total Marks- 50

Course Outcome: Indian thinkers make distinct contribution to philosophy of grammar or language. There are many profound texts on the subject. One can study them with benefit.

(All questions are to be answered in Sanskrit language and Devanagari script)

Unit-I - : Vākyapadīya (Brahmakāṇḍa) 30

Unit-II - : Paramalaghumañjūsa (Kāraka) 20

Reference Books:

1. Vakyapadiyam- Ed. By raghunath Sharma
2. Vakyapadiyam- (Brahmakandam) Ed. By Bishnupada Bhattacharyya
3. Vakyapadiyam- (Brahmakandam) Ed. By Mrinal Kanti Gangopadhyay
4. Vakyapadiyam- (Brahmakandam) Ed. By Satyanarayan Shastri Khandudi
5. Paramalaghumanjusa- Ed. By Lokamani Dahal
6. Paramalaghumanjusa- Ed. By Jaysankarlal Tripathy
7. Paramalaghumanjusa- Ed. By Bijaya Goswami

----------000----------

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:58:53; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Sanskrit_Syllabus_POCO_2018_19.pdf

Vidyasagar University

Curriculum for B.A. (Honours) in Sanskrit

[Choice Based Credit System]

Semester-I

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC1		**C1T**: Classical Sanskrit Literature (Poetry)	Core Course-1	5	1	0	6	75
CC2		**C2T:** Classical Sanskrit Literature (Prose)	Core Course-2	5	1	0	6	75
GE1		TBD	Generic Elective-1				4/5	75
							2/1	
AECC		English	AECC (Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC-** Core Course, **TBD -** To be decided, **AECC-** Ability Enhancement Compulsory Course
Generic Elective (GE) (Interdisciplinary) from other Department [paper will be of 6 credits]

Downloaded from Vidyasagar University by 42.110.197.62 on 18 December 2020 : 18:52:22; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons).pdf

Semester-I

Core Courses (CC)

CC-1 : Classical Sanskrit Literature (Poetry) Credit 06

C1T : Classical Sanskrit Literature (Poetry)

Course content

Section 'A'	Raghuvaṁśam: Canto-I (Verse: 1-25)
Section 'B'	Kumārasambhavam: Canto-V (Verse: 1-30)
Section 'C'	Kirātārjunīyam - Canto I (1-25 Verses)
Section 'D'	Nītiśatakam (1-20 Verses, 1st two Paddhatis)-M. R. Kale Edition.
Section 'E'	Origin and Development of Mahākāvya and Gītikāvya

Unit-Wise Division:

Section 'A'

Raghuvaṁśam: Canto-I (Verse: 1-25)

Unit: I Raghuvaṁśam: Introduction (Author and Text), Appropriateness of title, Canto I, 1-10 Grammatical analysis, Meaning/translation, Explanation, content analysis, Characteristics of Raghu Clan.

Unit: II Raghuvaṁśam: Canto I (Verses 11-25) grammatical analysis, Meaning/translation, Explanation, Role of Dilīpa in the welfare of subjects.

Section 'B'

Kumārasambhavam: Canto-V (Verses: 1-30)

Unit: I Kumārasambhavam: Introduction (Author and Text), Appropriateness of title, Background of given contents.
Text Reading Canto I Verses 1-15, (Grammatical analysis, Translation, and Explanation), Poetic excellence and Plot.

Unit: II Kumārasambhavam : Text Reading Canto I Verses 16-30 (Grammatical analysis, Translation, Explanation), Penance of Pārvati, Poetic excellence, Plot.

Section 'C'

Kirātārjunīyam - Canto I (1-25 Verses)

Unit: I Kirātārjunīyam: Introduction (Author and Text), Appropriateness of title, Background of given contents,
Canto I Verses 1-16, Grammatical analysis, Translation, Explanation, Poetic excellence, thematic analysis.

Unit: II Kirātārjunīyam: Verses 17-25, Grammatical analysis, Translation, Explanation, Poetic excellence, thematic analysis.

Section 'D'

Nītiśatakam (1-20 Verses, 1st two Paddhatis)-M. R. Kale Edition

Unit: I Nītiśatakam: Verses (1-10) Grammatical analysis Translation, explanation.

Unit: II Nītiśatakam: Verses (11-20) Grammatical analysis Translation, explanation, thematic analysis bhartṛhari's comments on society.

Downloaded from Vidyasagar University by 42.110.197.62 on 18 December 2020 : 18:52:22; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons).pdf

Section 'E'

Origin and Development of Mahākāvya and Gītikāvya

Unit: I Origin and development of different types of Māhākavya with special reference to Aśvaghoṣa, Kālidāsa, Bhāravi, Māgha,Bhatti, Śṛiharṣa.

Unit: II Origin & Development of Sanskrit gītikāvayas with special reference to Kālidāsa, Bilhaṇa, Jayadeva, Amarūk, Bhartṛhari and their works.

CC-2 : Classical Sanskrit Literature (Prose) Credit 06

C2T : Classical Sanskrit Literature (Prose)

Course content

Section 'A' Śukanāsopadeśa (Ed. Prahlad Kumar)

Section 'B' Viśrutacaritam Upto 15th Para

Section 'C' Origin and development of prose, Important prose romances and fables

Unit-Wise Division:

Section 'A'

Śukanāsopadeśa (Ed. Prahlad Kumar)

Unit: I Introduction- Author/Text, Text up to page 116 of Prahlad Kumar Up to the end of the Text.

Unit: II Society, *Āyurveda* and political thoughts depicted in *Śukanāsopadeśa*, logical meaning and application of sayings like बाणोणछछष्ट जगत्सवाम्, वाणी बाणो बभूव, पञ्चाननो बाण etc.

Section 'B'

Viśrutacaritam Upto 15th Para

Unit: I Para 1 to 10 - Introduction- Author, Text, Text reading (Grammar, Translation, and Explanation), Poetic excellence, plot, Timing of Action.

Unit: II Para 11 to 15 - Text reading (Grammar, Translation, and Explanation), Poetic excellence, plot, Timing of Action. Society, language and style of Daṇḍin. Exposition of Saying दणण्डन पदलाणलत्यम्, कणवदाण्डी कणवदाण्डो कणवदाण्डो न सशय ।

Section 'C'

Origin and development of prose, Important prose romances and fables

Unit: I Origin and development of prose, important prose romances and fables

Unit: II (i) Subandhu, Daṇḍin, Bāṇa, Ambikādatta Vyāsa.
(ii) Paňcatantra, Hitopadeśa, Vetālapaňcaviṁśatikā, Siṁhāsanadvātriṁśikā, Puruṣaparīkṣā, Śukasaptati.

Downloaded from Vidyasagar University by 42.110.197.62 on 18 December 2020 : 18:52:22; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons).pdf

Generic Elective (GE)

GE-1 [Interdisciplinary for other department]

GE-1 : Basic Sanskrit — Credit 06

GE1T : Basic Sanskrit

Course content:

Section 'A' Grammar and composition Part I
Section 'B' Grammar and composition Part II
Section 'C' Literature

Unit-Wise Division:

Section 'A'
Grammar and Composition Part I

Unit: I Nominative forms of pronouns- *asmad*, *yuṣmad*, *etat* and *tat* in masculine, feminine and neuter.
Nominative forms of 'a' ending masculine and neuter gender nouns with *paṭh, khād, likh* and similar simple verbs in present, past and future. Objective forms of the above nouns and pronouns in singular with more simple verbs

Unit: II Instrumental, dative, ablative forms of the above nouns and pronouns in singular, dual and plural instrumental, dative, ablative forms of all the words in this syllabus.

Unit: III *'ā'* and *' ī'* ending feminine words in nominative and accusative cases with *loṭ lakāra* (imperative).

Unit: IV *'ā'* and *' ī'* ending feminine nouns in singular in Genitive/ possessive and locative cases, genitive and locative cases in singular in pronouns tat, etat, yat, kim

Unit: V Masculine and Feminine nouns ending in *'i'* and masculine nouns ending in *'u'* in various cases in singular

Unit: VI Masculine nouns ending in consonants – *bhavat, guṇin, ātman* and Feminine nouns ending in consonants – *vāk,* Neuter nouns ending in consonants – *jagat , manas*

Section 'B'
Grammar and Composition Part II

Unit: I Special Verb forms – *in parasmaipada* –past, present, future and imperative - *kṛ, śrū*

Unit: II Special Verb forms – *in parasmaipada* –past, present, future and imperative *jñā* .
Special Verb forms – *in parasmaipada* –past, present, future and imperative *dā.*

Unit: III ātmanepada – *sev, labh*

Unit: IV Phonetic changes – *visarga sandhi*
vowel sandhis.

Downloaded from Vidyasagar University by 42.110.197.62 on 18 December 2020 : 18:52:22; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons).pdf

Unit: V Participles - *śatṛ, śānac, ktavatu, kta.*
Pratyayas – ktvā, lyap, tumun.
Active – passive structures in *lakāras* – (third person forms only) and *pratyayas*
kta, ktavatu

Section 'C'
Literature

Unit: I Gita Chapter XII

Downloaded from Vidyasagar University by 42.110.197.62 on 18 December 2020 : 18:52:22; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons).pdf

Vidyasagar University

Curriculum for B.A. Honours in Sanskrit
[Choice Based Credit System]

Semester-II

Sl. No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit
				L	T	P	
CC3	Critical Survey of Sanskrit Literature	Core Course-3		5	1	0	6
CC4	Self Management in the Gītā	Core Course-4		5	1	0	6
GE-2	TBD	GE					4/5
							2/1
AECC-2	Environmental Studies	AECC					4
				Total Credits = 22			

L=Lecture, T=Tutorial, P=Practical. AECC- Ability Enhancement Compulsory Course.

CC = Core Course, **TBD** = To be decided,

Interdisciplinary/Generic Elective (GE) from other Department. Each paper will be of 6 credits.

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

Semester-II

List of Core Courses and Electives

Core Courses (CC)

CC–3: Critical Survey of Sanskrit Literature
CC–4: Self Management in the Gītā

Generic Electives (GE)
[Interdisciplinary for other Department]

GE-2: Indian Culture and Social Issues
Or
GE-2: Sanskrit and other Modern Indian Languages
Or
GE-2: Indian Epigraphy & Paleography

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

CC-3: Critical Survey of Sanskrit Literature

Credits 06

CC3T: Critical Survey of Sanskrit Literature

Course Content:

Section 'A'	**Vedic Literature**
Section 'B'	**Rāmāyaṇa**
Section 'C'	**Mahābhārata**
Section 'D'	**Purāṇas**
Section 'E'	**General Introduction to Vyākaraṇa, Darśana and Sāhitvaśāstra**

Unit-Wise Division:

Section 'A'
Vedic Literature

Unit: I	*Saṁhitā* (*Ṛk, Yajuḥ, Sāma, Atharva*) time, subject– matter, religion & Philosophy, social life
Unit: II	*Brāhmaṇa, Āraṇyaka, Upaniṣad, Vedāṅga* (Brief Introduction)

Section 'B'
Rāmāyaṇa

Unit: I	*Rāmāyaṇa-time, subject–matter, Rāmāyaṇa* as an *Ādikāvya.*
Unit: II	*Rāmāyaṇa* as a Source Text and its Cultural Importance.

Section 'C'
Mahābhārata

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University.
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

Unit: I	*Mahābhārata* and its Time, Development, and subject matter
Unit:II	*Mahābhārata* : Encyclopaedic nature, as a Source, Text, Cultural Importance.

Section 'D'
Purāṇas

Unit: I	Purāṇas : Subject matter, Characteristics
Unit: II	Purāṇas : Social, Cultural and Historical Importance

Section 'E'
General Introduction to Vyākaraṇa, Darśana and Sāhityaśāstra

Unit-I	General Introduction to Vyākaraṇa- Brief History of Vyākaraṇaśāstra
Unit-II	General Introduction to Darśana-Major schools of Indian Philosophy Cārvāka, Bauddha, Jaina, Sāṅkhya-yoga, Nyāya-Vaiseśika, Pūrva-mīmāṁsā and Uttara mīmāṁsā.
Unit-III	General Introduction to Poetics- Six major Schools of Indian Poetics-Rasa, Alaṁkāra, Rīti, Dhvani,Vakrokti and Aucitya.

[D] Suggested Books/Readings:

1. बलदेव उपाध्याय, संस्कृत साहित्य का इतिहास, शारदा निकेतन, वाराणसी,
2. बलदेव उपाध्याय, वैदिक साहित्य और संस्कृति, वाराणसी
3. प्रीतिप्रभा गोयल, संस्कृत साहित्य का इतिहास, राजस्थानी ग्रन्थागार, जोधपुर.
4. उमाशंकर शर्मा ऋषि, संस्कृत साहित्य का इतिहास, चौखम्बा भारती अकादमी, वाराणसी.
5. राधावल्लभ त्रिपाठी, संस्कृत साहित्य का अभिनव इतिहास, विश्वविद्यालय प्रकाशन, वाराणसी
6. A.B. Keith, *History of Sanskrit Literature*, also Hindi translation, MLBD, Delhi. (हिन्दी अनुवाद, मंगलदेव शास्त्री, मोतीलाल बनारसीदास,दिल्ली).
7. M. Krishnamachariar, *History of Classical Sanskrit Literature*, MLBD, Delhi.
8. Gaurinath Shastri, *A Concise History of Sanskrit Literature*, MLBD, Delhi.
9. Maurice Winternitz, *Indian Literature* (Vol. I-III), also Hindi Translation, MLBD, Delhi.

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

CC-4: Self Management in the Gītā

Credits 06

CC4T: Self Management in the Gītā

Course Content:

Section 'A' Gītā: Cognitive and emotive apparatus

Section 'B' Gītā: Controlling the mind

Section 'C' Gītā: Self management through devotion

Unit-Wise Division:

Section 'A'
Gītā: Cognitive and emotive apparatus

Unit: I

Hierarchy of *indriya, manas, buddhi* and *ātman* III.42; XV. 7

Role of the ātman –XV.7: XV.9

Mind as a product of prakṛti VII.4

Properties of three guṇas and their impact on the mind – XIII. 5-6; XIV.5-8, 11-13; XIV.17

Section 'B'
Gītā: Controlling the mind

Confusion and conflict

Unit: I

Nature of conflict I.1; IV.16; I.45; II.6

Causal factors – Ignorance – II.41; *Indriya* – II.60, Mind – II.67; *Rajoguṇa* – III.36-39; XVI.21; Weakness of mind- II.3; IV.5

Unit: II

Means of controlling the mind

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

Meditation–difficulties –VI.34-35; procedure VI.11-14
Balanced life- III.8; VI.16-17

Diet control- XVII. 8-10

Physical and mental discipline – XVII. 14-19, VI. 36.

Means of conflict resolution

Importance of knowledge – II. 52 ; IV.38-39; IV.42

Clarity of *buddhi* – XVIII.30-32

Process of decision making – XVIII.63

Unit: III

Control over senses – II.59, 64

Surrender of *kartṛbhāva* –XVIII .13-16; V.8-9

Desirelessness- II.48; II.55

Putting others before self – III.25

Section 'C'
Gītā: Self management through devotion

Surrender of ego – II.7 ; IX.27; VIII.7; XI.55 ; II.47

Unit: I

Abandoning frivolous debates – VII.21, IV.11; IX.26

Acquisition of moral qualities - XII.11; XII.13-19

Recommended Books/Readings:

1. श्रीमद्भगवद्गीता — मधुसूदनसरस्वतीकृत गूढार्थदीपिका संस्कृतटीका तथा प्रतिभाभाष्य (हिन्दी) सहित,
2. श्रीमद्भगवद्गीता, व्याख्याकार — मदनमोहन अग्रवाल, चौखम्बा संस्कृत प्रतिष्ठान, वाराणसी, 1994.
3. श्रीमद्भगवद्गीता — एस० राधाकृष्णन् कृत व्याख्या का हिन्दी अनुवाद, राजपाल एण्ड सन्स, दिल्ली, 1969.

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

4. श्रीमद्भगवद्गीतारहस्य और कर्मयोगशास्त्र — बालगङ्गाधर तिलक, अपोलो प्रकाशन, दिल्ली, 2008.
5. Śrimadbhagavadgītā - English commentary by Jayadayal Goyandka, Tattvavivecinī Gītā Press, Gorakhpur, 1997.
6. Śrimadbhagavadgītārahasya - The Hindu Philosophy of Life, Ethics and or Karmayogaśāstra Religion, Original Sanskrit Stanzas with English Translation, Bal Gangadhar Tilak & Balchandra Sitaram Sukthankar, J.S.Tilak & S.S.Tilak, 1965.
7. Śrimadbhagavadgītā - A Guide to Daily Living, English translation and notes by Pushpa Anand, Arpana Publications, 2000.
8. Śrimadbhagavadgītā - The Scripture of Mankind, text in Devanagari with transliteration in English and notes by Swami Tapasyananda, Sri Ramakrishna Math, 1984.
9. Chinmayananda - The Art of Man Making (114 short talks on the Bhagavadgītā), Central Chinmaya Mission Trust, Bombay, 1991.
10. Panchamukhi, V.R.- Managing One-Self (Śrimadbhagavadgītā : Theory and Practice), R.S. Panchamukhi Indological Research Centre, New Delhi & Amar Grantha Publications, Delhi, 2001.
11. Sri Aurobindo - Essays on the Gītā, Sri Aurobindo Ashram,
    a. Pondicherry,1987.
12. Srinivasan, N.K. - Essence of Śrimadbhagavadgītā : Health & Fitness (commentary on selected verses), Pustak Mahal, Delhi, 2006.

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

GE-2: Indian Culture and Social Issues — Credits 06

GE2T: Indian Culture and Social Issues

Course Content:

Section 'A'	Culture in a multi-cultural society
Section 'B'	Cultural roots of India

Unit-Wise Division:

Section 'A'
Understanding Culture

Unit: I	1. What at is culture? Culture and Civilization 2. What is 'Indian' culture? 3. Culture in a multi-cultural society
Unit: II	1. Vedic sabhyata 2. Sindhu sabhyata 3. Sanskrit in Indo-Islamic tradition – (Proceedings of the Sagar University seminar on 'Islām kā Sanskrit paramparā ko yogadāna')
Unit: III	1. Pandavani, 2. Versions of the Rāma legend in Sanskrit literature – Vālmīki's Rāmāyaṇa, Bhāsa's Pratimā nāṭakam, Bhavabhūti's Uttarāma caritam, Raghuvaṁśam of Kalidasa, Somadeva's Kathāsaritsāgara, Rāmāyaṇa mañjari of Rājaśekhara etc. 3. Ṛitusaṁhāra in folk music 4. Sanskrit themes in traditional dance forms in Kerela 5. Yakṣagan 6. Gītagovinda and Odissi 7. Major agricultural and seasonal festivals of India and the Indian calendar – Bihu, Holi, Poṁgal, Makar Saṁkrāntī, Lohari, Oṇam, Baisakhi, Śrāvaṇī Pūrṇimā

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

Section 'B'
Social Issues

	Law and change – Dharma as an ever evolving phenomenon *Manusmṛti*, Chapter 2, verses 6 and 12 with the commentary of Medhātithi :
Unit: I	Lingat, Robert : *Classical Law of India*, Chapter 1, pp 3-7; tradition – pp 9-14 ; good customs – 14-17. Mathur, A.D. : *Medieval Hindu Law*, Chapter I, pp 1-8
	Caste – Voices of challenge
Unit: II	Traditional *varṇa* hierarchy *Vajrasūcī* by Aśvaghoṣa Identity of women **6 hrs.**
	Draupadī's question– Mahābhārata, *Sabhā Parva -- Dyūta Parva (sanskritdocuments.org)* Chapter 66 - Duryodhana asks Draupadī to be brought to the court 1; Vidura's protest 2, 4 ;
Unit: III	Chapter 67 – Duryodhana asks Pratikāmī to fetch Draupadī 2; Draupadī's refusal and question 5-10, 16 ; Yudhiṣṭhira's response 39-41 ; Bhīṣma's response 47-49 ; Draupadi's Rejoinder 50-52 ; Vikarṇa's statement, chapter 68, verses 12-17 Karṇa to Vikarṇa – 27-31, 35.
Unit IV	Struggle to secure women's right to property **8 hrs.** *Yājñavalkya Smṛti*, *Vyavahārādhyāya*: Verse 135 with Vijñāneśvara's commentary (section on *patnī*)

[D] Recommended Books/Readings:

1. उपाध्याय बलदेव, वैदिक साहित्य और संस्कृति
2. मध्यप्रदेश हिन्दी अकादमी, प्राचीन भारतीय सामाजिक एवं आर्थिक संस्थायें भोपाल, 1976
3. पाण्डेय राजबली, हिन्दू संस्कार, चौखम्बा विधा भवन
4. ज्ञानी शिवदत्त, भारतीय संस्कृति,
5. बाशम ए. ल. अद्भुत भारत
6. Basham A.L. . Wonder that was India
7. Bharadwaj, Ramesh: Vajrasūcī of Aśvaghoṣa (Varṇa-Jāti through the Ages). Vidyanidhi, Delhi
8. Gharpure, J.R., Teaching of Dharmaśāstra, Lucknow University, 1956, pp. 1-25.
9. Lingat Robert, Classical Hindu Law,
10. Majumdar R.C., History and Culture of the Indian People, Volume I(Vedic Age), Bhartiya Vidya Bhawan, Mumbai,
11. Mathur A.D., Medieval Hindu Law, Oxford University Press, New Delhi 2006

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

12. Sharma Braj Narain, Social Life in Northern India, New Delhi, 1966

13. Sharma Brijendra Nath, Social and Cultural History of Northern India, New Delhi, 1972
14. Sharma, S.L., Smṛtis, A Philosophical Study, Eastern Book Linkers, Delhi, 2013, pp. 62-74.
15. *Pandey Raj Bali: Hindu Sanskara, (English) Delhi, 2nd Revised Edition 1969, Reprinted 1991*
16. Prabhu, P.H., Hindu Social Organisation, Popular Prakashan, Mumbai, 1998, pp. 257-283.
17. Rama Krishna Mission, The Cultural Heritage of India, Calcutta
18. Yadav B.N. S., Society and Culture in Northern India, Allahabad, 1973
19. Basham A.L. . Wonder that was India
20. Gharpure, J.R., Teaching of Dharmasastra, Lucknow University, 1956, pp. 1-25.
21. Lingat Robert, Classical Hindu Law,
22. Majumdar R.C., History and Culture of the Indian People, Volume I(Vedic Age), Bhartiya Vidya Bhawan, Mumbai,
23. Mathur A.D., Medieval Hindu Law, Oxford University Press, New Delhi 2006
24. Sharma Braj Narain, Social Life in Northern India, New Delhi, 1966
25. Sharma Brijendra Nath, Social and Cultural History of Northern India, New Delhi, 1972
26. Sharma, S.L., Smṛtis, A Philosophical Study, Eastern Book Linkers, Delhi, 2013, pp. 62-74.
27. *Pandey Raj Bali: Hindu Sanskara, (English) Delhi, 2nd Revised Edition 1969, Reprinted 1991*
28. Prabhu, P.H., Hindu Social Organisation, Popular Prakashan, Mumbai, 1998, pp. 257-283.
29. Rama Krishna Mission, The Cultural Heritage of India, Calcutta
30. Yadav B.N. S., Society and Culture in Northern India, Allahabad, 1973

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

Or

GE-2: Sanskrit and other Modern Indian Languages — Credits 06

GE2T: Sanskrit and other Modern Indian Languages

Course Content:

Section 'A'	Indo-Aryan Languages
Section 'B'	Philology
Section 'C'	Literature

Unit-Wise Division:

Section 'A'
Indo-Aryan Languages

Unit: I	Stages of Indo-Aryan - Old Indo-Aryan, Middle Indo-Aryan Stages of development in the present day

Section 'B'
Philology

Unit: I	Phonetics of Sanskrit and other Modern Indian Languages
Unit: II	Morphology of Sanskrit and other Modern Indian Languages
Unit: III	Syntax of Sanskrit and other Modern Indian Languages

Section 'C'
Literature

Unit: I	Sanskrit as a source of Modern Indian Literature
Unit: II	Vernacular Languages as a source of enrichment of Sanskrit

[D] Recommended Books/Readings:

1. Beames, John, A Compartive Grammar of the Modern Aryan Languages of India, Munshiram Manoharlal, Delhi, 1970.
2. Cardona, Geoge and Jain Dhanesh (Ed.), The Indo-Aryan Languages, Routledge Language Family Series, London, 2003.
3. Chatterji, Suniti Kumar, Indo-Aryan and Hindi, Gujarat Vernacular Society, Ahemdabad, 1942.
4. Chatterji, Suniti Kumar, Origin and Development of the Bangali Language, Calcutta University Press Calcutta, 1926.

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

5. Turner, R.L., Indo-Aryan Linguistics, Diksha Publication, Delhi, 1985.
6. Coldwell, Robert, A comparative Grammar of Dravidian or South Indian Family of Languages, (3rd revised edn.) Munshiram Manoharlal, Delhi, 1970
7. नगेन्द्र, भारतीय साहित्य, प्रभात प्रकाशन, दिल्ली, 1987

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

Or

GE-2: Indian Epigraphy & Paleography — Credits 06

GE-2: Indian Epigraphy & Paleography

Course Contents:

Section 'A'
Study of selected Inscriptions

Section 'B'
Indian Palaeography

Section 'C'
Brahmi script and history of the study of Indian Epigraphy

Section 'A'
Study of selected Inscriptions

Unit: I:

1. Aśokan edicts & moral values:

   a) Samāja b) Suśrūsā c) Ćikitsā d) Stryadhyakṣamahāmātrā

2. Dhamma - according to Aśoka

3. Aśokan edicts administrative Officers

   a) rajjuka b) Yukta c) dharma- mahāmātra

4. Welfare state: repair of dam, mati-saćiva, karma-saćiva in Junagadh Inscription of Rudradāman

Unit: II

1. Eran Pillar Inscription:

   Status of Samudragupta

2. Meharauli Iron Pillar Inscription of Ćandra:

   - Reaction of sub-ordinate rulers after the death of Samudragupta
   - Mighty Ćandragupta (II)

3. Influence of the Ćāhmāna ruler, Vīsaladeva as depicted in the Delhi-Topra Pillar Inscription

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

Section 'B'
Indian Palaeography

Unit: I

1. Antiquity of writing in India

a) Observations from foreign scholars
b) Literary evidences
c) Observations made by Indian Epigraphists.

2. Importance of the study of Inscriptions.

a) Geographical description b) Historical evidences c) Society d) Religion

e) Literature f) Economic Conditions g) Administration

Unit: II

1. Types of Inscriptions:

a) Praśasti b) Religious c) Donations d) Grants

2. Writing material:

a) Rocks b) Pillars c) Metal Plates d) Statues e) Pen, Brush, Chisel, Stylus, Paint/Colour

Section 'C'
Brāhmī script and history of study of Indian Epigraphy

Unit: I

1. Origin of the Brāhmī Script

a) Foreign Origin b) Indian Origin
a.1. Greek origin a.2. Phoenician origin
b.1. Theory of South Indian Origin b.2. Theory of Aryan Origin.

2. Development of the script upto 700 A.D.

3. Varieties of the Brāhmī script.

Unit: I

1. History of reading of Indian Inscriptions.

2. Contribution of Epigraphists: G.H. Ojha, Fleet, Princep, D.C. Sircar, Cunningham, Buhler.

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

3. System of dating and use of eras: Vikram Era, Śaka Era, Gupta Era, Harśa Era.

Unit: II **Ethics:** Karma & Punarjanma theory, Liberation

Recommended Readings:

1. Bhandarkar, D.R., Aśoka (Hindi)
2. Buhler, G, On the origin of the Indian alphabet & numerals.
3. Dani, A. H, Indian Paleography
4. Ojha, G. H, Bhāratīya Prāćīna Lipimāla (Hindi)
5. Pandey, R.B, Aśoka ke Abhilekha (Hindi), Bhāratīya Purālipi (Hindi)
6. Rana, S.S., Bhāratīya Abhilekha
7. Sircar, D.C., Indian Epigraphy
8. K.D. Bajpeyi (trans.), Indian Epigraphy, - Bhāratīya Purālipi)
9. Select Inscriptions (Part - I)
10. Upadhyay, V., Prāćīna Bhāratīya Abhilekha (Hindi)
11. Thapar, Romila, Asoka tathā Maurya Sāmrājya Ka Patana (Hindi)

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)2.pdf

Vidyasagar University

Curriculum for B.A (Honours) in Sanskrit
[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		**C5T:** Classical Sanskrit Literature (Drama)	Core Course - 5	5	1	0	6	75
CC-6		**C6T:** Poetics and literary criticism	Core Course - 6	5	1	0	6	75
CC-7		**C7T:** Indian Social Institutions and Polity	Core Course - 7	5	1	0	6	75
GE-3		**TBD**	Generic Elective -3				6	75
SEC-1		**SEC1T:** Acting and Script Writing **Or** **SEC1T:** Reading skills in Brāhmī Scripts	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P**=Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided
Generic Elective (GE)(Interdisciplinary) from other Department.

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

List of the Core Course (CC) and Electives

Core Course (CC)

CC-5: Classical Sanskrit Literature (Drama)
CC-6: Poetics and literary criticism
CC-7: Indian Social Institutions and Polity

Skill Enhancement Course(SEC)

SEC-1: Acting and Script Writing
Or
SEC-1: Reading skills in Brāhmī Scripts

Generic Electives (GE)

GE-3: Indian Aesthetics
Or
GE-3: Fundamentals of Indian Philosophy
Or
GE-3: Ancient Indian Polity

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Semester-III

Core Courses (CC)

CC-5: Classical Sanskrit Literature (Drama) Credits 06

C5T: Classical Sanskrit Literature (Drama)

Course Contents:

Section A:	Svapnavāsavadattam– Bhāsa Act I & VI
Section B:	Abhijñānaśākuntalam– Kālidāsa I & IV
Section C:	Mudrārākṣasam - Viśākhadatta I, II & III
Section D :	Critical survey of Sanskrit Drama

Section A

Svapnavāsavadattam– Bhāsa Act I & VI

Unit: I

Svapnavāsavadattam: Act I &VI Story, Meaning/Translation and Explanation.

Unit: II

Svapnavāsavadattam: Unique features of Bhāsa's style, Characterization, Importance of 1st and 6th Act, Society, Norms of Marriage, Story of 'regains'. भासोहासः

Section B

Abhijānaśākuntalam– Kālidāsa I & IV

Unit: I

Abhijñānaśākuntalam : Act I- (a) Introduction, Author, Explanation of terms like nāndī, prastāvanā, sūtradhāra, naṭī, viṣkambhaka, vidūṣaka, kañcukī, (b) Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action. Personification of nature, Language of Kālidāsa, dhvani in Upamā Kālidāsa, Purpose and design behind Abhijñānaśākuntalam and other problems related to texts, popular saying about Kālidāsa & Sākuntalam .

Unit: II

Abhijñānaśākuntalam Act IV- Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Section C

Mudrārākṣasam - I, II & Viśakhdatta III

Unit: I

Mudrārākṣasam: Act I – (a) Introduction, Author, Purpose and design behind Mudrārākṣasa. (b) Text Reading prescribed verses for translation and explanation- 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 14, 16, 18, 19, 21, 22, 24, 26, 27. (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action.

Unit: II

Mudrārākṣasam: Act II - prescribed verses for translation and explanation- 1, 3, 4, 5, 7, 8, 9, 10, 13, 15, 16, 17, 18, 19, 22, and 23, Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action.

Unit: III

Mudrārākṣasam: Act III - prescribed verses for translation and explanation- 1, 3, 4, 6, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 29, 31 and 33. Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action.)

Section D

Critical survey of Sanskrit Drama

Unit-I: Sanskrit Drama: Origin and Development, Nature of Nātaka,

Unit-II: Some important dramatists and dramas: Bhāsa, Kālidāsa, Śūdraka, Viśākhadatta, Śri Harṣa, Bhavabhūti, Bhaṭṭanārāyaṇa and their works.

Suggested Readings:

1. सुबोधचन्द्र पन्द्त, अणभज्ञानशाकुन्द्तलम्, मोतीलाल बनारसीदास, ददलली
2. सुरेन्द्रदवे शास्त्री, रामनारायण बेनीप्रसाद, अणभज्ञानशाकुन्द्तलम्, इलाहाबाद
3. नारायणराम आचाया, अणभज्ञानशाकुन्द्तलम्, णनणायसागर प्रेस
4. C.R.Devadhar(Ed.), Abhijñanaśākuntalam, MLBD, Delhi.
5. M.R. Kale(Ed.), Abhijñanaśākuntalam, MLBD, Delhi.
6. Gajendra Gadakar(Ed.), Bose, Ramendramohan, Abhijñanaśākuntalam, Modern Book Agency, 10 College, Square, Calcutta.
7. जयपाल णवद्याल कार, स्वप्नवासवदत्तम्, मोतीलाल बनारसीदास, ददलली
8. M.R. Kale(Ed.), Svapnavāsavadattam , M.L.B.D., Delhi.
9. जगदीशचन्द्र णमश्र, मुराराक्षसम्, चौखम्बा णवद्याभवन, वाराणसी
10. णनरूपण णवद्याल कार, मुराराक्षसम्, साणहत्य भण्डार मरेठ

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

11. रमाश कर णिपाठी, मुराराक्षसम्, वाराणसी!
12. M.R. Kale(Ed.), Mudrārākṣasam, MLBD, Delhi.
13. K.T.Telang(Ed.), Mudrārākṣasam, Nag Publishers, Delhi.
14. रमाश कर णतवारी, महाकणव काणलदास
15. भगवतशरण, उपाध्याय, काणलदास, कणव और काव्य, भारतीय ज्ञानपीठ, काशी.
16. हजारीप्रसाद णिवेदी, काणलदास की लाणलत्य योजना , राजकमल प्रकाशन, ददलली
17. प कज कुमार, णमश्र शाकुन्द्तलणवषयक रम्यत्व की अवधारणा , पररमल पणाललकेशन, ददलली
18. Minakshi Dalal, Conflict in Sanskrit Drama, Somaiya Publication Pvt. Ltd.
19. Ratnamayi Dikshit, Women in Sanskrit Dramas, Meherchand Lachhman Das, Delhi.
20. A.B. Keith, Sanskrit Drama, Oxford University Press London, 1970.
21. Minakshi Dalal, Conflict in Sanskrit Drama, Somaiya Publication Pvt. Ltd.
22. G. K. Bhat, Sanskrit Drama, Karnataka University Press, Dharwar 1975
23. Henry W. Wells, Six Sanskrit Plays, Asia Publishing House, Bombay

CC- 6: Poetics and literary criticism — Credits 06

C6T: Poetics and literary criticism

Course Contents:

Section A:	Introduction to Sanskrit poetics
Section B:	Forms of Kāvya-Literature
Section C:	Śabda-śakti (Power of Word) and rasa-sūtra
Section D:	Alaṁkāra (figures of speech) and chandasa (metre)

Section A

Introduction to Sanskrit Poetics

Unit: I

Introduction to poetics: Origin and development of Sanskrit poetics, its various names- kriyākalpa, alaôkāraśāstra, sāhityaśāstra, saundryaśāstra.

Unit: II

Definition (lakṣaṇa), objectives (prayojana) and causes (hetu) of poetry. (according to kāvyaprakāśa)

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Section B

Forms of Kāvya-Literature

Unit: I

Forms of poetry: dṛśya, śravya, miśra, (campū)

Unit: II

Mahākāvya, khaṇḍakāvya, gadya-kāvya: kathā, ākhyāyikā (according to Sāhityadarpaṇa)

Section C

Śabda-śakti and rasa-sūtra

Power/Function of word and meaning (according to kāvyaprakāśa). abhidhā (expression/ denotative meaning), lakṣaṇā (indication/ indicative meaning) and vyañjanā (suggestion/ suggestive meaning).

Unit: II

Rasa: rasa-sūtra of Bharata and its prominent expositions: utpattivāda, anumitivāda, bhuktivāda and abhivyaktivāda, alaukikatā (transcendental nature) of rasa (as discussed in Kāvyaprakāśa).

Section D

Figures of speech and Meter

Unit: I

Figures of speech- anuprāsa, yamaka, śleṣa, upamā, rūpaka, sandeha, bhrāntimān, apahnuti, utprekṣā, atiśayokti, tulyayogitā, dīpaka, dṛṣṭānta, nidarśanā, vyatireka, samāsokti, svabhāvokti, aprastutapraśaṁsā, arthāntaranyāsa, kāvyaliṅga, vibhāvanā.

Unit: II

Metres- anuṣṭup, āryā, indravajrā, upendravajrā, drutavilambita, upajāti, vasantatilakā, mālinī, mandākrāntā, śikhariṇī, śārdūlavikrīḍita, sragdharā.

Suggested Readings:

1. Alaṅkāra according to Sāhityadarpaṇa (Ch. X) and metres according to prescribed texts of poetry and drama.
2. Dwivedi, R.C, The Poetic Light: , Motilal Banarsidas, Delhi.1967.
3. Kane P.V., History of Sanskrit Poetics pp.352-991,
4. Kane, P.V., 1961, History of Sanskrit Poetics and its Hindi translation by Indrachandra Shastri, Motilal Banarasidas, Delhi.
5. Kāvyaprakāśa, kārikās 4/27, 28 with explanatory notes.
6. Ray, Sharad Ranjan, Sāhityadarpaṇa; Viśvanātha, (Ch I,VI & X) with Eng. Exposition, Delhi.
7. Sāhityadarpaṇa: (Ch.VIth), Kārikā 6/1,2,313-37

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

8. नगेन्द्र , (स ०) , काव्यप्रकाश : मम्मटकृत , आचाया णवश्वश्वेर की व्याख्या सणहत , ज्ञानम डल णल० , वाराणसी 52.
9. शाणलग्राम शास्त्री , साणहत्यदपाण : (व्या०) , मोतीलाल बनारसीदास , ददलली.
10. बलदवे उपाध्याय , सस्कृत — आलोचना , णहन्द्दी सणमणत , सूचना णवभाग , उ. प्र. , 1963.

CC-7: Indian Social Institutions and Polity — Credits 06

C7T: Indian Social Institutions and Polity

Course Contents:

Section A: Indian Social Institutions: Nature and Concepts

Section B: Structure of Society and Value of Life

Section C: Indian Polity: Origin and Development

Section D: Cardinal Theories and Thinkers of Indian Polity

Section A

Indian Social Institutions: Nature and Concepts

Unit: I

Indian Social Institutions: Definition and Scope:

Sociological Definition of Social Institutions. Trends of Social Changes, Sources of Indian Social Institutions (Vedic Literature, Sūtra Literature, Purāṇas, Rāmāyaṇa , Mahābhārata ,Dharmaśāstras, Buddhist and Jain Literature, Literary Works, Inscriptions, Memoirs of Foreign Writers)

Unit: II

Social Institutions and Dharmaśāstra Literature:

Dharmaśāstra as a special branch of studies of Social Institutions, sources of Dharma (Manusmṛti, 2, 12; Yājñavalkyasmṛti,1.7).

Different kinds of Dharma in the sense of Social Ethics Manusmṛti, 10, 63; Viṣṇupurāṇa 2.16-17); Six kinds of Dharma in the sense of Duties (Mitākṣarāṭīkā on Yājñavalkyasmṛti,1.1).

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Tenfold Dharma as Ethical Qualities (Manusmṛti,6. 92); Fourteen – Dharmasthānas (Yājñavalkyasmṛti,1.3)

Section B

Structure of Society and Values of Life

Unit: I

Varṇa-System and Caste System:

Four-fold division of Varṇa System, (Ṛgveda, 10.90.12), Mahābhārata, Śāntiparva, 72. 3-8);

Division of Varṇa according to Guṇa and Karma (Bhagvadgīta , 4.13, 18.41-44).

Origin of Caste-System from Inter-caste Marriages (Mahābhārata, Anuśāsanaparva, 48.3-11);

Emergence of non-Aryan tribes in Varṇa-System (Mahābhārata, Śāntiparva, 65.13-22).

Social rules for up-gradation and down-gradation of Caste System (Āpastambadharmasūtra, 2.5.11.10-11, Baudhāyanadharmasūtra, 1.8.16.13-14, Manusmṛti, 10, 64, Yājñavalkyasmṛti, 1.96)

Unit: II

Position of Women in the Society :

Brief survey of position of women in different stages of Society.

Position of women in Mahābhārata (Anuśāsanaparva, 46.5-11, Sabhāparva, 69.4-13.

Praise of women in The Bṛhatsaṁhitā of Varāhamihira (Strīprasaṁsā, chapter-74.1-10)

Unit: III

Social Values of Life:

Social Relevance of Indian life style with special reference to Sixteen Saṁskāras.

Four aims of life 'Puruṣārtha Catuṣṭaya'- 1. Dharma, 2. Artha, 3. Kāma, 4. Mokṣa.

Four Āśramas - 1. Brahmacarya, 2. Gṛhastha, 3. Vānaprastha, 4. Saṁnyāsa.

Section C

Indian Polity : Origin and Development

Unit: I

Initial stage of Indian Polity (from Vedic period to Buddhist period).

Election of King by the people: 'Viśas' in Vedic priod (Ṛgveda,10.173;10.174; Atharvaveda,3.4.2; 6.87.1-2).

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Parliamentary Institutions: ‘Sabhā,‘Samiti’ and ‘Vidatha’ in Vedic period (Atharvaveda,7.12.1;12.1.6 ; Ṛgveda ,10.85.26);

King-maker ’Rājakartāraḥ‘ Council in Atharvaveda (3.5.6-7),Council of ‘Ratnis’ in śatapathabrāhmaṇa (5.2.5.1);

Coronation Ceremony of Samrāṭ in śatapathabrāhmaṇa (51.1.8-13; 9.4.1.1-5).

Republic States in the Buddhist Period (Digghnikāya, Mahāparinibbaṇa Sutta, Aṅguttaranikāya, 1.213; 4.252,256)

Unit: II

Later Stages of Indian Polity (From Kauṭilya to Mahatma Gandhi).

Concept of Welfare State in Arthaśāstra of Kauṭilya (Arthaśāstra, 1.13 : ‘matsyanyāyābhibhutḥ’ to ‘yo' asmāngopāyatīti’);

Essential Qualities of King (Arthaśāstra, 6.1.16-18: ’sampādayatyasampannaḥ’ to ‘jayatyeva na hīyate’);

State Politics ’Rajadharma’(Mahābhārata , Śāntiparva,120.1-15; Manusmṛti, 7.1-15; Śukranīti,1.1-15);

Constituent Elements of Jain Polity in Nitivākyāmṛta of Somadeva Suri, (Daṇḍanīti- samuddeśa, 9.1.18 and Janapada- samuddeśa, 19.1.10).

Relevance of GandhianThought in Modern Period with special reference to ‘Satyāgraha’ Philosophy (‘Satyāgrahagītā’ of Panditā Kṣamārāva and ‘Gandhi Gītā’, 5.1-25 of Prof. Indra)

Section D

Cardinal Theories and Thinkers of Indian Polity

Unit: 1

Cardinal Theories of Indian Polity: ‘Saptāṅga’ Theory of State: 1.Svāmi, 2. Amātya, 3. Janapada 4. Pura, 5. Kośa, 6. Daṇḍa and 7. Mitra (Arthaśāstra, 6.1. Mahābhārata, Śāntiparva, 56.5, Śukranīti, 1.61-62).

‘Maṇḍala ‘Theory of Inter-State Relations: 1.Ari, 2. Mitra, 3. Ari-mitra,4.Mitra- mitra, 5.Ari-mitra-mitra;

‘Śāḍgunya’ Policy of War and Peace : 1. Sandhi, 2. Vigraha, 3. Yāna, 4. Āsana, 5. Saṁśraya 6. Dvaidhibhāva.

‘CaturvidhaUpāya’for Balancing the power of State : 1.Sāma 2.Dāma,3.Daṇḍa.4.Bheda;

Three Types of State Power ’Śakti’: 1.Prabhu- śakti, 2. Mantra- śakti, 3. Utsāha-śakti.

Unit: II

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Important Thinkers on Indian Polity:

Manu, Kautilya, Kāmandaka, Śukrācārya, SomadevaSuri, Mahatma Gandhi.

Suggested Readings:

1. ĀpastambadharmaSūtra - (Trans.), Bühler, George, The Sacred Laws of the Āryas, SBE Vol. 2, Part 1,1879
2. Arthaśāstra of Kautilya - (Ed.)Kangale, R.P. Delhi, Motilal Banarasidas 1965
3. Atharvavedasaṁhitā - (Trans.) R.T.H. Griffith, Banaras, 1896-97, rept.(2 Vols) 1968.
4. BaudhāyanadharmaSūtra - (Ed.) Umesha Chandra Pandey,Chowkhamba Sanskrit Series Office,Varanasi,1972.
5. Mahābhārata (7 Vols) - (Eng. Tr.) H.P. Shastri, London, 1952-59.
6. Manu's Code of Law - (Ed. & Trans.) :Olivelle, P. (A Critical Edition and Translation of the Manava- Dharamaśāstra), OUP, New Delhi, 2006.
7. Rāmāyaṇa of Vālmīki — (Eng. Tr.) H.P. Shastri, London, 1952-59. (3 Vols)
8. Ṛgvedasaṁhitā (6 Vols)- (Eng. Tr.) H.H. Wilson, Bangalore Printing & Publishing Co., Bangalore, 1946.
9. Śatapathabrāhmaṇa - (with Eng. trans. ed.) Jeet Ram Bhatt, Eastern (3 Vols), BookLinkers, Delhi, 2009.
10. Visṇupurāṇa - (Eng. Tr.) H.H. Wilson, PunthiPustak,reprint, Calcutta, 1961.
11. Yājñavalkyasmṛti with Mitākṣarā commentary - Chowkhamba Sanskrit Series Office,Varanasi,1967
12. अ गुत्तरणनकाय (1—4 भाग)क्च बनारसक्च 1980।
13. कौरटलीय अथाशास्त्र—णहन्द्दी अनुवाद—उदयवीर शास्त्री, मेहरचन्द्द लछमनदास, ददलली,1968।
14. ददग्घणनकाय(1—2 भाग)—सम्पा० जे० कश्यपणबहारक्च 1958।
15. नीणतवाक्यामृतम्—सोमदवेसूररणवरणचत, व्या०रामचन्द्र मालवीय, चौखम्बा णवघाभवन, वाराणसी, 1972।
16. बृहत्स णहता—वराहणमणहरणवरणचत,णहन्द्दी अनुवाद—बलदवेप्रसाद णमश्र, खेमराज श्रीकृष्णदास प्रकाशन, मुम्बई।
17. महाभारत(1-6 भाग)-णहन्द्दी अनुवादसणहत, (अनु०) रामनारायण दत्त शास्त्री पाण्डेय, गीताप्रेस, गोरखपुर।
18. मनुस्मृणत (1-13 भाग) — (सम्पा० एव व्या०) उर्ममला रुस्तगी, जे.पी. पणलशशग हाउस, ददलली, 2005।
19. णवष्णुपुराण-णहन्द्दी अनुवादसणहत, (अनु०) मुणनलाल गुप्त, गीताप्रेस, गोरखपुर।
20. शतपथब्राह्मण(1-5 भाग)—(माध्यणन्द्दनीय शाखा) —सायणाचाया एव हररस्वामीटीकासणहत, ददलली, 1987.
21. शुक्रनीणत-णहन्द्दी अनुवाद, ब्रह्मश कर णमश्र, चौखम्बा स स्कृतसीरीज, वाराणसी, 1968।
22. सत्याग्रहगीता—पणण्डता क्षमाराव, पेररस, 1932।
23. नाटाणी, प्रका नारायण—प्राचीनभारत के राजनीततक विचारक, पोइन्टरपब्लि सम, जयपुर, 2002।

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

24. ससन्हा विनोद एिं ससन्हा रेखा—प्राचीन भारतीय इततहास एिं राजनैततक र्चन्तन, राधा
25. Altekar, A.S - State and Government in Ancient India, MotilalBanarsidass, Delhi, 2001.
26. Altekar, A.S - The Position of Women in Hindu Civilization, Delhi, 1965.
27. Belvalkar, S.K.- Mahābhārata :Śāntiparvam, 1954.
28. Bhandarkar , D.R. - Some Aspects of Ancient Indian Hindu Polity,Banaras Hindu University Bharadwaj, Ramesh: Vajrasūcī of Aśvaghoṣa (Varṇa-Jāti through the Ages), Vidyanidhi, Delhi
29. Gharpure, J.R. - Teaching of Dharmaśāstra, Lucknow University,1956.
30. Ghosal, U.N. - A History of Indian Political Ideas, Bombay,1959.
31. Jayaswal, K.P.- Hindu Polity, Bangalore, 1967.
32. Jha, M.N. -Modern Indian Political Thought, MeenakshiParkashan, Meerut, UP.
33. Law, N. S. - Aspect of Ancient Indian Polity, Calcutta, 1960.
34. Maheshwari, S. R. -Local Government in India, Orient Longman, New Delhi,
35. Mehta, V.R. - Foundations of Indian Political Thought, Manohar Publisher, Delhi, 1999.
36. Pandey, G.C.-Jaina Political Thought, Jaipur Prakrit Bharti, 1984.
37. Prabhu, P.H.- Hindu Social Organisation, Popular Prakashan, Mumbai, 1998
38. Prasad, Beni - Theory of Government in Ancient India, Allahabad, 1968.
39. Saletore, B.A. - Ancient Indian Political Thought and Institutions, Bombay, 1963.
40. Sharma, R. S. - Aspects of Political Ideas and Institutions in Ancient India,
41. MotilalBanarsidass, Delhi, 1996.
42. Sharma, S.L. -Smṛtis, A Philosophical Study, Eastern Book Linkers, Delhi, 2013
43. Singh, G.P. & Singh, S.Premananda - Kingship in Ancient India: Genesis and Growth,Akansha Publishing House, Delhi, 2000.
44. Sinha, K.N. - Sovernity in Ancient Indian Polity, London,1938.
45. Valavalkar, P.H. — Hindu Social Institutions, Manglore, 1939

Skill Enhancement Course (SEC)

SEC-1: Acting and Script Writing — Credits 02

SEC1T: Acting and Script Writing

Course Contents:

Section A: Acting (Abhinaya

Section B: Script Writing (Paṭakathālekhana)

Section A

Acting (Abhinaya)

Unit: I

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

a. Persons competent for presentation (acting) :
kuśala (skilful), vidagdha (learned), pragalbha (bold in speech), jitaśramī (inured to hard-work) .

b. Lokadharmī and Nātyadharmī Abhinaya

c. Nāṭya-prayoktā-gaṇa (members of theatrical group) :
sūtradhāra (director), nāṭyakāra (playwrighter), naṭa (actor) kuśīlava(musician), bharata, nartaka (dancer), vidūṣaka (jester) etc.

Unit: II

(i.) Assignment of role:

a. General principles of distribution
b. Role of minor characters
c. Role of women characters
d. Special cases of assigning of role

(ii.) Kinds of roles: anurūpa (natural), virūpa (unnatural), rūpānusariṇī (imitative)

Unit: III

Definition of abhinaya and its types:

a. Āṅgika (gestures): aṅga, upāṅga and pratyaṅga
b. Vācika(oral): svara, sthāna, varṇa, kāku, bhāṣā .
c. Sāttvika (representation of the Involuntary gestures)
d. Āhārya: pusta, alaṅkāra, aṇgaracanā, sañjiva (dresses and make-up)

Section B

Script Writing

Unit: I

Types of dramatic production:

sukumāra (delicate), āviddha (energetic).

Nature of plot (vastu): Ādhikārika (principal), Prāsaṅgika (subsidiary), Dṛsya (presentable), Sūchya (restricted scenes).

Unit: II

Division of Plot

a. Source of plot: Prakhyāta (legendary), Utpādya (invented), Miśra (mixed);
b. Objectives of plot- Kārya (dharma, artha, kāma);
c. Elements of plot- Five kinds of Arthaprakṛtis (caustations), Kāryāvasthā (stages of the action of actor); Sandhis (junctures) and their sub-divisions (segments)
d. Five kinds of Arthopakṣepaka (interludes);

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Unit: III

Dialogue writing: kinds of saṁvāda (dialogue)

a. Sarvaśrāvya or Prakāśa (aloud)
b. Aśrāvya or Svagata (aside)
c. Niyataśrāvya : Janāntika (personal address), Apavārita (confidential)
d. Ākāśabhāṣita (conversation with imaginary person).

Unit: IV

a. Duration of play
b. Three Unities: Time, Actions and place.
c. Starting of a play: Pūrvaraṅga –Raṅgadvāra, Nāndī, Prastāvanā, Prarocanā.
d. Analysis of acting, plot and dialogue in the context of Abhijñānaśākuntalam.

Suggested Readings:

1. Ghosh, M.M.: Nāṭyaśāstra of Bharatamuni.
2. M.M. Ghosh, Nāṭyśāstra of Bharatamuni, vol-1, Manisha Granthalaya, Calcutta, 1967.
3. Hass, The Daśarūpaka : A Treatise on Hindu Dramaturgy, Columbia University, NewYork , 1912.
4. Adyarangachrya, Introduction to Bharata's Nāṭyaśātra, Popular Prakashan Bombay, 1966.
5. हजारी प्रसाद , णिवेदी , नाट्यशास्त्र की भारतीय प रपरा और दशरूपक , राजकमल प्रकाशन ददलली ,1963.
6. राधावललभ , णिपाठी , भारतीय नाट्यशास्त्र की परम्परा और णवश्व र गम च , प्रणतभा प्रकाशन , ददलली ,1999.
7. राधावललभ , णिपाठी , भारतीय नाट्य स्वरूप और पर परा , हररशसह गौर णवश्वणवघालय , सागर , 1988.
8. वाचस्पणत , गैरोला — भारतीय नाट्यपरम्परा और अणभनयदपाण , इलाहाबाद , 1967.

Or

SEC-1: Reading skills in Brāhmī Scripts — Credits 02

SEC1T: Reading skills in Brāhmī Scripts

Course Contents:

Section A: Brāhmī Alphabet

Section B: Translation

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Section C: Kind of Scripts

Section A

Brāhmī alphabets

Unit: I:

Early Brāhmī alphabet - Aśokan period

Section B

Translation to variations – up to 4th century C.E

Unit: I

Translation to variations – up to 4th century C.E.

Section C

Kind of script

Unit - I: North Indian

Unit - II: South Indian

Unit - III: East Indian

Unit - IV: West Indian

Unit - V: Vākāṭaka variety

Suggested Readings:

1. Dani, A.H. Indian Paleography, 1963
2. Upasak, C.S. History & Paleography of Mauryan Brāhmī Script, 1960
3. Verma, T.P. Paleography of Brāhmī script in North India, 1971
4. ओझा, गौ. ही. भारतीय प्राचीन णलणपमाला
5. पाण्डये, राजबली : अशोक के अणभलेख, 1967

Generic Electives (GE)

GE-3: Indian Aesthetics Credits 06

GE3T: Indian Aesthetics

Course Contents:

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Section A: Aesthetics (Saundaryaśāstra), its nature and components
Section B: Aesthetic experience (Rasa) and its process
Section C: Aesthetic elements (saundarya - tattva)
Section D: Prominent thinkers on Aesthetics

Section A

Aesthetics (Saundaryaśāstra), its nature and components

Unit: I

Beauty (Saundarya): its definition, nature and components: vaya,rūpa, vacana, hāva

Unit: II

Discussion of synonyms of the term Beauty (Saundarya) : ramaṇīyatā, śucitā, lāvaṇya, cārutā, kānti, vicchitti, madhuratā, mugdhatā, manohāritā, śrī.

Section B

Aesthetic experience (Rasa) and its process

Unit: I

Nature of rasa (Aesthetic experience) according to Sāhityadarpaṇa, aesthetic enjoyment – eternal bliss, the ultimate reality (ānandamayatā, alaukikatā).

Unit: II

Constituents of rasa: bhāva (human feelings and emotions) vibhāva (causes or determinants), anubhāva (voluntary gestures), sāttvika bhāva (Involuntary gestures), vyabhicāri bhāva (transitory states) and sthāyibhāva (basic mental states), sahṛdaya / sāmājika (Connoisseur / Spectator). anukārya, anukartā.

Unit: III

sādhāraṇīkaraṇa (Generalization), four mental stages of rasa realization: vikāsa (cheerfulness), vistāra (exaltation), kṣobha (agitation), vikṣepa (perturbation). Number of rasas according to Bharat.

Section C

Aesthetic elements (saundarya - tattva)

Unit: I

Art as the mode of expression of saundarya –in fine arts (Architecture, Sculpture and Painting).

Unit: II

Main aesthetic elements of literary arts (Poetry and Drama) : alaṅkāra, rīti, dhvani,vakrokti & aucitya.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Section D

Prominent thinkers of Indian Aesthetics

Unit: I

Bharata, Bhāmaha, Vāmana, Daṇḍī, Ānandavardhana Abhinavagupta, Kuntaka, Mahimabhaṭṭa, Kṣemendra, Vishvanātha and Jagannātha.

Unit: II

Perception of beauty in Drama from cultural, social and aesthetical point of view in the context of Abhijñānaśākuntalam.

Suggested Readings:

1. Sāhityadarpaṇa of Vishvanatha, (Based on karikas3/1-28).
2. Kane P.V., History of Sanskrit Poetics pp.352-391, i. Upadhyaya, Baladeva, Sanskrit Ālocanā (for six schools)
3. Kane P.V., History of Sanskrit Poetics
4. Pandey, Kantichandra: Comparative Aesthetics, vol.1 Chowkhamba Sanskrit series office Varanasi, 2008
5. Gnoli, R. : The Aesthetic Experience according to Abhinavagupta, Chowkhamba Sanskrit series office Varanasi.
6. चतुवेदी, ब्रजमोहन भारतीय सौन्द्दयादशान पृ० 42—60.
7. चतुवेदी, ब्रजमोहन भारतीय सौन्द्दयादशान पृ० 37—42.
8. चतुवेदी ब्रजमोहन भारतीय सौन्द्दयादशान पृ० 61—76.
9. कृष्णकुमार अल कारशास्त्र का इणतहास, साणहत्य भण्डार,मेरठ,199
10. उपाध्याय बलदवे स स्कृत—आलोचना, णहन्द्दी सणमणत, सचूना णवभाग, उ. प्र., 1963
11. कृष्णकुमार अल कारशास्त्र का इणतहास, साणहत्य भण्डार,मेरठ,1998
12. Coomarswami A : Introduction to Indian Art, Theosophical Society , Adyar, 1956.

Or

GE-3: Fundamentals of Indian Philosophy Credits 06

GE3T: Fundamentals of Indian Philosophy

Course Contents:

Section A: General Introduction

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Section B: Schools of Indian Philosophy

Section C: Problems in Indian Philosophy

Section A

Fundamentals of Philosophy

Unit: I

Darśana - concept and aims, Classification of Indian Philosophical schools,

Unit: II

Salient features of Indian Philosophy

Section B

Schools of Indian Philosophy

Unit: I

Heterodox Schools

- Cārvāka – General introduction with emphasis on Chanllenge to Veda, Rejection of Transcendental Entities, Ethics (Based on Sarvadarshansamgrah)
- Jainism – General introduction with emphasis on Anekāntavāda, Syādvāda, Saptabhaṅginaya, triratna
- Buddhism- General Introduction with emphasis on Four Noble Truths

Unit: II

Orthodox Schools of Philosophy

- Sāṁkhya – General Introduction with emphasis on prakṛti, guṇatraya & puruṣa Entities (Based on Sāṃkhyakārikā)
- Yoga - Eight fold path of Yoga (Based on Yogasūtra Sādhanapāda and their on Yogabhāṣya thereon)

Unit: III

Nyāya –General introduction with emphasis on Vaiśesika : Seven Padārthas (Based on Tarksamgrah)

Unit: IV

Advaita Vedānta – General introduction with emphasis a Brahman, Māyā, Jīva and Jagat (Based on Vedāntasāra)

Unit: V

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Mīmāṃsā - Svataḥ Prāmāṇyavāda

Unit: VI

Bhakti Schools of Vedānta – General introduction with emphasis on God, Īśvara & nature of bhakti

Section C

Problems in Indian Philosophy

Unit: I

Epistemology: six pramāṇas

Unit: II

Metaphysics: realism, idealism, Causation - Satkāryavāda. Asatkāryavāda, Pariṇāmavāda, Vivartavāda, svabhāvavāda, consciousness and matter, theories of self

Unit: III

Ethics: Karma & Punarjanma theory, Liberation

Suggested Readings:

1. Bhartiya, Mahesh - Bhāratīya Darśana Kī Pramukha Samasyāeṁ, Ghaziabad, 1999.
2. Chatterjee, S. C. & D. M. Datta - Introduction to Indian Philosophy, Calcutta University, Calcutta, 1968 (Hindi Translation also).
3. Chatterjee, S. C. – The Nyāya Theory of Knowledge, Calcutta, 1968.
4. Hiriyanna, M. - Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
5. Shastri, Kuppuswami, A Primer of Indian Logic, 1951 (only introduction).
6. Bhartiya, Mahesh - Causation in Indian Philosophy, Ghaziabad, 1975.
7. O'Flaherty, Wendy Doniger – Karma and Rebirth in Classical Indian Tradition, MLBD, Delhi, 1983.
8. Pandey, Ram Chandra - Panorama of Indian Philosophy (also Hindi version), M.L.B.D., Delhi, 1966.
9. Radhakrishnan, S. - Indian Philosophy, Oxford University Press, Delhi, 1990.
10. Raja, Kuhnan - Some Fundamental Problems in Indian Philosophy, MLBD, Delhi, 1974.
11. Rishi, Uma Shankar (Ed.), Sarva-Darshana_Samgraha, Chowkhamba Vidyabhawan, Varansi, 1984.

Or

GE-3: Ancient Indian Polity — Credits 06

GE3T: Ancient Indian Polity

Course Contents:

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Section A: Name, Scope and Origin of Ancient Indian Polity

Section B: Types and Nature of the State

Section C: Kingship, Council of Ministers and Assemblies

Section D: Law and Justice, Taxation and Inter- State Relations

Section A

Name, Scope and Origin of Ancient Indian Polity

Unit: I

Name, Scope and Sources of the Science of Polity

- Name of Ancient Indian Polity: Daṇḍanīti, Dharmaśāstra,Nītiśāstra;
- Scope of Indian Polity: Relation with Dharma, Artha and Nīti;
- Sources :Vedic Literature, Purāṇas, Rāmāyaṇa, Mahābhārata, Dharmaśāstra, Kautilya's Arthaśāstra and Nīti –śāstra

Unit: II

Origin of the State'Daṇḍaniti':

- Origin of State'Daṇḍanīti':Mātsyanyāya- Theory -(Arthaśāstra1.1.3, Mahābhārata, Śānti parva, 67.17-28, Manusmrti,7.20)
- Divinity of the King'Rājā' – (Arthaśāstra,1.9, Mahābhārata, Śānti parva,67.43-48, ,Manusmṛti, 7.4-7)

Section B

Types and Nature of the State

Unit: I

Types of the State:

- Rājya,Svrājya,Bhojya,Vairājya,Mahārājya, Sāmrājya concept in Aitreya Brāhmaṇa (8.3.13-14 and 8.4.15-16)
- Republics in Buddhist Literature (Dighnikāya, MahāparinibbāṇaSūtta, Anguttaranikāya,1.213;4.252,256)

Unit: II

Nature of the State:

- With special reference to Saptānga-Theory: 1. Svāmī, 2. Amātya, 3. Janapada, 4. Pura, 5. Kośa, 6. Daṇḍa and 7. Mitra (Arthaśāstra,6.1; Manusmṛti, 9.294)

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Section C

Problems in Indian Philosophy

Unit: I

Kingship and Council of Ministers:

- Kingship :Royal Succession, Coronation Ceremony, King as a Public Servent (Sukranīti,4.2.130,137), King as a Trustee(Arthaśāstra,10.3),
- King as Upholder of the Moral Order(Mahābhārata, Śānti parva,120.1-35; Manusmṛti, 7.1-35);
- Council of Ministers : Ratni Council in Vedic age Śatapathabrāhmaṇa, 5.2.5.1);
- Council of Ministers in Kauṭilya's Arthaśāstra (1.4,1.5,1.11) and Śukranīti,(2.70- 72)

Unit: II

Central Assemblies and Local Administration:

- Central Assembly in Vedic Literature : 'Sabhā','Samiti' in Atharvaveda (7.12.1;12.1.6) and 'Vidatha' in Ṛgveda (10.85.26):
- Town Assembly:' Paura- Janpada' in Rāmāyaṇa and Mahābhārata;
- Village Council: Sabhā, Pañcakula, Pañcāyata

Section D

Law, Justice, Taxation and Inter-State Relations

Unit: I

Nature and Sources of Law 'Dharma':

- Four types of Source of Law 'Dharma':1.'Dharma', 2. Vyavahāra', 3.'Caritra' and 4. 'Rājaśāsana';
- Four types of Enforcement of Law: 1. Rules of Castes 'Jatidharma', 2. Local Customs' 'Janapadadharma', 3. Bye-laws of Guilds 'Śreṇīdharma' and 4. Family Traditions 'Kuladharma'

Unit: II

Judicial administration and Courts:

- King as Head and Fountain Sources of all Justice, Qualities of Chief Justice-'Pradvivak 'and members of Jury-'Sabhāsadah, (Shukraniti, 4.5.69-196)
- Two types of Royal Courts 'Dharmasthīya' and 'Kaṇṭakaśodhana' in Arthaśāstra (3.1-20)
- Social and local Courts situated in Villages-' Kula','Puga','Dharmaśāsana'.

Unit: III

Taxation Policy of State:

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

- Reasonable and Equitable Taxation Policy 'Śāstranīta' permitted by Dharmaśāstra (Mahābhārata, Śānti parva,71.10-25, Manusmṛti, 7.127, 144) ;
- Criticism of unlawful taxation policy in Mahābhārata, Śānti parva (87.19-18-22,88.4-7)
- Two Types of Tax Sources in Arthaśāstra -1.'Aya- sarira' and 2'Aya-mukha'(Altekar, A.S , State and Government in Ancient India, pp.262 267; Sahay, Shiva Swarup, , Prachin Bharaa ka Samajika evam Arthika Itihas, pp.456-458)

Unit: IV

Inter-State Relations of State:

- Brief survey of 'Manḍala' Theory of Inter- State Relations; Principles and means of Diplomacy : 1.Sāma 2.Dāma,3 Danḍa.4.Bheda;
- Diplomacy of War and Peace – 'Ṣāḍguṇya theory:1.Sandhi, 2.Vigraha, 3.Yāna, 4.Āsana, 5.Sanśraya and, 6.Dvaidhībhāva (Altekar, A.S , State and Government in Ancient India, pp.291-308; Satyaketu Vidyalankar, Prachin Bharatiya Shasana Vyavastha aur Rajashastra, pp.363- 376)

Suggested Readings:

1. Arthashastra of Kautilya-(ed.) Kangale, R.P. Delhi, Motilal Banarasidas 1965
2. Atharvaveda samhita- (Trans.) R.T.H. Griffith, Banaras, 1896-97, rept.(2 Vols) 1968.
3. Mahabharata (7 Vols)- (Eng. Tr.) H.P. Shastri, London, 1952-59.
4. Manu's Code of Law- (ed. & trans.) : Olivelle, P. (A Critical Edition and Translation of the Mānava- Dharmaśāstra), OUP, New Delhi, 2006.
5. Ramayana of Valmaki - (Eng. Tr.) H.P. Shastri, London, 1952-59. (3 Vols)
6. Rgveda samhita (6 Vols)- (Eng. Tr.) H.H. Wilson, Bangalore Printing &Publishing Co., Bangalore, 1946. 7. Satapatha brahmana- (with Eng. trans. ed.) Jeet Ram Bhatt, Eastern (3 Vols) Book Linkers, Delhi, 2009.
7. अ गुतर णनकाय (1-4 भाग) क्च बनारसक्च1980
8. कौरटलीय अथाशास्त्र -णहन्द्दी अनुवाद -उदयवीर शास्त्री, मेहरचन्द्द लछमनदास, ददलली,1968.
9. दीघणनकाय (1-2 भाग) क्चसम्पा० जे० कश्यप णबहार, 1958
10. महाभारत (1-6 भाग) - णहन्द्दी अनुवाद सणहत, (अनु०) रामनारायण दत्त शास्त्री पाण्डेय गीताप्रेस, गोरखपुर.
11. मनुस्मृणत (1-13 भाग) - (सम्पा० एव व्या०) उर्ममला रुस्तगी, जे.पी. पणललशशग हाउस, ददलली, 2005
12. शतपथब्राहमण (1-5 भाग) (माध्यणन्द्दनीय शाखा) -सायणाचाया एव हररस्वामी टीकासणहत, ददलली, 1987.
13. शुक्रनीणत - णहन्द्दी अनुवाद, ब्रहमश कर णमश्र, चौखम्बा स स्कृत सीरीज, वाराणसी, 1968.
14. काणे, पी.वी.-धमाशास्त्र का इणतहास (1-4 भाग) अनु० अजुान चौबे काश्यप,णहन्द्दी सणमणत,लखनऊ, 1966—73.
15. गानार, जे.डललयू.- राज्यणवज्ञान और शासन, (अनु०) रामनारायण यादवेन्द्दु, आगरा, 1972.
16. नाटाणी, प्रकाश नारायण - प्राचीन भारत के राजनीणतक णवचारक, पोइन्द्टर पणललशसा, जयपुर, 2002.
17. मोहनचन्द्द- जैन स स्कृत महाकाव्यों में भारतीय समाज, ईस्टना बुक शलकसा, ददलली, 1989.
18. णवघाल कार, सत्यकेतु - प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

19. सहायक्चणशवस्वरूपक्च- प्राचीन भारत का सामाणजक एव आर्मथक इणतहास, मोतीलाल बनारसीदास, ददलली, 2012
24. णसन्द्हा णवनोद एव णसन्द्हा रेखा- प्राचीन भारतीय इणतहास एव राजनैणतक णचन्द्तन, राधा पणललकेशन्द्स, ददलली, 1989
25. Altekar, A.S - State and Government in Ancient India, Motilal Banarsidass, Delhi, 2001.
26. Belvalkar, S.K. -Mahabharata: Santi Parvam, 1954.
27. Gharpure, J.R. -Teaching of Dharmashastra, Lucknow University,1956
28. Ghosal, U.N. - A History of Indian Political Ideas, Bombay, 1959.
29. Jayaswal, K.P. - Hindu Polity, Bangalore, 1967.
30. Law, N. S. - Aspect of Ancient Indian Polity, Calcutta, 1960.
31. Maheshwari, S. R. - Local Government in India, Orient Longman, New Delhi,
32. Prasad, Beni - Theory of Government in Ancient India, Allahabad, 1968.
33. Saletore, B.A. - Ancient Indian Political Thought and Institutions, Bombay, 1963.
34. Sharma, R. S. - Aspects of Political Ideas and Institutions in Ancient India, Motilal Banarsidass, Delhi, 1996.
35. Sinha, K.N. - Sovernity in Ancient Indian Polity, London, 1938.
36. Verma, V.P. - Studies in Hindu Political Thought and its Metaphysical Foundations, Delhi, 1954.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:30:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)3.pdf

Vidyasagar University

Curriculum for B.A (Honours) in Sanskrit

[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-8		**C8T:** Indian Epigraphy, Paleography and Chronology	Core Course - 8	5	1	0	6	75
CC-9		**C9T:** Modern Sanskrit Literature	Core Course - 9	5	1	0	6	75
CC-10		**C10T:** Sanskrit and World Literature	Core Course - 10	5	1	0	6	75
GE-4		**TBD**	Generic Elective- 4				6	75
SEC-2		**SEC2T:** Machine Translation: Tools and Techniques **Or** Evolution of Indian scripts **Or** Sanskrit Meter and Music	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T**= Tutorial, **P**=Practical, **CC** = Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD** = to be decided

Generic Elective (GE)(Interdisciplinary) from other Department.

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

List of the Core Course (CC) and Electives

Core Course (CC)

CC-8: Indian Epigraphy, Paleography and Chronology
CC-9: Modern Sanskrit Literature
CC-10: Sanskrit and World Literature

Skill Enhancement Course(SEC)

SEC-2: Machine Translation: Tools and Techniques
Or
SEC-2: Evolution of Indian scripts
Or
SEC-2: Sanskrit Meter and Music

Generic Electives (GE)

GE-4: Basic Principles of Indian Medicine System (Ayurveda)
Or
GE-4: Computer Applications for Sanskrit
Or
GE-4: Nationalism and Indian Literature

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Core Course (CC)

CC-8: Indian Epigraphy, Paleography and Chronology **Credits 06**

CC8T: Indian Epigraphy, Paleography and Chronology

Course Contents:

Prescribed Course:

Section 'A'	**Epigraphy**
Section 'B'	**Paleography**
Section 'C'	**Study of selected inscriptions**
Section 'D'	**Chronology**

Section 'A'
Epigraphy

Unit: I	Introduction to Epigraphy and Types of Inscriptions
Unit: II	Importance of Indian Inscriptions in the reconstruction of Ancient Indian History and Culture
Unit: III	History of Epigraphical Studies in India
Unit: IV	History of Decipherment of Ancient Indian Scripts (Contribution of Scholars in the field of epigraphy): Fleet, Cunninghum, Princep, Buhler, Ojha, D.C.Sircar.

Section 'B'
Paleography

Unit: I	Antiquity of the Art of Writing
Unit: II	Writing Materials, Inscribers and Library
Unit: III	Introduction to Ancient Indian Scripts.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section 'C'
Study of selected inscriptions

Unit: I	Aśoka's Giranāra Rock Edict-1
	Aśoka's Sāranātha Pillar Edict
Unit: II	Girnāra Inscription of Rudradāman
Unit: III	Eran Pillar Inscription of Samudragupta
	Mehrauli Iron Pillar Inscription of Candra
Unit: IV	Delhi Topra Edict of Bīsaladeva

Section 'D'
Chronology

Unit: I	General Introduction to Ancient Indian Chronology
Unit: II	System of Dating the Inscriptions (Chronograms)
Unit: III	Main Eras used in Inscriptions - Vikrama Era, Śaka Era and Gupta Era

Recommended Books/Readings:

1. अभिलेख—मंजूषा, रणजीत सिंह सैनी, न्यूभारतीय बुककार्पोरेशन, दिल्ली, 2000.
2. उत्कीर्णलेखपञ्चकम्, झा बन्धु, वाराणसी, 1968.
3. उत्कीर्णलेखस्तबकम्, जियालाल काम्बोज, ईस्टर्न बुकलिंकर्स, दिल्ली.
4. भारतीय अभिलेख, एस.एस. राणा, भारतीय विद्याप्रकाशन, दिल्ली, 1978.
5. भारतीय प्राचीन लिपिमाला, गौरीशंकरहीराचन्द ओझा, अजमेर, 1918.
6. Select Inscriptions (Vol.I) - D.C. Sircar, Calcutta, 1965.
7. नारायण, अवध किशोर एवं ठाकुरप्रसाद वर्मा : प्राचीनभारतीय लिपिशास्त्र और अभिलेखिकी , वाराणसी, 1970.
8. पाण्डे, राजबली : भारतीय पुरालिपि, लोकभारती प्रकाशन, इलाहाबाद, 1978.
9. ब्यूलर, जॉर्ज : भारतीय पुरालिपि शास्त्र, (हिन्दीअनु०) मङ्गलनाथ सिंह, मोतीलाल बनारसीदास, दिल्ली, 1966.
10. मुले, गुणाकर : अक्षरकथा, प्रकाशनविभाग, भारतसरकार, दिल्ली, 2003.
11. राही, ईश्वरचन्द : लेखनकला का इतिहास (खण्ड 1—2), उत्तरप्रदेश हिन्दीसंस्थान,

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

लखनऊ, 1983.

12. सरकार, डी.सी. : भारतीय पुरालिपिविधा, (हिन्दीअनु०) कृष्णदत्त वाजपेयी, विधानिधि प्रकाशन, दिल्ली, 1996.
13. सहाय, शिवस्वरूप : भारतीय पुरालेखों का अध्ययन, मोतीलाल बनारसीदास,दिल्ली. Dani, Ahmad Hasan :*Indian Paleography*, Oxford, 1963.
14. Pillai, Swami Kannu& K.S. Ramchandran :*Indian Chronology (Solar, Lunar and Planetary),* Asian Educational Service, 2003.
15. Satyamurty, K. :*Text Book of Indian Epigraphy*, Lower Price Publication, Delhi. 1992.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

CC-9: Modern Sanskrit Literature **Credits 06**

CC9T: Modern Sanskrit Literature

Course Contents:

Prescribed Course:

Section 'A'	**Mahākāvya and Charitakāvya**
Section 'B'	**GadyaKāvya and Rūpaka**
Section 'C'	**GītiKāvya and Other genres**
Section 'D'	**General Survey of Modern Sanskrit Literature**

Section 'A'

Mahākāvya and Charitakāvya

Unit: I	SvātantryaSambhavam (RevaprasadaDwivedi) Canto 2, verses 1-45 Bhimāyanam (Prabha Shankar Joshi) Canto X. verses 20-29; Canto - XI. Verses 13-20 & 40-46.

Section 'B'

Gadya and Rūpaka

Unit: I	Śataparvikā (Abhirāja Rajendra Mishra)
Unit: II	ŚārdūlaŚakatam (Virendra Kumar Bhattacharya)

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section 'C'

Gitikāvya and Other genres

Unit: I	Bhatta Mathurna Nath Shastri (Kundaliyān, BacchuLal Avasthi Jñāana (Kaete, Kva Yataste), SriñivasaRath (Katamā Kavitā) etc
Unit: II	Hariram Acharya (Sankalpa Gitih) ; Pushpa Dikshit (Bruhi kosminYuge..) RadhaVallabhTripathi DhivaraGitih (Naukamihasaramsaram…);
Unit III	Harshdev Madhava Haiku- Snanagrihe, vedanā, mrityuh1, mrtyuh 2; khanih; shatāvadhāni R. Ganesh (kavi-viṣādah, varṣāvibhūtih

Section 'D'

General Survey

Unit 1	Pandita Kshama Rao, P.K. Narayana Pillai, S. B. Varnekar, ParmanandShastri, Reva Prasad Dwivedi
Unit 2	Janaki VallabhShastri, Ram Karan Sharma, Jagannath Pathak, S. Sunderrajan, Shankar Dev Avatare
Unit 3	Haridas SiddhantaVagish, Mula Shankar M. Yajnika, Mahalinga Shastri, Leela Rao Dayal, YatindraVimal Chowdhury, Virendra Kumar Bhattacharya

Recommended Books:

1. मिश्र अभिराज राजेन्द्र,कल्पवल्ली (समकालीनसंस्कृतकाव्यसंकलना)—साहित्य अकादमी, 2013
2. प्रभाशंकर जोशी—भीमायनम्, शारदा गौरव ग्रन्थमाला, पुणे
3. त्रिपाठी राधावल्लभ—नवस्पन्दः, मध्य प्रदेश हिन्दीग्रन्थ अकादमी
4. त्रिपाठी राधावल्लभ—आयतिः, राष्ट्रिय संस्कृत संस्थान, दिल्ली.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

5. आधुनिकसंस्कृत—साहित्य—संचयन— (सम्पा०) गिरीश चन्द्र पन्त, विघानिधि प्रकाशन, दिल्ली, 2008.
6. तदेव गगनं सैव धरा(काव्यसंग्रह) —श्रीनिवासरथविरचित, राष्ट्रिय संस्कृत संस्थान, दिल्ली.
7. विंशशताब्दी—संस्कृत—काव्यामृतम् — (संक०) अभिराज राजेन्द्रमिश्र (भाग—1)
8. उपाध्याय, रामजी—आधुनिकसंस्कृतनाटक, चौखम्बासुरभारती प्रकाशन, वाराणसी, 1996.
9. त्रिपाठी, राधावल्लभ—संस्कृतसाहित्य ः बीसवीं शताब्दी, राष्ट्रिय संस्कृतसंस्थान, दिल्ली, 1999.
10. भार्गव, दयानन्द—आधुनिकसंस्कृतसाहित्य, राजस्थानी ग्रन्थागार, जोधपुर, 1987.
11. द्विवेदी, मीरा —आधुनिक संस्कृत महिला नाटककार, परिमल पब्लिकेशन्स, दिल्ली, 2000.
12. रुचि कुलश्रेष्ठ—बीसवीं शताब्दी का संस्कृतलघुकथासाहित्य, राष्ट्रिय संस्कृतसंस्थान, दिल्ली, 2008.
13. शास्त्री, कलानाथ—आधुनिक काल का संस्कृत गघ—साहित्य, राष्ट्रिय संस्कृतसंस्थान, दिल्ली, 1995.
14. शुक्ल, हीरालाल—आधुनिकसंस्कृतसाहित्य, रचनाप्रकाशन, इलाहाबाद, 1971.
15. Joshi, K.R. & S.M. Ayachuit ² *Post Independence Sanskrit Literature*, Nagpur, 1991.
16. Prajapati, Manibhai K. ² *Post Independence Sanskrit Literature: A Critical Survey*, Patna, 2005.
17. UshaSatyavrat *Sanskrit Dramas of the Twentieth Century*, Mehar Chand Lachmandas, Delhi, 1987.
18. Dwivedi Rahas Bihari – AdhunikMahakāvya Samikshanam
19. Tripathi RadhaVallabh– Sanskrit SahityaBeesaveenShatabdi , 1999, Delhi
20. Musalgaonkar Kesava Rao – Adhunik Sanskrit KāvyaParampara, 2004
21. Naranga, S.P. – KalidasaPunarnava,
22. Upadhyaya, Ramji–Adhunik Sanskrit Natak, Varanasi

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

CC-10: Sanskrit and World Literature — Credits 06

CC10T: Sanskrit and World Literature

Course Contents:

Prescribed Course:

Section 'A'	Survey of Sanskrit Literature in the World
Section 'B'	Upaniṣads and Gītā in World Literature
Section 'C'	Sanskrit Fables in World Literature
Section 'D'	Rāmāyaṇa and Mahābhārata in South East Asian Countries
Section 'E'	Kālidāsa's Literature in World Literature
Section 'F'	Sanskrit Studies across the World

Section 'A'
Survey of Sanskrit Literature in the World

Unit: I	Vedic cultural elements in ancient Eastern and Western societies.
Unit: II	Presence of Sanskrit words in the World languages.
Unit: III	General survey of the Classical Sanskrit Literature in the Eastern and Western literature.

Section 'B'
Upaniṣads and Gītā in the West

Unit: I	Dara Shikoh's Persian Translation of Upanisads and their Influence on Sufism, Latin translation and its influence on Western thought
Unit: II	Translation of the Gītā in European languages and religio–philosophical thought of the west.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section 'C'
Sanskrit Fables in World Literature

Unit: I	Translation of Paňcatantra in Eastern and Western Languages. Translation of Vetālapaňcaviṁśatikā, Siṁhāsanadvātriṁśikā and Śukasaptati in Eastern
Unit: II	Languages and Art.

Section 'D'
Rāmāyaṇa and Mahābhārata in South Eastern Asia

Unit: I	Rāma Kathā in south eastern countries
Unit: II	Mahābhārata stories as depicted in folk cultures of SE Asia

Section 'E'
Kālidāsa in the West

Unit: I	English and German translation of Kālidāsa 's writings and their influence on western literature and theatre.

Section 'F'
Sanskrit Studies across the World

Unit: I	i. Sanskrit Study Centers in Asia ii. Sanskrit Study Centers in Europe iii. Sanskrit Study Centers in America

Recommended Books/Readings:

1. The Bhagavad Gita and the West: The Esoteric Significance of the Bhagavad Gita and Its Relation to the Epistles of Paul", by Rudolf Steiner, p. 43. arisebharat.com/2011/10/22/impact-of-bhagvad-gita-on-west/
2. AWAKENING - Google Books Result.
3. Ben-Ami Scharfstein (1998), A Comparative History of World Philosophy: From the Upanishads to Kant, State University of New York Press, ISBN 978-0791436844, page 376.
4. Bhagavad Gita - World Religions
5. Edgerton, Franklin (1924), *The Paňcatantra Reconstructed* (Vol.1: Text and Critical Apparatus, Vol.2 : Introduction and Translation), New Haven, Connecticut: American Oriental Series. Volumes 2-3.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

en.wikipedia.org/wiki/Influence_of_Bhagavad_Gita
6. Banarji, Suresh Chandra- 'Influence of Sanskrit out side India, A Companion to Sanskrit Literature, MLBD, 1971.
7. Excerpt from Wood's 2008 update of *Kalila and Dimna- Fables of Friendship and Betrayal.*
8. Falconer, Ion Keith (1885), *Kalilah and Dimnah or The Fables of Bidpai*, Cambridge University Press, Amsterdam, 1970.
9. Hertel, Johannes(1908-15), *The Paňcatantra : a collection of ancient Hindu tales, in the recension called Paňcākhyānaka*, and dated 1199 A.D., of the Jaina monk, Pūrṇabhadra, critically edited in the original Sanskrit, Harvard Oriental Series Volume 11,12,13, 14.
10. *History of Sanskrit Literature,* A Berriedale Keith, Motilal Banarsidas Publishers Pvt. Limited, India, 1993.
11. *History of the Miration of Paňcatantra.*
12. http://en.wikipedia.org/wiki/Panchatantra". https://books.google.co.in/books?isbn=8184002483
13. Ibn al- Muqaffa, Abd'allah, *Calila e Dimna*, Eds. Juan Manuel Cacho Blecua and Marīa Jesus Lacarra, Madrid: Editorial Castalia, 1984.
14. Ibn al- Muqaffa, Abdallah, *Kalilah et Dimnah*, Ed. P. Louis Cheiko. 3 ed. Beirut: Imprimerie Catholique, 1947.
15. Impact of Bhagvad Gita on West | Arise Bharat
16. Influence of Bhagavad Gita - Wikipedia, the free encyclopedia
17. Jacobs, Joseph (1888), *The earliest English version o the Fables of Bidpai* , London.
18. James A. Hijiya, "The Gita of Robert Oppenheimer" Proceeding of the American Philosphical Society, 144, no. 2 (Retrieved on 27 February 2011).
19. कालिदास ग्रन्थावली, सम्पा. रेवा प्रसाद द्विवेदी, काशी हिन्दू विश्वविघालय, वाराणसी, 1986.
20. रमेश भारद्वाज — नवजागरण एवं स्वतन्त्रता आन्दोलन में उपनिषदों की भूमिका, विघानिधि, दिल्ली
21. Kāśīnāth Pāṇḍuraṅga Paraba, ed. (1896), The Paňcatantra of Viṣṇuśarman, Tukārām Jāvajī, http://books.google.com/-id=K71WAAAAYAAJ-, Google Books.
22. Katchbull, Rev. Wyndham (1819), *Kalila and Dimna or The Fables of Bidpai*, Oxford, (Translated from Silvestre de Stacy's laborious 1816 collation of different Arabic manuscripts)
23. Mahulikar, Dr. Gauri, Effect of Ramayana On Various Cultures And Civilisation, Ramayana Institute.
24. Mark B. Woodhouse (1978), Consciousness and Brahman-Atman, The Monist, Vol. 61, No.1, Conceptions of the Self: East & West (January, 1978), pages 109-124.
25. Neria H. Hebber, Influence of Upanishads in the West, Boloji.com. Retrieved on : 2012-03-02.
26. Olivelle, Patrick (2006), *The Five Discourses on Worldly Wisdom,* Clay Sanskrit Library.
27. Paňcatantra, http://en.wikipedia.org/wiki/Panchatrantra, retrieved on Feb 1, 2008.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

28. Pandit Guru Prasad Shastri (1935), *Pañcatantra with the commentary Abhinavarajalaxmi*, Benares: Bhargava Pustakalaya.
29. Patrick Olivelle (2014), The Early Upanishads, Oxford University Press, ISBN 978-0195124354, page 12-14.
30. *Rajan, Chandra (transl.) (1993), Viṣṇuśarma: The Pañcatantra,* London : Penguin Books, ISBN-9780140455205-(reprint : 1995) (also from the North Western Family text.
31. Rohman, Todd (2009). "The Classical Period". In Watling, Gabrielle, Quay, Sara.
32. S Radhakrishnan, The Principal Upanishads George Allen&Co., 1951, pages 22, Reprinted as ISBN 978-8172231248
33. The Gita of J. Robert Oppenheimer" by JAMES A. HIJIYA, Professor of History, University of Massachusetts Dartmouth (PDF file)
34. *The* Pañcatantra, Viṣṇuśarma, translated from Sanskrit with an Introduction by Chandra Rajan, Penguin Books, India, 1993.
35. Valmiki's Ramayana illustrated with Indian miniatures from the 16th to the 19th Century 2012, Editions Diane de Selliers, ISBN 9782903656168
36. Video of London 2009 ICR Illustrated Lecture on the Westward Migration of Panchatantra from India.
37. Viṣṇuśarma, http://en.wikipedia.org/wiki/Vishnu_Sarma, retrieved on Feb 1, 2008.
38. Wilkinson (1930), *The Lights of Canopus described by* J V S Wilkinson, London: The studio.
39. Winternitz, M. *Some Problems of Indian Literature* –Munshiram Manoharlal, Delhi, 1978. www.comparativereligion.com/Gita.html

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Skill Enhancement Course (SEC)

SEC-2: Machine Translation: Tools and Techniques

Credits 06

SEC2T: Machine Translation: Tools and Techniques

Course Contents:

Prescribed Course

Section 'A'	**Theoretical Concepts of Machine Translation**
Section 'B'	**Survey of Machine Translation**
Section 'C'	**Machine Translation (MT) Approaches**
Section 'D'	**Challenges in Machine Translation**

Section 'A'

Theoretical Concepts of Machine Translation

Unit: I

Human vs Computer translation of languages. Basics of Machine Translation, Tools and Techniques of Machine Translation, Source vs Target Langugae

Section 'B'

Survey of Machine Translation

Unit: I

Survey of Machine Translation Systems, List of research laboratories for machine translation

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section 'C'

Machine Translation (MT) Approaches

Unit: I

Rule Base MT: Transfer-based, Interlingual and Dictionaly Based, Statistical MT, Example Based MT,

Hybrid MT

Section 'D'

Challenges in Machine Translation

Unit: I Ambiguity and Acceptability

Recommended Books/Readings:

1. Dorr, B J, Machine Translation – a view from Lexicon
2. Sergei Nirenburg, H. L. Somers, Readings in Machine Translation, MIT Press (MA)
3. Philipp Koehn, Statistical Machine Translation, Cambridge University Press.
4. Sergei Nirenburg, Jaime Carbonell, Masaru Tomita, Editors: Kenneth Goodman, Machine Translation: A Knowledge-Based Approach, Morgan Kaufmann Publishers Inc. San Francisco, CA, USA, 1994
5. Chandra, Subhash and Jha, GN. Computer Processing of Nominal Inflections in Sanskrit: Methods and Implementations, CSP, UK, 2012.
6. Dan Jurafsky, James H. Martin, 2000, Speech and Natural Language Processing, Prentice Hall.
7. Sanskrit Computational Linguistics symposium 1-2: Springer Verlag LNCS 5402 G Huet, A Kulkarni and P Scharf (eds), Proceedings of the 1st and 2nd International Symposium, 2009.
8. Sanskrit Computational Linguistics symposium 3: Springer Verlag LNCS 5406 A Kulkarni, G Huet (eds), Proceedings of the 3rd International Symposium, Jan 15 - 17, 2009, Hyderabad.
9. Grishman, R., Computational Linguistics: An introduction, Cambridge University Press, 1986.
10. Sergei Nirenburg, Harold L. Somers and Yorick A. Wilks, "Readings in Machine Translation" MIT Press. 2003.
11. Teacher's notes and selected research paper suggested by teachers.
12. Important E-Content suggested by teacher.
13. Amba Kulkarli, Machine translation activities in India: A survey, In proceedings of workshop on survey on Research and Development of Machine Translation in Asian Countries, Thailand, May 13-14, 2002.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Or

SEC-2: Evolution of Indian scripts

Credits 06

Course Contents:

Prescribed Course:

Section 'A'

Section 'B'

Unit-Wise Division

Section 'A'

Unit: I

1. Antiquity of writing in India
2. Sign & symbols - pre-scripts
3. Early Brāhmī and Kharoshthi Scripts
4. Indus Valley script - Introduction

Section 'B'

Unit: I

1. Types/Kinds of the Brāhmī script by 400 A.D.
2. Transition to early modern Indian scripts
3. Causes of variation in the Brāhmī script

Recommended Books/Readings:

1. Buhler, G. : Indian Paleography, 1959
   i. : On the origin of the Indian alphabet & numerals
2. Burnell, A.C. : Elements of South Indian Paleography, 1878.
3. Dani, A.H. : Indian Paleography, 1963
4. Diringer, David : The Alphabet (Reprint) 1962
5. Gelb, I. J. : A study of writing, 1963
6. Sircar, D.C. : Indian Epigraphy, 1965
7. Upasak, C.S. : History & Paleography of Mauryan Brāhmī script, 1960
8. Verma, T.P. : Paleography of Brāhmī script in North India, 1971.
9. गौ. ही. ओझा: भारतीय प्राचीन लिपिमाला
10. राजबली पाण्डेय : अशोक के अभिलेख, 1967

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Or

SEC-2: Sanskrit Meter and Music

SEC2T: Sanskrit Meter and Music **Credits 06**

Course Contents:

Section 'A'	**Brief Introduction to Chhandaḥśāstra**
Section 'B'	**Classification and Elements of Sanskrit Meter**
Section 'C'	**Analysis of Selected Vedic Meters and their musical rendering**
Section 'D'	**Analysis of Selected Classical Meters and their musical rendering**

Unit-Wise Division:

Section 'A'

Brief Introduction to Chhandaḥśāstra

Unit: I	Brief Introduction to Chhandaḥśāstra

Section 'B'

Classification and Elements of Sanskrit Meter

Unit: I	Syllabic verse (akṣaravṛtta):
	Syllabo-quantitative verse (varṇavṛtta)
	Quantitative verse (mātrāvṛtta)
	Syllables: laghu and guru
Unit: II	Gaṇa
	Feet

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section 'C'

Analysis of Selected Vedic Meter and their Lyrical Methods (गान-पद्धति)

Unit: I

Definition, Example, Analysis and Lyrical Methods of following Meters:

gāyatrī, uṣṇika, anuṣṭupa, bṛhatī, paṃkti, ṭriṣṭup and jagatī

Section 'D'

Analysis of Selected Classical Meter and their Lyrical Methods (गान-पद्धति)

Unit: I

Definition, Example, Analysis and Lyrical Methods of following Meters:

bhujaṅgaprayāta, sragviṇī, toṭaka, harigītikā, vidyunmālā, anuṣṭupa, āryā, mālinī, śikhariṇī, vasantatilakā, mandākrāntā, sragdharā and, *śārdūlvikrīḍita*

Suggested Books/Readings:

1. Brown, Charles Philip (1869). Sanskrit Prosody and Numerical Symbols Explained. London: Trübner & Co.
2. Deo, Ashwini. S (2007). The Metrical Organization of Classical Sanskrit Verse, (PDF). Journal of Linguistics 43 (01): 63–114. doi:10.1017/s0022226706004452.
3. Recordings of recitation: H. V. Nagaraja Rao (ORI, Mysore), Ashwini Deo, Ram Karan Sharma, Arvind Kolhatkar.
4. Online Tools for Sanskrit Meter developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi: http://sanskrit.du.ac.in
5. धरानन्द शास्त्री (संपा.), केदारभट्ट विरचित वृत्तरत्नाकर, मोतीलाल बनारसीदास, दिल्ली, 2004 ।

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Generic Electives (GE)

GE-4: Basic Principles of Indian Medicine System (Ayurveda) **Credits 06**

GE4T: Basic Principles of Indian Medicine System (Ayurveda)

Course Contents:

Prescribed Course:

Section 'A'	**Introduction to Indian Medicine System: Āyurveda**
Section 'B'	**Basic Principles of Āyurveda**
Section 'C'	**Dietetics, Nutrition and Treatments in Āyurveda**
Section 'D'	**Important Medicinal Plants and their based on Āyurveda**

Section 'A'
Introduction to Indian Medicine System: Āyurveda

Unit: I

Definition of Āyurveda, Āyuh (Life), Śarīra (Body), Health, Aim of Āyurveda, Subject Matter of Āyurveda, Salient Features of Āyurveda, Concept of Health according to Āyurveda, Unique features of Āyurveda.

Unit: II

History of Āyurveda, Atharvaveda as an early source for medicinal speculations, Introduction to Major Texts (Suśrut Saṁhitā and Caraka Saṁhitā) and Authors (Suśruta and Caraka) and Aṣṭāṅga Hṛdayam, Aṣṭāṅga Saṅgraha of Vāgbhaṭa.

Unit: III

Eight Components of Āyurveda (aṣṭāṅgaĀyurveda):

1. Kāycikitsā (General Medicine)
2. Kaumārabhṛtya(Pediatrics)
3. ŚalyaTantra (Surgery)
4. Śālākya-Tantra (Ent. and Ophthalmology)
5. Bhūta Vidyā (Psychiatry Medicine).
6. Viṣa Vijñāna (Toxicology).
7. Rasāyana (Rejuvenates).
8. Vajīkaraṇa (Aphrodisiac).

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section 'B'

Basic Principles of Āyurveda

Unit: I

1. **The Triguṇas:** Sattva,Rajas and Tamas.
2. **The Pañcamahābhūtas:**Ākāśa (Space), Vāyu (Air),Teja or Agni(Fire),Jala(Water) and Pṛthvī (Earth).
3. **The Tridoṣas:** Vāta,Pitta and Kapha.
4. **The Saptadhātus:** Rasa (fluid), Rakta(blood), Māṁsa, Meda (fat),Asthi, Majjā and Śukra.
5. **The Trayodosāgni:** Jatharāgni (gastric fire), Saptadhātvāgni and Pañcabhūtāgni.
6. **The Trimalas:**Purīṣā (faeces),Mūtra (urine) and Sveda (sweat).

Unit: II

Āyurvedic understanding of lifestyle and concepts of preventive medicine.

Seasonal regimen & social conduct and its effect on health, Concepts of Prakṛti, Agni, and Kosta.

SvasthaVṛtta (Preventive Medicine) : Understanding Health and Disease in Āyurveda

Unit: III

Diagnosis of illness: eight ways to diagnose illness, called Nāḍī (pulse), Mūtra (urine), Mala (stool), Jihvā (tongue), Śabda (speech), Sparśa (touch), Dṛk (vision), and Ākṛti (appearance).

Section 'C'

Dietetics, Nutrition and Treatments in Āyurveda

Unit: I

Āyurvedic understanding of nutrition and metabolism, Classification of Āhāra according to Āyurveda and Viruddhāhāra (incompatible diet) & role of diet.

Unit: II

Commonly used substances and their therapeutic properties and Pharmacology: Intro to basic principles of Āyurvedic pharmacology, Art and science of Āyurvedic Pharmacy and Understanding Āyurvedic Herbs and common formulations

Unit: III

Pañcakarma and Other Āyurvedic Specialty Treatments: Method and classification of treatments in Āyurveda, Pretreatment, Therapeutic vomiting (Vamana), Purgation Therapy, Enema (Basti), Nasal Administration – Nāsya, Blood Letting (RaktaMokṣa), Introduction and importance of Pañcakarma/Detoxification, Science and art of rejuvenation (Rasāyana and Vājikaraṇa). Āyurvedic prenatal and postpartum care for healthy mothers and babies, Saṁskāra, care of infants and children.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section 'D'

Important Medicinal Plants in Āyurveda

Unit: I

19 Medicinal Plants in Suśruta Saṁhitā: Tulsī, Haridrā, Sarpagandhā, Ghṛta Kumārī, Guggulu, Brāhmī, Āmalā, Aśwagandhā, Arjun Tree, Turmeric, Ceylon Hydrolea, Neema Plant, Lady Ferns, Blackberries, Pot Marigold, Camomile, Peppermint, Fenugreek and Aloe Vera.

4 Credit

Recommended Books/Readings:

1. Acharya, Srinivas, Panchakarma Illustrated, Chaukhaba SanskritPratishtana, Delhi, 2006.
2. V.B. Athavale, Basic Principles of Āyurveda, ChaukhambaSanskrit Pratishthan New Delhi, 2005.
3. Āyurveda Kā Saṅkṣipta Itihāsa, Hindi Sahitya Sammelan, Allahabad.
4. Bhagavan Dash, Vaidya, and Acarya Manfred M. Junius, A Handbook of Āyurveda, Concept Publishing Co., New Delhi,1987.
5. Bhishagratna, KavirajKunjalal, ed., translator. (2002). Sushruta Samhita Volumes I and II. Varanasi, India: Chowkhamba Sanskrit Series.
6. Charak Samhita E-text: http://www.charakasamhita.com/
7. http://www.speakingtree.in/blog/medicinal-plants-from-ancient-india
8. http://www.tkdl.res.in/tkdl/langdefault/ayurveda/Ayu_Principles.asp?GL=#q1
9. K. R. Srikantha Murthy, Illustrated Susruta Samhita, ChaukhambaOrientalia, 2012
10. M.S. Valiathan, An Introduction to Āyurveda Paperback, Universities Press (India) Private Limited, 2013
11. M.S. Valiathan, The Legacy of Suśruta, Universities Press, 2007
12. PriyaVrat Sharma, Essentials of Āyurveda: Sodasangahṛdayam, MotilalBanarsidass Publishers, 1999
13. Ravi DattaTripathi, Vāgbhaṭa's Aṣṭāṅg-saṅgraha, ChowkhambaSanskrit Pratishthanam, Delhi., 2011.
14. ShanthaGodagama, The Handbook of Āyurveda, North Atlantic Books, 2004
15. Sharma, Priyavrit V., ed., translator. (1981-1994). Charaka Samhita, Vols. 1 - 4,Chaukhamba Sanskrit Series, Varanasi, India: Varanasi, India: Chowkhamba SanskritSeries.
16. Sharma, Ram Karan and Bhagawan Dash, Vaidya, eds., translators (1992 – 2000). CharakaSamhita Vols. 1 – 6. Varanasi, India.Chaukhamba Sanskrit Series.
17. Srikrishnamurthy, K.R. Srikantha, translator. (1991-1992). Vagbhata, AstangaHridayamVols. 1 and 2. Varanasi, India: Krishnadas Academy.
18. Srikrishnamurthy, K.R. Srikantha, translator. (2001). Sharangadhara Samhita: A treatise onĀyurveda. Varanasi, India: ChaukhambaOrientalia.
19. SusrutaSusruta (Author), Kunja Lal Bhishagratna, An English Translation of the Sushruta Samhita, Based on Original Sanskrit Text. Edited and Published by KavirajKunja Lal Bhishagratna. with a Full ... Notes, Comperative Views, Index, Glossary. Nabu Press. 2012

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Or

GE-4: Computer Applications for Sanskrit — Credits 06

GE4T: Computer Applications for Sanskrit

Course Contents:

Section A	Interactive Sanskrit Teaching Learning Tools
Section B	Standard for Indian Languages (Unicode)
Section C	Text Processing and Preservation Tools
Section D	Optical Character Reader

Section A

Interactive Sanskrit Teaching Learning Tools

Unit: I	Interactive Sanskrit Learning Tools, Introduction, Why Interactive Tools for Sanskrit? E-learning, Basics of Multimedia, Web based tools development HTML, Web page etc., Tools and Techniques

Section B

Standard for Indian Languages (Unicode)

Unit: I	Unicode Typing in Devanagari Scripts, Typing Tools and Software

Section C

Text Processing and Preservation Tools

Unit: I	Text Processing, Preservation, Techniques, Text Processing and Preservation, Tools and Techniques, Survey

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section D

Optical Character Reader

Unit: I — Optical Character Reader (OCR), Applications of OCR for Sanskrit and Indian Languages, Tool and Techniques, Survey

Suggested Readings:

1. Bharti A., R. Sangal, V. Chaitanya, "NL, Complexity Theory and Logic" in Foundations of Software Technology and Theoretical Computer Science, Springer, 1990.
2. Tools developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi, Delhi-110007 available at: http://sanskrit.du.ac.in
3. Basic concept and issues of multimedia: http://www.newagepublishers.com/samplechapter/001697.pdf
4. Content creation and E-learning in Indian languages: a model: http://eprints.rclis.org/7189/1/vijayakumarjk_01.pdf
5. HTML Tutorial - W3Schools: www.w3schools.com/html
6. The Unicode Consortium: http://unicode.org/.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Or

GE-4: Nationalism and Indian Literature **Credits 06**

GE4T: Nationalism and Indian Literature

Course Contents:

Prescribed Course:

Section 'A	**Concepts and Basic Features of Indian Nationalism**
Section 'B'	**Nationalism and Concept of 'Rāṣṭra' in Sanskrit Literature**
Section 'C'	**Rise of Indian Nationalism and Modern Indian Literature**

Section 'A'

Concepts and Basic Features of Indian Nationalism

Unit: I

Definition of Indian Nation, Nature and Elements : Meaning of Nation, Definitions in the light of Modern Political Science; Western Concept of Nation, Origion and Development of Nationalism in West; Constituent Elements of Nation; Different view regarding Nation and State; Indian Concept of Nation, Meaning, Etymology and Fundamental Elements in the light of Sanskrit Literature.

Unit: II

Definition of Nationality, **Nature and** Natonal Symbols Meaning of Nationality, Definitions and Constituent Elements of Nationality; Essential Factors of Nationality: 1. National Intigration, 2. Patriotism, 3. Freedom, 4. Religious Tolerance 5. National Pride, 6. National Conciousness, 7. Citizenship.

National Symbols of India : 1. National Anthem- *'Jana Gaṇa Mana'* 2.. National Song

'Vande Mātaram' 3..National Flag of India, 4. National Emblem *'Ashok Chakra'*.

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Section 'B'

Nationalism and Concept of ' Rāṣṭra' in Sanskrit Literature

Unit: I

Origin, Development and Concept of ' Rāṣṭra' in Sanskrit Literature Concept and Nature of Vedic *'Rāṣṭra'* (*Atharvaveda, 11.9.17*; 12.1,1-12; SuklaYajurveda, 22.22); Five Elements of Vedic *'Rāṣṭra'* (*Atharvaveda,* 12.1,1); Coronation Ceremony of Vedic King and its relation with Nation State *'Rāṣṭra'* Śatapathabrāhmaṇa, 51.1.8-13; 9.4.1.1-5); *' Rāṣṭra'* in the Context of *'Saptāñga'* Theory of State (Kautilya's *Arthaśāstra,*6.1, *Mahābhārata, Śāntiparva,*56.5, *Śukranīti,* 1.61-62)

Unit: II

Name, Geography and Features of *'Bhāratavarṣa'* in Sanskrit Literature Different Views Regarding Name of 'Bhāratavarṣa' in Vedic and Pauraṇika Literature; Geography and Salient Features of 'Bhāratavarṣa' in Viṣṇu Purāṇa (2.3) Diversity and Geographical Unity of 'Bharatavarṣa' (Valmīki *Rāmāyaṇa, Kiṣkindhākāṇḍa,* chapters-46,47,48 ; *Raghuvaṁśa* of Kalidasa (fourth canto)

Section 'C'

Rise of Indian Nationalism and Modern Indian Literature

Unit: I

Rise of **Indian Nationalism and Freedom Struggle Movement** : Major Factors which led to the Rise of Nationalist Sentiments in Modern Period with special reference to:1. Western thought and education 2.Rediscovery of India's past 3. Socio-religious reform movements 4. Impact of contemporary National movements worldwide .Socio-Religious Nationalist thoughts of: 1.Swami Dayanand Saraswati, 2. SwamiVivekanand, 3. Bankim Chandra Chatopadhyay,4. Mahatma Gandhi, 5. Dr.B.R.Ambedkar and 6.Vir Savarker. Freedom struggle movement and relevance of Gandhian thought in modern period with special reference to '*Grāma Svarāja',Satyāgraha*','*Ahiṁsā*' and 'Svadeśī' movement.

Unit: II

Nationalism in Sanskrit Literature and Modern Indian Poetry :

Nationalist Trends of Modern **Sanskrit**

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Literature with special reference to

1.*'Satyāgrahagītā'* of Panditā Kṣamārāva; 2. *'Bhāratavijayanāṭakam'* of Mathura Prashad Dikshita; 3.*'Gāndhicaritam'* of Charudeva Shastri;

4.*'Srisvāmivivekānandacaritam'* of Tryambaka Sharma Bhandarkar. (Ref. Book : Tiwari, Shashi, *Rashtriyata evam Bharatiya Sahitya*, pp.113-139)

Nationalistic thought in Modern **Hindi Poetry: 1.** Bhartendu Harishchandra, 2. Ramdhari Singh 'Dinkar', 3. Jayashankar Prashad., 4.Maithili Sharan Gupta, 5. MakhanlalChaturvedi, 6. Subhadra Kumari Chauhan. (Ref. Book : Tiwari, Shashi, *Rashtriyata evam Bharatiya Sahitya*,pp.140-219)

Nationalistic thought in Modern Urdu Poetry:1.Muhammad Iqbal(Taran-e- Hindi),

2. Firakh GorakhPuri (Aya Madar-e- Hind), 3. Sagar Nizami (Taran-e-Vatana),

4. Afsar Merathi (Vatan Ka Rag), 5. Ali Sardar Jafari (Yah Hindostan), 6. Ezaz Siddiqui

(Nagm-e-Vatan).

(Ref. Book **:** Akhtar, Jaan Nisar, *Hindostan Hamara*, part-1,pp.49-86)

Recommended Books/Readings:

1. Kāne PV : History of Dharma Śāstra, Bhandarkar Oriental Research Institute, Pune
2. Pandey Rajbali: Hindu, Samskara, Motilal Banarasi Das, Delhi
3. काणे पांडुरंग वामन – धर्मशास्त्र का इतिहास, अनुवादक अर्जुन चौर्ण काश्यप, उत्तर प्रदेश हिंदी संस्थान
4. पाण्डेय राजबलि – हिन्दू संस्कार – चौखम्बा विद्याभवन, वाराणसी 1978
5. जोशी लक्ष्मण शास्त्री – धर्मकोष, व्यवहारकाण्ड, विवादपदानि (प्रथम भाग) प्राज्ञ पाठशाला, वाई, सतारा, महाराष्ट्र|
   a. : Select Inscriptions (Part - I)
6. Upadhyay, V. : Prācīna Bhāratīya Abhilekha (Hindi)
7. Thapar, Romila : Asoka tathā Maurya Sāmrājya Kā Patana (Hindi)
8. Arthashastra of Kautilya—(ed.) Kangale, R.P. Delhi, Motilal Banarasidas 1965
9. Atharvaveda samhita(2 Vols)— (Trans.) R.T.H. Griffith, Banaras, 1896-97,

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

1968.
10. Mahabharata (7 Vols)— (Eng. Tr.) H.P. Shastri, London, 1952-59.
11. Ramayana of Valmaki (3 Vols) — (Eng. Tr.) H.P. Shastri, London, 1952-59.
12. Satapatha brahmana (3 Vols)— (Eng. trans. ed.) Jeet Ram Bhatt, E. B.L. Delhi, 2009.
13. Visnu purana— (Eng. Tr.) H.H. Wilson, Punthi Pustak, reprint, Calcutta, 1961.
14. कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास, दिल्ली, *1968.*
15. महाभारत (*1—6* भाग) — हिन्दी अनुवाद सहित, (अनु०) रामनारायण दत्त शास्त्री पाण्डेय, गीताप्रेस, गोरखपुर.
16. यजुर्वेद— हिन्दी अनुवाद सहित, सातवलेकर, श्रीपाद दामोदर, पारडी
17. विष्णुपुराण— हिन्दी अनुवाद सहित, (अनु०) मुनिलाल गुप्त, गीताप्रेस, गोरखपुर.
18. शतपथब्राह्मण (*1—5* भाग) (माध्यन्दिनीय शाखा) — सायणाचार्य एवं हरिस्वामी टीकासहित, दिल्ली, *1987.*
19. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, *968.*
20. सत्याग्रहगीता— पण्डिता क्षमाराव, पेरिस, *1932.*
21. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, *(1 —2* भाग) गीताप्रेस, गोरखपुर.
22. अख्तर,जान निसार (सम्पा०) —हिन्दोस्ताँ हमारा (भाग—*1)*, हिन्दुस्तानी बुक ट्रस्ट, मुंबई, *2006,*
23. कपूर,अनूप चन्द— राजनीतिविज्ञान के सिद्धान्त, प्रीमियर पब्लिशिंग हाउस,दिल्ली, *1967.*
24. गोस्वामी, योगेन्द्र (सम्पा०) — राष्ट्रीय एकता और भारतीय साहित्य, काशी अधिवेशन स्मृति ग्रन्थ, *2001.*
25. टंडन, कुमुद— महात्मागांधीपरक संस्कृत काव्य, ईस्टर्न बुक लिंकर्स, दिल्ली, *1991.*
26. तिवारी, मोहन चन्द —अष्टाचक्रा अयोध्याः इतिहास और परम्परा,उत्तरायण प्रकाशन,दिल्ली, *2006*
27. तिवारी, शशि— राष्ट्रीयता एवं भारतीय साहित्य, विघानिधि प्रकाशन, दिल्ली, *2007.*
28. तिवारी, शशि— संस्कृत साहित्य में राष्ट्रवाद और भारतीय राजशास्त्र, विघानिधि प्रकाशन दिल्ली, *2013.*
29. दीक्षित, हरिनारायण — संस्कृत साहित्य में राष्ट्रिय भावना ईस्टर्न बुक लिंकर्स, दिल्ली, *2006.*

Downloaded from Vidyasagar University by 47.11.14.213 on 14 April 2021 : 11:21:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)4.pdf

Vidyasagar University

Curriculum for B.A. (Honours) in Sanskrit[Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 11		**C11T: Vedic Literature**	Core Course - 11	5	1	0	6	75
CC- 12		**C12T: Sanskrit Grammar**	Core Course - 12	5	1	0	6	75
DSE-1		**TBD**	Discipline Specific Electives -1	5	1	0	6	75
DSE-2		**TBD**	Discipline Specific Electives -2	5	1	0	6	75
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

Semester-V

List of Core Course (CC)

CC-11: Vedic Literature
CC-12: Sanskrit Grammar

Discipline Specific Electives (DSE)

DSE-1A: Indian System of Logic and Debate
Or
DSE-1B: Art of Balanced Living
DSE-2A: Theatre and Dramaturgy in Sanskrit
Or
DSE-2B: Tools and Techniques for Computing Sanskrit Language

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

Semester: V

Core Courses

CC-11: Vedic Literature **Credits 06**

C11T: Vedic Literature

Course Contents:

Prescribed Course:

Section 'A'	***Saṁhitā* and *Brāhmaṇa***
Section 'B'	**Vedic Grammar**
Section 'C'	**Muṇḍakopaniṣad**

Unit-Wise Division:

Section 'A'

Saṁhitā and *Brāhmaṇa*

Unit: I	***Ṛgveda*-** Agni- 1.1, Uṣas- 3.61, Akṣa Sūkta 10.34, Hiraṇyagarbha- 10.121
Unit: II	***Yajurveda*-** Śivasaṁkalpa Sūkta- 34.1-6
Unit: III	***Atharvaveda*-** Sāmmanasyam- 3.30, Bhūmi- 12.1-12

Section 'B'

Vedic Grammar

Unit: I	Declensions (*śabdarūpa*), Subjunctive Mood (*leṭ*), Gerunds (*ktvārthaka, Tumarthaka*), Vedic Accent and Padapāṭha.

Section 'C'

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020, 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

(*Muṇḍakopaniṣad*)

Unit: I *Muṇḍakopaniṣad* - 1.1 to 2.1

Unit: II *Muṇḍakopaniṣad* – 2.2 to 3.2

Recommended Books/Readings:

1. ऋग्वेदसंहिता (सायणाचार्यकृत भाष्य एवं हिन्दी व्याख्या सहित), (संस्करण) रामगोविन्द त्रिवेदी, चौखम्बा संस्कृत प्रतिष्ठान, दिल्ली.
2. *Atharvaveda* (Śaunakīya): (Ed.) Vishva Bandhu, VVRI, Hoshiharpur, 1960.
3. शुक्लयजुर्वेदसंहिता, (पदपाठ, उव्वट—महीधर भाष्य संवलित दृतत्त्वबोधिनी 'हिन्दी व्याख्या सहित), (संस्करण) रामकृष्ण शास्त्री, चौखम्बा संस्कृत प्रतिष्ठान, दिल्ली.
4. *Śatapatha Brāhmaṇa* , (Ed.) Ganga Prasad Upadhyaya, SLBSRS Vidyapeeth, Delhi.
5. *Śuklayajurveda-Saṁhitā,* (Vājasaneyi-Mādhyandina), (Ed.) Jagadish Lal Shastri, MLBD, Delhi, 1978.
6. मुण्डकोपनिषद् (शाङ्करभाष्य), (संस्करण) जिया लाल काम्बोज, ईस्टर्न बुक लिंकर्स, दिल्ली.
7. शशि तिवारी, विधानिधि प्रकाशन, दिल्ली
8. वैदिक संग्रह, कृष्णलाल, ईस्टर्न बुक लिंकर्स, दिल्ली.
9. *Ṛksūktāvalī,* H.D. Velankar, Vaidika Sanshodhana Mandala, Pune, 1965.
10. *Ṛksūktavaijayantī,* H.D. Velankar, Bharatiya Vidya Bhavan, Bombay, 1972.
11. ऋक्सूक्तनिकरः , उमाशंकर शर्मा ऋषि, चौखम्बा ओरियण्टालिया, वाराणसी.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

CC-12: Sanskrit Grammar — Credits 06

C12T: Sanskrit Grammar

Course Contents:

Prescribed Course:

Section 'A'	Laghusiddhāntakaumudī : Saṃjñā prakaraṇa
Section 'B'	Laghusiddhāntakaumudī : Sandhi prakaraṇa
Section 'C'	Laghusiddhāntakaumudī : Vibhakti prakaraṇa

Unit-Wise Division:

Section 'A'
Laghusiddhantakaumudi: Saṁjñā Prakaraṅa

Unit: I — *Samjñā Prakaraṇa*

Section 'B'
Laghusiddhantakaumudi: Sandhi Prakaraṇa

Unit: I — ac sandhi:
yaṇ, guṇa, dīrgha, ayādi, vṛddhi and *pūrvarūpa.*

Unit: II — hal sandhi:
ścutva, ṣṭutva, anunāsikatva, chhatva and *jaśtva*

Unit: III — visarga sandhi:
utva, lopa, satva and *rutva*

Section 'C'
Laghusiddhāntakaumudī: Vibhaktyartha Prakaraṇa

Unit: I — Vibhaktyartha Prakaraṇa

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

Recommended Books

1. धरानन्द शास्त्री, लघुसिद्धान्तकौमुदी, मूल एवं हिन्दी व्याख्या, दिल्ली।
2. भीमसेन शास्त्री, लघुसिद्धान्तकौमुदी भैमी व्याख्या (भाग-1), भैमी प्रकाशन, दिल्ली।
3. चारुदेव शास्त्री, व्याकरण चन्द्रोदय (भाग-1,2 एवं 3), मोतीलाल बनारसीदास, दिल्ली।
4. सत्यपाल सिंह (संपा.), लघुसिद्धान्तकौमुदी: प्रकाशिका नाम्नी हिन्दी व्याख्या सहिता, शिवालिक पब्लिकेशन, दिल्ली, 2014।
5. V.S. Apte, The Students' Guide to Sanskrit Composition, Chowkhamba Sanskrit Series, Varanasi (Hindi Translation also available).
6. M.R. Kale, Higher Sanskrit Grammar, MLBD, Delhi (Hindi Translation also available).
7. Kanshiram, Laghusiddhāntakaumudī (Vol. I), MLBD, Delhi, 2009.
8. Online Tools for Sanskrit Grammar developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi: http://sanskrit.du.ac.in.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

Discipline Specific Electives (DSE)

DSE-1A: Indian System of Logic and Debate **Credits 06**

DSE1AT: Indian System of Logic and Debate

Course Contents:

Indian System of Logic and Debate

Prescribed Course:

Section 'A' **Fundamentals of Science of Debate**

Section 'B' **Syllogistic Logic**

Section 'C' **Theory of Debate**

Unit-Wise Division:

Section 'A'
Fundamentals of Science of Debate

Unit: I

Science of inquiry (*ānvīkṣikī*) & its importance, Growth of *ānvīkṣikī* into art of debate, The council of debate (*pariṣad*) & its kinds, Discussant (*vādī*), Opponent (*prativādī*), Judge (*madhyastha/prāśnika*).

Unit: II

The Method of debate (*sambhāṣāvidhi/vādavidhi*) & its utility, Types of debate - congenial debate (*anuloma sambhāṣā*) & hostile debate (*vigṛhya sambhāṣā*), The expedience of debate (*vādopāya*), The limits of debate (*vādamaryādā*).

Note : The definitions and concepts are to be taken only from the *Nyāyasūtra*, *Nyāyakośa* by Bhimacharya Jhalkikar and *A History of Indian Logic* by S. C. Vidyabhushan, Chapter III of Section I. The illustrations and examples must be taken from day to day life and philosophical

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38, Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

Section 'B'
Syllogistic Logic

Unit: I

Inference (*anumāna*) & its key terms, viz. major term or probandum (*sādhya*), middle term or probans (*hetu*), minor term (*pakṣa*), illustration (*sapakṣa*), contrary-illustration (*vipakṣa*), basic understanding of invariable concomitance (*vyāpti*) & its types, establishing *vyāpti* by inductive method, Five components of argument (*pañcāvayava*) – proposition (*pratijñā*), reason (*hetu*), example (*udāharaṇa*), application (*upanaya*) & conclusion (*nigamana*), the *hetu* term – its nature and requirement, demonstration of pervasion – *upādhi and tark,* nature and variety of *tark.*

Note : The definitions and concepts are to be taken only from the *Tarkasaṁgraha* and *The Nyāya Theory of Knowledge* by S. C. Chatterjee, Chapters X1-XIV.

Section 'C'
Theory of Debate

Unit: I

Basic understanding of the following terms: Example (*dṛṣṭānta*), Tenet (*siddhānta*), Ascertainment (*nirṇaya*), Dialouge (*kathā*) and its kinds, Discussion (*vāda*), Wrangling (*jalpa*), Cavil (*vitaṇḍā*).

Unit: II

Quibble (*chala*) & its kinds; Analogue (*jāti*) and its important kinds (only first four, i.e. *sādharmyasama*, *vaidharmyasama*, *utkarṣasama* & *apakarṣasama*); Point of defeat (*nigrahasthāna*) & its kinds – Hurting the proposition (*pratijñāhāni*), Shifting of proposition (*pratijñāntara*), Opposing the proposition (*pratijñāvirodha*), Renouncing the proposition (*pratijñāsannyāsa*), Admission of an opinion (*matānujñā*).

Note : The definitions and concepts are to be taken only from the *Nyāyasūtra*, *Nyāyakośa* by Bhimacharya Jhalkikar and *A History of Indian Logic* by S. C. Vidyabhushan, Chapter II of

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

Section
II. The illustrations and examples must be taken from day to day life and philosophical examples must be abandoned.

Recommended Books/Readings:

1. Vidyabhushan, Satish Chandra, *A History of Indian Logic*, MLBD, Delhi, 1962. (Chapter III of Section I & Chapter II of Section II only)
2. Potter, karl H., Encyclopedia of Indian Philosophies, Vol. II, Motilal Banarsidass, Delhi, 1977.
3. Jhalkikar, Bhimacharya, *Nyāyakośaḥ*, Bhandarkar Oriental Research Institute, Poona, 1997 (reprint of fourth edition)
4. Athalye & Bodas, *Tarkasaṅgraha*, Mumbai, 1920. (only introduction & exposition of *anumāna*)
5. Shastri , Kuppuswami, *A Primer of Indian Logic*, Madras, 1951 (only introduction & exposition of *anumāna*).
6. Tarkasaṁgraha of Annaṁbhaṭṭa (with Dipika), (Ed. & Tr. in Hindi), Kanshiram & Sandhya Rathore, MLBD, Delhi 2007.
7. Bagchi, S. S. – *Inductive Logic : A Critical Study of Tarka & Its Role in Indian Logic*, Darbhanga, 1951.
8. Chatterjee, S. C. & D. M. Datta - *Introduction to Indian Philosophy*, Calcutta University, Calcutta, 1968 (Hindi Translation also)
9. Chatterjee, S. C. – *The Nyāya Theory of Knowledge*, Calcutta, 1968.
10. Hiriyanna, M. - *Outline of Indian Philosophy*, London, 1956 (also Hindi Translation).
11. Jha, Harimohan – Bhāratīya Darśana Paricaya, Vol. I (Nyāya Darśana), Darbhanga.
12. Matilal, B. K. – *The Character of Logic in India*, Oxford, 1998.
13. Radhakrishnan, S. - *Indian Philosophy*, Oxford University Press, Delhi, 1990.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

OR

DSE-1B: Art of Balanced Living **Credits 06**

DSE1BT: Art of Balanced Living

Course Contents:

Prescribed Course: **Tota**

Section 'A' **Self-presentation**

Section 'B' **Concentration**

Section 'C' **Refinement of Behaviour**

Unit-Wise Division:

Section 'A'
Self-presentation

Unit: I

Method of Self-presentation : Hearing (*śravaṇa*), Reflection (*manana*) & meditation (*nididhyāsana*)

(Bṛhadāraṇyakopaniṣad, 2.4.5)

Section 'B'
Concentration

Unit: I

Concept of Yoga : (*Yogasūtra*, 1.2)
Restriction of fluctuations by practice (*abhyāsa*) and passionlessness (*vairāgya*) :(*Yogasūtra*, 1.12-16)
Eight aids to Yoga (*aṣṭāṅgayoga*) : (*Yogasūtra*, 2.29, 30,32, 46, 49, 50; 3.1-4).
Yoga of action (*kriyāyoga*) : (*Yogasūtra*, 2.1)
Four distinct means of mental purity (*cittaprasādana*) leading to oneness : (*Yogasūtra*, 1.33)

Section 'C'
Refinement of Behavior

Unit: I

Methods of Improving Behavior : *jñāna-yoga*, *dhyāna-yoga*, *karma-yoga* and *bhakti-yoga* (especially *karma-yoga*)

Karma : A natural impulse, essentials for life journey, co-ordination of the world, an ideal duty and a metaphysical dictate (*Gītā*, 3.5, 8, 10-16, 20 & 21)

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

DSE-2A: Theatre and Dramaturgy in Sanskrit **Credits 06**

DSE2AT: Theatre and Dramaturgy in Sanskrit

Course Contents:

Prescribed Course:

Section 'A'	**Theatre: Types and Constructions**
Section 'B'	**Drama : *vastu* (subject-matter), *netā* (Hero) and *rasa***
Section 'C'	**Tradition and History of Indian Theatre**

Unit-Wise Division:

Section 'A'
Theatre: Types and Construction

Unit: I

Types of theatre: *vikṛṣṭa* (oblong), *caturasra* (square), *tryasra* (triangular), *jyeṣṭha* (big), *madhyama* (medium), *avara* (small). *bhūmi-śodhana* (Examining the land) and *māpa* (measurement of the site), *mattavāraṇī* (raising of pillars), *raṅgapīṭha and rangaśīrṣa* (stage), *dārukarma* (wood–work), *nepathya -gṛha* (green-house), *prekṣkopaveśa* (audience-hall), Doors for entrance & exit.

Section 'B'
Drama - *vastu* (subject-matter), *netā* (hero) and *rasa*

Unit: I

Definition of drama and its various names - *dṛśya, rūpa,rūpaka , abhineya;* abhinaya and its types: *āṅgika* (gestures), *vācika*(oral), *sāttvika* (representaion of the sattva), *āhārya* (dresses and make-up).

Vastu: (subject-matter) : *ādhikārika* (principal), *prāsaṅgika* (subsidiary), Five kinds of *arthaprakṛti*, *kāryāvasthā* (stages of the action of actor) and *sandhi* (segments), *arthopakṣepaka* (interludes),

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

kinds of dialogue:1. *sarvaśrāvya* or *prakāśa* (aloud)
2. *aśrāvya* or *svagata* (aside) 3. *niyataśrāvya* : *janāntika* (personal address), *apavārita* (confidence) 4. *ākāśabhāṣita* (conversation with imaginary person).

Unit: II

Netā: Four kinds of heroes, Three kinds of heroines,*sūtradhāra* (stage manager), *pāripārśvika* (assistant of sūtradhāra), *vidūṣaka* (jester), *kañcukī* (chamberlain), *pratināyaka* (villain).

Unit: III

Rasa: definition and constituents, ingredients of *rasa-niṣpatti:* - *bhāva (*emotions), *vibhāva* (determinant), *anubhāva* (consequent), *sāttvikabhāva* (involuntary state), *sthāyibhāva* (permanent states), *vyabhicāribhāva* (complementary psychological states), *svāda* (pleasure), Four kinds of mental levels : *vikāsa* (cheerfulness), *vistāra* (exaltation), *kṣobha* (agitation), *vikṣepa* (perturbation).

Section 'C'

Tradition and History of Indian Theatre

Unit: I

Origin and development of stage in different ages: pre-historic, Vedic age, epic-puranic age, court theatre, temple theatre, open theatre, modern theatre: folk theatre, commercial theatre, national and state level theatre.

Recommended Books/Readings:

1. Ghosh , M.M. - *Nāṭyaśāstra of Bharatamuni*, pp. 18-32.
2. झा सीताराम, (1982) नाटक और रंगमंच, बिहार राष्ट्रभाषा परिषद्, पटना, पृ. 171 175.
3. Hass , *The Daśarūpa: A Treatise on Hindu Dramaturgy*, kārika 7,8,11 24,30,36,43,48,57-65.
4. Hass , *The Daśarūpa: A Treatise on Hindu Dramaturgy,* kārikās 2/1-5,8,9,15.
5. Hass , *The Daśarūpa: A Treatise on Hindu Dramaturgy,* kārikās 4/1-8,43,44.

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

6. द्विवेदी, हजारी प्रसाद — नाट्यशास्त्र की भारतीय पंरपरा और दशरूपक.

7. Farley P.Richmond, (2007),ed. *Indian Theatre: traditions of performance*, vol-I, Origins of Sanskrit Theatre, pp. 25-32.

8. झा सीताराम, (1982) नाटक और रंगमंच, पृ. 161—211.

9. Farley P.Richmond, (ed) *Indian Theatre: traditions of performance* vol-I Delhi, MLBD. 2007, pp. 25-32.

10. Ghosh , M.M, *Nāṭyaśāstra of Bharatamuni*, vol-1, Manisha Granthalaya, Calcutta, 1967.

11. Hass, *The Daśarūpaka : A Treatise on Hindu Dramaturgy*, Columbia University, NewYork , 1912.

12. नागर, रविशंकर, नाट्यशास्त्र, अभिनवभारती टीका सहित, परिमल पब्लिकेशन दिल्ली.

13. द्विवेदी, हजारी प्रसाद, नाट्यशास्त्र की भारतीय पंरपरा और दशरूपक, राजकमल प्रकाशन दिल्ली, *1963.*

14. त्रिपाठी, राधावल्लभ — भारतीय नाट्यशास्त्र की परम्परा और विश्व रंगमंच, प्रतिभा प्रकाशन, दिल्ली, *1999.*

15. त्रिपाठी, राधावल्लभ (सं0) संक्षिप्तनाट्यशास्त्र, वाणीप्रकाशन, दिल्ली, *2008.*

16. झा, सीताराम, नाटक और रंगमंच, बिहार राष्ट्रभाषा परिषद्, पटना, *1981.*

17. मिश्र, भारतेन्दु, भरतकालीन कलाएँ, प्रतिभा प्रकाशन, दिल्ली, *2004.*

18. त्रिपाठी, राधावल्लभ, भारतीय नाट्यः स्वरूप और परंपरा, हरिसिंह गौर विश्वविघालय, सागर, *1988.*

19. गैरोला, वाचस्पति — भारतीय नाट्यपरम्परा और अभिनयदर्पण, इलाहाबाद, *1967.*

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

OR

DSE-2B: Tools and Techniques for Computing Sanskrit Language **Credits 06**

DSE2BT: Tools and Techniques for Computing Sanskrit Language

Course Contents:

Prescribed Course:

Section 'A'	**Sanskrit and Language Computing**
Section 'B'	**Language Computing Methodology and Survey**

Unit-Wise Division:

Section 'A'
Sanskrit and Language Computing

Unit: I	Sanskrit Phonology, Sanskrit Morphology, Syntax Semantics, Lexicon, Corpora
Unit: II	Introduction, Objective, Tools, Techniques, Methodology Sanskrit Language Resources and Tools.

Section 'B'
Language Computing Methodology and Survey

Unit: I	Rule Base, Statistical and Hybrid
Unit: II	Language Computing Survey

Recommended Books/Readings:

1 Akshar Bharati, Vineet Chaitanya and Rajeeva Sanghal, Natural Language Processing: A Paninian Prospective, Prentice Hall of India, New Delhi, 1995.
2 Jha, Girish Nath, Morphology of Sanskrit Case Affixes: A Computational Analysis, M.Phil Dissertation, Centre of English and Linguistics, School of Language, Literature and Culture Studies, JNU, 1993.
3 Subhash Chandra, Computer Processing of Sanskrit Nominal Inflections: Methods and Implementation, Cambridge Scholars Publishing (CSP), 2011

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

4 Girish Nath Jha, Madhav Gopal, Diwakar Mishra, Annotating Sanskrit Corpus: Adapting IL-POSTS, Human Language Technology. Challenges for Computer Science and Linguistics Lecture Notes in Computer Science Volume 6562, 2011, pp 371-379.
5 Teachers Notes and Handout.
6 E-contents suggested by teachers.
7 Various Materials from Internet
8 Daniel Jurafsky and James H. Martin, Speech and Language Processing, Prentice Hall; 2008
9 Tools developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi, Delhi-110007 available at: http://sanskrit.du.ac.in

Downloaded from Vidyasagar University by 42.110.209.238 on 21 September 2020 : 10:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)5.pdf

Vidyasagar University

Curriculum for B.A. (Honours) in Sanskrit [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 13		**C13T: Ontology and Epistemology**	Core Course - 13	5	1	0	6	75
CC- 14		**C14T: Sanskrit Composition and Communication**	Core Course - 14	5	1	0	6	75
DSE-3		**TBD**	Discipline Specific Electives -3	5	1	0	6	75
DSE-4		**TBD**	Discipline Specific Electives -4	5	1	0	6	75
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Semester-VI

List of Core Course (CC)

CC-13: Ontology and Epistemology

CC-14: Sanskrit Composition and Communication

Discipline Specific Electives (DSE)

DSE-3A: Sanskrit Linguistics
Or
DSE-3B: Computational Linguistics for Sanskrit
DSE- 4A: Fundamentals of Ayurveda
Or
DSE- 4B: Environmental Awareness in Sanskrit Literature

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Semester: VI

Core Courses

CC-13: Ontology and Epistemology **Credits 06**

C13T: Ontology and Epistemology

Course Contents:

Prescribed Course

Section 'A' **Essentials of Indian Philosophy**

Section 'B' **Ontology (Based on Tarkasaṁgraha)**

Section 'C' **Epistemology (Based on Tarkasaṁgraha)**

Unit-Wise Division:

Section 'A'

Essentials of Indian Philosophy

Unit: I Meaning and purpose of darśana, general classification of philosophical schools in classical Indian philosophy

Unit: II Realism (*yathārthavāda* or *vastuvāda*) and Idealism (*pratyayavāda*), Monism (*ekattvavāda*), Dualism (*dvaitavavāda*) & Pluralism (*bahuttvavāda*) ; dharma (property)-dharmi (substratum)

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Unit: III	Causation (*kāryakāraṇavāda*) : naturalism (*svabhāvavāda*), doctrine of pre-existence of effect (*satkāryavāda*), doctrine of real transformation (*pariṇāmavāda*), doctrine of illusory transformation (*vivartavāda*), doctrine of non-prexistence of effect in cause (*asatkāryavāda and ārambhavāda*)

Section 'B'

Ontology

Unit: I	Concept of padārtha, three dharmas of padārthas, definition of Dravya,
Unit: II	Sāmānya, Viśeṣa, Samavāya, Abhāva.
Unit: III	Definitions of first seven dravyas and their examination; Ātma and its qualities, manas.
Unit: IV	Qualities (other than the qualities of the ātman) Five types of Karma.

Section 'C'

Epistemology

Unit: I	Buddhi(jñāna) – nature of jñāna in Nyāya vaiśeṣika; smriti-anubhava; yathārtha and ayathārtha ,
Unit: II	Karaṇa and kāraṇa, definitions and types of pramā, kartā-kārana-vyāpāra-phala, model

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Unit: III Pratyakṣa

Unit: IV Anumāna including hetvābhāsa

Unit: V Upamāna and śabda pramāṇa

Unit: VI Types of ayathārtha anubhava

Recommended Books/Readings:

1. A Primer of Indian Logic, Kuppuswami Shastri, Madras, 1951.
2. Tarkasaṁgraha of Annambhaṭṭa (with Dīpikā & Nyāyabodhinī), (Ed. & Tr.) Athalye & Bodas, Mumbai, 1930.
3. Tarkasaṁgraha of Annambhaṭṭa (with Dīpikā & Nyāyabodhinī), (Ed. & Tr.) Virupakshananda, Sri Ramkrishna Nath, Madras, 1994.
4. Tarkasaṁgraha of Annambhaṭṭa (with Dīpikā commentary with Hindi Translation), (Ed.& Tr), Pankaj Kumar Mishra, Parimal Publication, Delhi-7. 2013.
5. Tarkasaṁgraha, Narendra Kumar, Hansa Prakashan, Jaipur.
6. Chatterjee, S. C. & D. M. Datta - Introduction to Indian Philosophy, Calcutta University, Calcutta, 1968 (Hindi Translation also).
7. Chatterjee, S. C. – The Nyāya Theory of Knowledge, Calcutta, 1968.
8. Hiriyanna, M. - Outline of Indian Philosophy, London, 1956 (also Hindi Translation).
9. Radhakrishnan, S. - Indian Philosophy, Oxford University Press, Delhi, 1990.
10. Chatterjee, S.C. & : Introduction to Indian Philosophy, Calcutta
11. D.M. Dutt (हिन्दी अनुवाद — भारतीय दर्शन)
12. Bhattacharya, Chandrodaya, The Elements of Indian Logic and Epistemology,
13. Maitra, S.K., Fundamental Questions of Indian Metaphysics & Logic,

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

CC-14: Sanskrit Composition and Communication

Credits 06

C14T: Sanskrit Composition and Communication

Course Contents:

Prescribed Course:

Section 'A'	**Vibhaktyartha, Voice and Kṛt**
Section 'B'	**Translation and Communication**
Section 'C'	**Essay**

Unit-Wise Division:

Vibhaktyartha, Voice & Kṛt

Section 'A'

Unit: I	(i). *Vibhaktyartha Prakaraṇa* of *Laghusiddhāntakaumudī* (ii). Voice (*kaṭr, karma* and *bhāva)*
Unit: II	Selections from *Kṛt Prakaraṇa-* from *Laghusiddhāntakaumudī* Major Sūtras for the formation of *kṛdanta* words (*tavyat, tavya, anīyar, yat, ṇyat, ṇvul, tric, aṇ, kta, katavatu, śaṭṛi, śānac, tumun, ktvā-lyap, lyuṭ ,ghan, ktin*)

Section 'B'

Translation and Communication

Unit: I	(i). Translation from Hindi/English to Sanskrit on the basis of cases, Compounds and kṛit suffixes. (ii). Translation from Sanskrit and Hindi

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Unit: II	Communicative Sanskrit: Spoken Sanskrit.

Section 'C'

Essay

Unit: I	Essay (traditional subjects) e.g. *veda, upniṣad, Sanskrit Language, Sanskriti, Rāmāyaṇa, Mahābhārata, purāṇa, gītā*, principal Sanskrit poets.
Unit: II	Essay based on issues and topic related to modern subjects like entertainment, sports, national and international affairs and social problems.

Recommended Books/Readings:

1. शास्त्री, धरानन्द — लघुसिद्धान्तकौमुदी , मूल एवं हिन्दी व्याख्या, मोतीलाल बनारसीदास, दिल्ली.
2. शास्त्री, भीमसेन — लघुसिद्धान्तकौमुदी, भ्ौमीव्याख्या (भाग— 1), भ्ौमीप्रकाशन, दिल्ली.
3. नौटियाल, चक्रधर — बृहद्—अनुवाद—चन्द्रिका, मोतीलाल बनारसीदास, दिल्ली.
4. पाण्डेय, राधामोहन — संस्कृत सहचर , स्टूडेण्ट्स फ्रेण्ड्स, पटना.
5. द्विवेदी, कपिलदेव — रचनानुवादकौमुदी, विश्वविघालय प्रकाशन, वाराणसी.
6. द्विवेदी, कपिलदेव — संस्कृतनिबन्धशतकम् विश्वविघालय प्रकाशन, वाराणसी Apte, V.S. - *The Students' Guide to Sanskrit Composition,* Chowkhamba Sanskrit Series, Varanasi (Hindi Translation also available).
7. Kale, M.R. - *Higher Sanskrit Grammar*, MLBD, Delhi (Hindi Translation also available).
8. Kanshiram- *Laghusiddhāntakaumudī* (Vol.1), MLBD, Delhi, 2009.

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Discipline Specific Electives (DSE)

Credits 06

DSE-3A: Sanskrit Linguistics

DSE3AT: Sanskrit Linguistics

Course Contents:

Prescribed Course

Section 'A' भाषाशास्त्र

Course Objectives:

Unit-Wise Division:

Section 'A'

भाषाशास्त्र

Unit: I	भाषा का स्वरूप, परिभाषा, भाषा की विशेषताएँ, भाषा विज्ञान का स्वरूप, भाषाविज्ञान के मुख्य अङ्ग एवं उपादेयता
Unit: II	संस्कृत की दृष्टि से ध्वनिविज्ञान, पदविज्ञान, वाक्यविज्ञान एवं अर्थविज्ञान का सामान्य अवबोध
Unit: III	संस्कृत एवं भारोपीय भाषापरिवार
Unit: IV	संस्कृत एवं तुलनात्मक भाषाविज्ञान के इतिहास का सामान्य परिचय

Recommended Books/Readings:

1. तिवारी, भोलानाथ, तुलनात्मक भाषाविज्ञान, मोतीलाल बनारसीदास, दिल्ली, 1974.
2. तिवारी, भोलानाथ, भाषाविज्ञान, किताबमहल, इलाहाबाद, 1992.
3. द्विवेदी, कपिलदेव, भाषाविज्ञान एवं भाषाशास्त्र, विश्वविघालय प्रकाशन, वाराणसी, 2001.
4. शर्मा, देवेन्द्रनाथ, भाषाविज्ञान की भूमिका, राधाकृष्ण प्रकाशन, दिल्ली, 2014
5. व्यास, भोलाशंकर, संस्कृत का भाषाशास्त्रीय अध्ययन, चौखम्बा विघाभवन, 1957.

1. Burrow, T., Sanskrit Language (also trans. into Hindi by Bholashankar Vyas), ChaukhambaVidyaBhawan, Varanasi, 1991.
2. Crystal, David, The Cambridge Encyclopedia of Language, Cambridge, 1997.
3. Ghosh, B.K., Linguistic Introduction to Sanskrit, Sanskrit Pustak Bhandar,

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Calcutta, 1977.

4. Gune, P.D., Introduction to Comparative Philology, Chaukhamba Sanskrit Pratisthan, Delhi, 2005.
5. Jesperson, Otto, Language: Its Nature, Development and Origin, George Allen & Unwin, London, 1954.
6. Murti, M., An Introduction to Sanskrit Linguistics, D.K. Srimannarayana. Publication, Delhi, 1984.
7. Taraporewala, Elements of the Science of Language, Calcutta University Press, Calcutta, 1962.
8. Verma, S.K., Modern Linguistics, Oxford University Press, Delhi,
9. Woolner, A.C., Introduction to Prakrit, Bhartiya Vidya Prakashan, Varanasi.

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

OR

DSE-3B: Computational Linguistics for Sanskrit **Credits 06**

DSE3BT: Computational Linguistics for Sanskrit

Course Contents:

Computational Linguistics for Sanskrit

Prescribed Course:

Section 'A'	**Theoretical Concepts of Computational Linguistics**
Section 'B'	**Applied Areas of Computational Linguistics**
Section 'C'	**Data Storage: An Introduction to Databases**

Unit-Wise Division:

Section 'A'
Theoretical Concepts of Computational Linguistics

Unit: I	Language and Communication, Levels of Language, Phonemes, Morphemes, POS, Lexicon, Syntax, Semantics, Discourse, Natural Language vs Artificial Language, Speech and Language, Grammars, Computer as Intelligent Devices, Human Computer Intelligent Interaction (HCII), Human Processing of Languages vs Computer Processing of Natural Languages, Rule based vs Statistical Processing, Machine Learning, Annotation of Language, Standards, Unicode, and Language Resources.
Unit: II	Survey of Computational Linguistics

Section 'B'
Applied Areas of Computational Linguistics

Unit: I	Morphological Analyzer/Speech/Speaker Recognition, Speech Synthesis, Text to Speech

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 | 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Machine Translation.

Section 'C'
Data Storage: An Introduction to Databases

Unit: I Databases and Database Systems, Architecture of Database Systems, Historical Perspective of Database Systems.

Recommended Books/Readings:

2. Bharti A., R. Sangal, V. Chaitanya, "NL, Complexity Theory and Logic" in Foundations of Software Technology and Theoretical Computer Science, Springer, 1990.
3. Chandra, Subhash and Jha, GN. Computer Processing of Nominal Inflections in Sanskrit: Methods and Implementations, CSP, UK, 2012.
4. Gazdar G. and C. Mellish, NLP in Prolog, Wokhingham: Addison Wesley, 1989.
5. Gazdar, G. and C. Mellish, NLP in Lisp, Wokhingham: Addison Wesley, 1989.
6. Grishman, R., Computational Linguistics: An introduction, Cambridge University Press, 1986.
7. Grosz, Barbara J. (et al.) Readings in NLP, (ed.) LA: Morgan Kaufmann, 1990
8. Kenneth A. Lambert, 2011, Fundamentals of Python: First Programs, Cengage Learning.
9. Nath Jha, Girish (ed.), 2010, Sanskrit Computational Linguistics, Springer. Verlag, Germany, 2010.
10. Ruslan Mitkov, Oxford handbook of computational linguistics, Oxford University Press, 2005.
11. Dan Jurafsky, James H. Martin, 2000, Speech and Natural Language Processing, Prentice Hall.
12. Teacher's notes and selected research paper suggested by teachers.
13. Important E-contents suggested by Teachers.
14. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems (5th Ed.), PearsonEducation.

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

DSE- 4A: Fundamentals of Ayurveda Credits 06

DSE4AT: Fundamentals of Ayurveda

Course Contents:

- **Prescribed Course:**

Section 'A'	**Introduction of Āyurveda**
Section 'B'	**Carakasaṛhitā – (Sūtra-sthānam)**
Section 'C'	**Taittirīyopaniṣad**

- **Unit-Wise Division:**

Section 'A'
Introduction of Āyurveda

Unit: I	Introduction of Āyurveda, History of Indian Medicine in the pre-caraka period, The two schools of Āyurveda: Dhanvantari and Punarvasu.
Unit: II	Main Ācāryas of Āyurveda – Caraka, Suśruta, Vāgbhaṭṭa, Mādhava, Sārṅgadhara and Bhāvamiśra

Section 'B'
Carakasaṃhitā – (Sūtra-sthānam)

Carakasaṃhitā – (Sūtra-sthānam): Division of Time and condition of nature and body in six seasons.

Unit: I	Regimen of Fall Winter (Hemanta), Winter (Śiśira) & Spring (Vasanta) seasons. Regimen of Summer (Grīṣma), Rainy (Varṣā) and Autumn (Sarada) seasons.

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Section 'C'
Taittirīyopaniṣad

Unit: I Taittirīyopanishad—Bhṛguvalli, anuvak 1- 3

Unit: II Taittirīyopanishad—Bhṛguvalli, anuvak 1- 3

Suggested Books/Readings:

1. Brahmananda Tripathi (Ed.), Carakasamhitā, Chaukhamba Surbharati Prakashana, Varanasi, 2005.
2. Taittirīyopaniṣad –Bhṛguvalli.
3. Atridev Vidyalankar, Ayurveda ka Brhad itihasa.
4. Priyavrat Sharma, Caraka Chintana.
5. V. Narayanaswami, Origin and Development of Āyurveda (A brief history), Ancient Science of life, Vol. 1, No. 1, July 1981, pages 1-7.

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

OR

DSE- 4B: Environmental Awareness in Sanskrit Literature **Credits 06**

DSE4BT: Environmental Awareness in Sanskrit Literature

Course Contents:

Prescribed Course

Section 'A'	**Environmental Issues and Importance of Sanskrit Literature**
Section 'B'	**Environment Awareness in Vedic Literature**
Section 'C'	**Environment Awareness in Classical Sanskrit Literature**

Unit-Wise Division

Section 'A'

Modern Environmental Perspective and Sanskrit Literature

Unit: I	Science of Environment : Definition, Scope and Modern Crises : Role of Environment in human civilization; Meaning and definitions of The Environment; Various name for Science of Environment: 'Ecology', '*Paryavarana*', *Prakriti Vijnana*'; Main components of Environment: living organisms(*Jaiva Jagat*) and non-living materials (*Bhoutika Padarth*). Elementary factor of Environment Physical elements, Biological elements and Cultural elements
Unit: II	Moden Challenges and Crises of Environment : Global warming, Climate change, Ozone depletion, Explosively increase in Pollution, Decrease in underground water label, River pollution, Deforestation in large scale. Natural calamities such as flood , draft and earthquakes
Unit: III	Environmental Background of Sanskrit Literature : Importance of Sanskrit Literature from the view point of Science of environment ; Concept of ' Mother Earth' and worship of Rivers in Vedic literature; Brief survey of

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

environmental issues such as protection and preservation of mother nature, planting trees in forests, and water preservation techniques as propounded in the Sanskrit Literature. Buddhist and Jain concepts of ecology, protection of trees, love for animals and birds;

Section 'B'
Environment Awareness in Vedic Literature

Unit: I

Environmental Issues and Eco-system in Vedic Literature Divinity to Nature, Co-ordination between all natural powers of universe; Cosmic order '*Rta*' as the guiding force for environment of whole universe (*Rgveda,* ***10.85.1***); Equivalent words for Environment in *Atharvaveda* : '*Vritavrita*' (*12.1.52*), '*Abhivarah,*'*(1.32.4.),* '*Avritah*' *(10.1.30)*, '*Parivrita*' *(10.8.31);* five basic elements of universe covered by environment : Earth, Water, Light, Air, and Ether. (*Aitareya Upanishad 3.3) ;* Three constituent elements of environment known as '*Chandansi*': Jala (water),*Vayu* (air), and *Osadhi* (plants) (*Atharvaveda*, 18.1.17); Natural sources of water in five forms: *rain water(Divyah),natural spring(Sravanti), wells and canals (Khanitrimah), lakes (Svayamjah) and rivers(Samudrarthah) Rigveda*, 7.49.2).

Unit: II

Environment Preservation in Vedic Literature:
Five elementry sources of environment preservation: *Parvat*(mountain),
Soma (water),*Vayu* (air), *Parjanya* (rain) and *Agni* (fire) (*Atharvaveda*, 3.21.10); Environment Protection from Sun (*Rgveda*,1.191.1-16,*Atharvaveda*,2.32.1-6,
Yajurveda,4.4,10.6); Congenial atmosphere for the life created by the Union of herbs and plants with sun rays (*Atharvaveda,*5.28.5);Vedic concept of Ozone-layer Mahat ulb'(*Rgveda*,10.51.1; *Atharvaveda*,4.2.8); Importance of plants and animals **for preservation of global ecosystem;** (*Yajurveda* ,13.37); **Eco friendly** environmental organism in Upanishads (*Brhadaranyaka Upanishad*,3.9.28,*Taittiriya Upanishad*,5.101, *Iso-Upanishad*,1.1)

Section 'C'
Environment Awareness in Classical Sanskrit Literature

Unit: I

Environmental **Awareness and Tree plantation** : Planting of Trees in *Puranas* **as a pious activity** (*Matsya Purana* ,59.159;153.512 ; *Varaha Purana* 172. 39),Various medinal trees to be planted in forest by **king** (*Sukraniti,*4.58-62)

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Plantation of new trees and preservation of old trees as royal duty of king (*Arthasastra,* 2.1..20); Punishments for destroying trees and plants (*Arthasastra,*3.19), **Plantation of trees for recharging under ground water**(*Brhatsamhita,* 54.119)

Unit: II

Environmental Awareness and Water management :
Various types of water canels *'Kulya'* for irigation : canal originated from river *'Nadimatr mukha kulya'*, canal originated from nearbv mountain *'Parvataparsva vartini kulya'*, canal originated from pond, *'Hrdasrta kulya'*, Preservation of water resources *'Vapi –kupa –tadaka'* (*Agnipuranas*,209-2; *V.Ramayana*,2.80.10-11); Water Harvesting system in *Arthasastra* (2.1.20-21);Underground Water Hydrology in Brhatsamhita (Dakargaiadhyaya,chapter-54);

Unit: III

Universal Environmental Issues in Literature of Kalidasa : Eight elements of Environment and concept of *'Astamurti'* Siva (*Abhijnasakuntalam*1.); Preservation of forest,water resources, natural resources; protection of animals, birds and plant in Kalidasa's works, Environmental awareness in *Abhijnasakuntalam* Drama, Eco- system of indian monsoon in *Meghdoo*t, Seasonl weather conditions of Indian sub continent in *Rtusamhara,* Himalayan ecology *in Kumarasambhava,*
Oceanography in *Raghuvamsa* (canto-13).

Recomended Books

1. ***Arthashastra of Kautilya***—(ed.) ***Kangale, R.P. Delhi, Motilal Banarasidas 1965***
2. *Atharvaveda samhita*.(2 Vols — (Trans.) R.T.H. Griffith, Banaras 1968.
3. *Ramayana* of Valmaki (3 Vols)— (Eng. Tr.) H.P. Shastri, London, 1952-59.
4. *Rgveda samhita* (6 Vols)— (Eng. Tr.) H.H. Wilson, Bangalore, 1946.
5. कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास, दिल्ली,1968.
6. बृहत्संहिता— वराहमिहिर विरचित, हिन्दी अनुवाद— बलदेव प्रसाद मिश्र, खेमराज श्रीकृष्णदास प्रकाशन, मुम्बई.
7. यजुर्वेद— हिन्दी अनुवाद सहित, सातवलेकर, श्रीपाद दामोदर, पारडी
8. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, 968.
9. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, (1 —2 भाग)

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

गीताप्रेस, गोरखपुर.

10. ठाकुर, आद्यादत्त— वेदों में भारतीय संस्कृति, हिन्दी समिति, लखनऊ,1967.

11. तिवारी, मोहन चन्द —अष्टाचक्रा अयोध्याः इतिहास और परम्परा,उत्तरायण प्रकाशन,दिल्ली, 2006.तिवारी, शशि—

12. विघालंकार, सत्यकेतु — प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.

13. सहायक्चशिवस्वरूपक्च प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2012 कौटिलीय अर्थशास्त्र —हिन्दी अनुवाद —उदयवीर शास्त्री, मेहरचन्द लछमनदास, दिल्ली,1968.

14. बृहत्संहिता— वराहमिहिर विरचित, हिन्दी अनुवाद— बलदेव प्रसाद मिश्र, खेमराज श्रीकृष्णदास प्रकाशन, मुम्बई.

15. यजुर्वेद— हिन्दी अनुवाद सहित, सातवलेकर, श्रीपाद दामोदर, पारडी

16. शुक्रनीति — हिन्दी अनुवाद, ब्रह्मशंकर मिश्र, चौखम्बा संस्कृत सीरीज, वाराणसी, 968.

17. श्रीमद्वाल्मीकिरामायण — हिन्दी अनुवाद सहित, (सम्पा०) जानकी नाथ शर्मा, (1 —2 भाग) गीताप्रेस, गोरखपुर.

18. ठाकुर, आघादत्त— वेदों में भारतीय संस्कृति, हिन्दी समिति, लखनऊ,1967.

19. तिवारी, मोहन चन्द —अष्टाचक्रा अयोध्याः इतिहास और परम्परा,उत्तरायण प्रकाशन,दिल्ली, 2006.तिवारी, शशि—

20. विद्यालंकार, सत्यकेतु — प्राचीन भारतीय शासनव्यवस्था और राजशास्त्र, सरस्वती सदन, मसूरी, 1968.

21. सहायक्चशिवस्वरूपक्च प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2012

22. Bhandarkar,RG— *Vaishnavism, Saivism and Minor Religious Systems*, Indological Book House, Varanasi, 1965

23. Das Gupta, SP— *Environmental Issues for the 21st Century*, Amittal Publications, New Delhi, 2003

24. Dwivedi, OP, Tiwari BH — *Environmental Crisis and Hindu Religion*, Gitanjali

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Publishing House, New Delhi,1987
25. Dwivedi, OP — *The Essence of the Vedas,* Visva Bharati Research Institute, Gyanpur, Varanasi ,1990
26. Jernes, H (ed.) —*Encyclopedia of Religion and Ethics* (Vol. II), New York: Charles Szcribmer Sons, 1958.
27. Joshi, PC, Namita J—*A Textbook of Environmental Science*, A.P.H. Publishing Corporation, New Delhi, 2009
28. Sinha, KR) — *Ecosystem Preservation Through Faith and Tradition in India*. J. Hum. Ecol., Delhi University, New Delhi, 1991
29. Trivedi, PR—*Environmental Pollution and Control*, A.P.H. Publishing Corporation, New Delhi, 2004
30. Pandya,SmtaP. — *Ecological Renditions in the Scriptures of Hinduism – I* (article) *Bulletin* of *the Ramakrishna Mission Institute of Culture.*
31. Renugadevi, R. —*Environmental Ethics in the Hindu Vedas and Puranas in India,* (article) *African Journal of History and Culture* , Vol. 4(1), January 2012
32. Kumar, B M. — *Forestry in Ancient India: Some Literary Evidences on Productive and Protective Aspects*, (article)*AsianAgri- History,*
33. Vol.12, No.4, 2008.
34. Kiostermair,Klaus—*Ecology and Religion: Christian and Hindu Paradigms* (article) *Jornal of Hindu-Christian Studies,* Butler university Libraries, Vol.6,1993

35. अग्निपुराण : _____ तथा हिंदी अनुवाद तारिणीया झा एवं घनश्याम त्रिपाठी, हिंदी साहित्य सम्मलेन, इलाहाबाद, 1998
36. ईशोपनिषद – गीता प्रेस, गोरखपुर संस्करण
37. तैत्तिरीयोपनिषद – ईशादिद्शोपनिषद, दिल्ली, 1964
38. बृहदारण्यकोपनिषद – (108 उपनिषद) ज्ञानखंड, सम्या० श्री एम. शर्मा, शांति कुंज, हरिद्वार, 1997
39. ऐतरेयोपनिषद - (108 उपनिषद) ज्ञानखंड, सम्या० श्री एम. शर्मा, शांति कुंज, हरिद्वार, 1997
40. मत्स्यपुरण – आनंदाश्रय संस्कृत सीरीज, पूजा, 1907
41. ओझा, डी.डी., विज्ञान और वेड, साइंटिफिक पब्लिशर्स, जोधपुर, 2005
42. द्विवेदी, कपिल देव, वेदों में विज्ञान, विख्याति अनुसंधान परिषद्, यदोई 2004
43. पंडा, पी. के. , कालिदास का साहित्य आधुनिक परिप्रेक्ष्य में, विद्यानिधि प्रकाशन, दिल्ली – 2009
44. सेमवाल, श्री कृष्णा (सम्या०), 'संस्कृत वाड्मये कृषि विज्ञानम' दिल्ली संस्कृत अकादमी, 2006
45. द्विवेदी, रेवा प्रसाद, कालिदास ग्रन्थावली

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 19:01:56; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_HONS/Sanskrit(Hons)6.pdf

Vidyasagar University

Curriculum for B.A. (General) in Sanskrit

[Choice Based Credit System]

Semester-I

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC1 [DSC-1A]		**C1T:**Sanskrit Poetry	Core Course-1	5	1	0	6	75
CC2 [DSC-2A]	TBD	**DSC-2A (other Discipline)**	Core Course-2				6	75
AECC Core[L-1]		**English-1**	AECC-Core **[Language core]**	5	1	0	6	75
AECC (Elective)		**English**	AECC(Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T=**Tutorial, **P=**Practical, **CC =** Core Course, **TBD =** To be decided, **AECC (Elective)=** Ability Enhancement Compulsory Course (Elective), **DSC-1** = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2, **AECC- Core [L-1]: Ability Enhancement Compulsory Course-Core [Language Core -1]**

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 18:58:06; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General).pdf

Semester –I
Core Course (CC)

CC-1:: Sanskrit Poetry — Credits 06

C1T: Sanskrit Poetry

Prescribed Course:

Section 'A' **Raghuva_śam**
Section 'B' **Śiśupālavadham**
Section 'C' **Nītiśatakam**
Section 'D' **History of Sanskrit Poetry**

Unit-Wise Division:

Section 'A'
Raghuva_śam

Unit: I
Introduction (Author and Text)
Canto-I (Verses 1-10) Meaning/translation, Explanation**,** Story, Characteristics of Raghu Clan, Characteristics of Dilīpa.

Unit: II
Canto-I (Verses: 11-25) Meaning/translation, Explanation, Role of Dilīpa for the welfare of the subjects. Appropriateness of title, Background of given contents.

Section 'B'
Śiśupālavadham

Unit: I

Introduction (Author and Text), Appropriateness of title, Background of given contents.
Canto II, Verses 26-37, Grammar, Translation, Explanation, Poetic excellence, thematic analysis.

Unit II
Verses 42-56, Grammar, Translation, Explanation, Poetic excellence, thematic analysis.
ceeles meefvle $e³ees iegCee: cesles ceeles ieleb Jel³e:,
leeJeod Yee YeejJesYeefjefle ³eeJevceelem³e veeso³e:~

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 18:58:06; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General).pdf

Section 'C'
Nītiśatakam

Unit: I
Verses (1-10) Translation, explanation.

Unit II
Verses (11-20) Translation, explanation, Social experiences of Bhartṛhari, Types of Fool.

Section 'D'
History of Sanskrit Poetry

Unit I
Aśvaghoṣa, Kālidāsa, Bhāravi, Māgha, Śriharṣa, Jayadeva, Bhart_hari and their works.

Unit II
Origin and Development of Different types of Mahakavya and Gītikāvya with special reference to the following Poets and their works.

Downloaded from Vidyasagar University by 157.43.217.168 on 18 December 2020 : 18:58:06; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General).pdf

Vidyasagar University

Curriculum for B.A (General) in Sanskrit [Choice Based Credit System]

Semester-II

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC3 [DSC-1B]		**Sanskrit Prose**	Core Course	5	1	0	6	75
CC4 [DSC-2B]	TBD	**DSC-2B (other Discipline)**	Core Course				6	75
AECC Core[L-1]		**MIL-1**	AECC-Core **[Language core]**	5	1	0	6	75
AECC (Elective)		**Environmental Studies**	AECC(Elective)				4	100
Semester Total							**22**	**325**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC** = Core Course, **TBD** = To be decided, **AECC (Elective)** = Ability Enhancement Compulsory Course (Elective)

DSC-1 = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,

AECC- Core: Ability Enhancement Compulsory Course-Core [Language Core-1]

Semester-II

DSC-1B: Sanskrit Prose — Credits 06

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)2.pdf

DSC-1B: Sanskrit Prose Credits 06

DSC1BT: Sanskrit Prose Credits 06

Course Content:

Section 'A'	Śukanāsopadeśa
Section 'B'	Śivarājavijayam, Niḥśwāsa-I
Section 'C'	Survey of Sanskrit Literature- Prose

Unit-Wise Division:

Section 'A'
Śukanāsopadeśa

Unit: I	Introduction- Author/Text, Text up to page 116 of Prahlad Kumar upto यथा यथा चेयं चपला दीप्यते समाप्तिपर्यन्त (up to the end of the text.)
Unit: II	Society and political thought depicted in Śukanasopadeśa, logical meaning and application of sayings.

Section 'B'
Śivarājavijayam, Niḥśwāsa-I

Unit: I	Para 1 to 20 Introduction- Author/Text, Text reading (Grammar, Translation, and Explanation), poetic excellence, plot, Timing of Action.

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General

Unit: II	From para 21 to the end of the text. Text reading (Grammar, Translation, and Explanation), Poetic excellence, plot, Timing of Action.

Section 'C'
Survey of Sanskrit Literature: Prose

Unit: I	Origin and development of prose and important prose romances Subandhu, Bāṇa, Daṇḍin, Ambikādatta Vyāsa.
Unit II	Pañcatantra, Hitopadeśa, Vetālapañcaviṁsattikā, Siṁhāsanadvātriṁśikā and Purūṣaparīkṣā.

Suggested Books/Readings:

1. भानुचन्द्रसिंह, शुकनासोपदेश: संस्कृत टीका तथा हिन्दी व्याख्या व अनुवाद सहित ।
2. प्रह्लाद कुमार (व्या.) , शुकनासोपदेश, मेहरचन्द लक्ष्मनदास, दिल्ली, 1974 ।
3. रामनाथ शर्मा सुमन (व्या.) , शुकनासोपदेश, साहित्य भण्डार , दिल्ली, 1968 ।
4. बलदेव उपाध्याय, संस्कृत साहित्य का इतिहास, शारदा निकेतन, वाराणसी ।
5. प्रीतिप्रभा गोयल, संस्कृत साहित्य का इतिहास, राजस्थानी ग्रन्थागार, जोधपुर ।
6. उमाशंकर शर्मा ऋषि: संस्कृत साहित्य का इतिहास, चौखम्बा भारती अकादमी, वाराणसी ।
7. राधावल्लभ त्रिपाठी: संस्कृत साहित्य का अभिनव इतिहास, विश्वविद्यालय प्रकाशन, वाराणसी ।
8. A.B. Keith, *History of Sanskrit Literature*, also Hindi translation, MLBD, Delhi (हिन्दी अनुवाद, मंगलदेव शास्त्री, मोतीलाल बनारसीदास, दिल्ली) ।
9. Krishnamachariar, History of Classical Sanskrit Literature, MLBD, Delhi
10. Gaurinath Shastri, A Concise History of Sanskrit Literature, MLBD, Delhi.
11. Winternitz, Maurice, Indian Literature (Vol. I-III), also Hindi Translation, MLBD, Delhi.

Downloaded from Vidyasagar University by 106.211.153.47 on 14 July 2021 : 20:22:35; Copyright : Vidya
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GE

Vidyasagar University

Curriculum for B.A (General) in Sanskrit
[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1C		**DSC1CT:** Sanskrit Drama	Core Course	5	1	0	6	75
DSC-2C	TBD	**DSC-2C (other Discipline)**	Core Course				6	75
AECC Core[L-2]		**English-2**	AECC-Core **[Language core]**	5	1	0	6	75
SEC-1		**SEC1 :**Computer awareness for Sanskrit **Or** Indian Architecture System	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC =** Core Course, **TBD =** To be decided, **AECC (Elective) =** Ability Enhancement Compulsory Course (Elective)

DSC-1 = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,

AECC- Core: Ability Enhancement Compulsory Course - Core [Language Core-2]

Downloaded from Vidyasagar University by 47.11.192.222 on 11 February 2021 : 23:55:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)3.pdf

Semester-III
Core Courses (CC)

DSC-1C (CC-3): Sanskrit Drama — Credits 06

DSC1CT : Sanskrit Drama

Prescribed Course:

Section 'A'	**Pratimānāṭakam: Act I&III – Bhāsa**
Section 'B'	**Abhijñānaśākuntalam Act IV- Kālidāsa**
Section 'C'	**Technical Terms from Sanskrit Dramaturgy**
Section D	**History of Sanskrit Drama and an Introduction to Principle of Sanskrit Dramas**

Unit-Wise Division:

Section 'A'
Pratimānāṭakam: Act I&III – Bhāsa

Unit: I	First Act Introduction, Text Reading (Grammar, Translation, and Explanation), Poetic excellence, Plot.
Unit: II	Third Act Introduction, Text Reading (Grammar, Translation, and Explanation), Poetic excellence, Plot.

Section 'B'
Abhijñānaśākuntalam Act IV- Kālidāsa

Unit: I	**Fourth Act** (a) Introduction, Explanation of terms like *nāndī, prastāvanā, sūtradhāra, naṭī, viṣkambhaka, vidūṣaka* and *kañcukī.* (b) Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action. Personification of nature
Unit: II	*kāvyeṣu nāṭakam ramyam, upamā,* Language of Kālidāsa, *dhvani* in Kālidāsa, Purpose and design

Downloaded from Vidyasagar University by 47.11.192.222 on 11 February 2021 : 23:55:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)3.pdf

behind *Abhijñanaśākuntalam* and other problems related to the text.

Section 'C'

Technical Terms from Sanskrit Dramaturgy

Unit: I	नाटक, नायक, नायिका, पूर्वरङ्ग, नान्दी, सूत्रधार, नेपथ्य प्रस्तावना, कञ्चुकी एवं विदूषक।
Unit II	अङ्क, स्वगत, प्रकाश, अपवारित, जनान्तिक, आकाशभाषित, विष्कम्भक, प्रवेशक एवं भरतवाक्य।

Section 'D'

History of Sanskrit Drama and an Introduction to Principle Sanskrit Drama

Unit I	Origin and Development
Unit II	Some important dramatists and dramas: Bhāsa, Kālidāsa, Śūdraka, Viśākhadatta, Harṣa, Bhavabhūti, and their works.

[D] Suggested Books/Readings:

1. सुबोधचन्द्र पन्त, अभिज्ञानशाकुन्तलम्, मोतीलाल बनारसीदास, दिल्ली।
2. सुरेन्द्रदेव शास्त्री, अभिज्ञानशाकुन्तलम्, रामनारायण बेनीप्रसाद, इलाहाबाद।
3. नारायणराम आचार्य, अभिज्ञानशाकुन्तलम्, निर्णयसागर प्रेस।
4. C.D. Devadhar (Ed.), Abhijñanaśākuntalam, MLBD, Delhi.
5. M.R. Kale (Ed.), Abhijñanaśākuntalam, MLBD, Delhi.
6. Gajendra Gadakar (Ed.), Abhijñanaśākuntalam.
7. Ramendramohan Bose, Abhijñanaśākuntalam, Modern Book Agency, Calcutta.
8. भागवतशरण उपाध्याय, कालिदास, कवि और काव्य, भारतीय ज्ञानपीठ, काशी।
9. हजारीप्रसाद द्विवेदी, कालिदास की लालित्य योजना, राजकमल प्रकाशन, दिल्ली।
10. पंकज कुमार मिश्र, शाकुन्तलविषयक रम्यत्व की अवधारणा, परिमल पब्लिकेशन, दिल्ली।
11. Minakshi Dalal, Conflict in Sanskrit Drama, Somaiya Publication Pvt. Ltd.
12. Ratnamayi Dikshit, Women in Sanskrit Dramas, Meherchand Lacchman Das, Delhi.
13. A.B. Keith, Sanskrit Drama, Oxford University Press London, 1970.
14. Minakshi Dalal, Conflict in Sanskrit Drama, Somaiya Publication Pvt. Ltd.
15. G. K. Bhat, Sanskrit Drama, Karnataka University Press, Dharwar, 1975.

Downloaded from Vidyasagar University by 47.11.192.222 on 11 February 2021 : 23:55:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)3.pdf

Skill Enhancement Course (SEC)

SEC-1: Computer awareness for Sanskrit **Credits 02**

SEC1T: Computer awareness for Sanskrit

Course Contents

Section A: Basic Computer Awareness
Section B: Typing in Unicode for Preservation and Digitalization of Sanskrit Text
Section C: Web Publishing

Section A

Basic Computer Awareness

Unit: I - Design, Architecture: Operating System
Unit: II - MS Office Tools (Word, Power points, Excel etc.)
Unit: III - Using Internet, Web Search (Searching E-text/ e-book for Sanskrit in Roman and Devanagari Scripts), Email etc.

Section B

Typing in Unicode for Preservation and Digitalization of Sanskrit Text

Unit: I - Character encoding, Unicode, ASCII, UTF-8, UTF-16
Unit: II - Typing in Unicode through various Softwares
Unit: III - Sanskrit Text Digitalization/Preservation/Storage

Section C

Web Publishing

Unit: I - Basics HTML, Java Scripts and CSS
Unit: II - Basics of Databases

Suggested Readings:

1. Tom Henderson (April 17, 2014). "Ancient Computer Character Code Tables – and Why They're Still Relevant". Smart bear. Retrieved 29 April 2014.

Downloaded from Vidyasagar University by 47.11.192.222 on 11 February 2021 : 23:55:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)3.pdf

2. Unicode Technical Report #17: Unicode Character Encoding Model". 2008-11-11. Retrieved 2009-08-08. At: http://www.unicode.org/reports/tr17/
3. Constable, Peter (2001-06-13). "Character set encoding basics". Implementing Writing Systems: An introduction. SIL International. Retrieved 2010-03-19.
4. Devanagari Unicode Chart at: http://unicode.org/charts/PDF/U0900.pdf
5. The Unicode Consortium: http://unicode.org/
6. W3Schools Online Web Tutorials: http://www.w3schools.com/
7. Microsoft Office 2013 Online Tutorials: https://www.microsoft.com/enable/training/office2013/

Or

SEC-1: Indian Architecture System **Credits 02**

SEC1T: Indian Architecture System

Course Contents:

Section A: Vāstusaukhyam of Todaramala

Section B: Vāstusaukhyam of Todaramala

Section C: Vāstusaukhyam of Todaramala

Section D: Vāstusaukhyam of Todaramala

Section A

Vāstusaukhyam of Todaramala

Unit: I - Vāstusaukhyam of Toaramala - Chapter – 1 vastu prayojana, vastusvarūpa. (varses-4-13)

Unit: II - Vāstusaukhyam of Toaramala - Chapter – 2 Bhumi parikaam, diksādhanam, nivāsahetu sthananirvacanam. (varses-14-22)

Section B

Vāstusaukhyam of Todaramala

Unit: I- Vāstusaukhyam of Toaramala - Chapter – 3 Gha Paryavaranam: Tree plantation, śalya śodhanam.(Verses31-49,74-82)

Unit: II - Vāstusaukhyam of Toaramala - Chapter – 4 avargapariśodhanam,vāstucakram, grahavāstu, śilānyāsam. (verses 83-102,107-112)

Downloaded from Vidyasagar University by 47.11.192.222 on 11 February 2021 : 23:55:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)3.pdf

Section C

Vāstusaukhyam of Toaramala

Unit: I - Vāstusaukhyam - Chapter – 6 Pacavidhāni Ghāni (five types of house), śāla-ālinda Pramāam (verses-171-194),Vīthikā Pramāam (195- 196)

Unit: II - Vāstusaukhyam - Chapter – 7 Dvāraj–ānam, Stambha -Pramāam, Pa–ca Chatu śālāni Ghāni-Sarvatobhadram, Nandyāvartam,Vardhamānam, Svastikam, Rūcakam (verses 203-217)

Section D

Vāstusaukhyam of Todaramala

Unit: I - Vāstusaukhyam -Chapter -8. Ekāsīti-pada- Vāstuchakram (287- 302), Marmasthānāni (305- 307).

Unit: II - Vāstusaukhyam -Chapter -9 Vāsādisanirūpaam, Dvārafalam, Dvārvedhafalam (322- 335, 359-369).

Suggested Readings:

1. Shukdeo Chaturvedi, Bhāratiya Vāstu Sāstra, Sri Lal Bahadur Shasrti Rastriya Sanskrit Vidyapeeth, New Delhi.
2. Vinod Shasrti and Shitaram Sharma, Vāstuprabodhinī, Motilal Banarsidas, Delhi.
3. Rammanohar Dwivedi and Dr. Brahmanand Tripathi, Vrihadvāstumāmā, Chaukhamba Surbharati Prakashan, Varanasi, 2012.
4. Deviprasad Tripathi, Vāstusāra, Eastern Book Linkers, Delhi, 2015.
5. Jeevanaga, Vāsturatnāvali.

Downloaded from Vidyasagar University by 47.11.192.222 on 11 February 2021 : 23:55:07; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)3.pdf

Vidyasagar University

Curriculum for B.A (General) in Sanskrit [Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1D		DSC1DT: Sanskrit Grammar	Core Course	5	1	0	6	75
DSC-2D	TBD	DSC-2D (other Discipline)	Core Course				6	75
AECC Core[L-2]		Bengali -2	AECC-Core [Language core]	5	1	0	6	75
SEC-2		TBD	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							20	275

L = Lecture, **T** = Tutorial, **P** = Practical, **CC** = Core Course, **TBD** = To be decided, **DSC-1** = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2.

AECC-Core [L-2]: Ability Enhancement Compulsory Course - Core [Language Core-2]

Downloaded from Vidyasagar University by 157.43.216.201 on 04 December 2020 : 21:24:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)4.pdf

Core Course (CC)

DSC-1D: Sanskrit Grammar

Skill Enhancement Course (SEC)

SEC-2: Basic Elements of Āyurveda
Or
SEC-2: Yogasūtra of Patanjali

Downloaded from Vidyasagar University by 157.43.216.201 on 04 December 2020 : 21:24:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)4.pdf

Semester-IV
Core Course (CC)

DSC-1D (CC-4): Sanskrit Grammar **Credits 06**

DSC1DT: Sanskrit Grammar

Prescribed Course:

Section 'A'	**Laghusiddhāntakaumudī : Saṃjñā prakaraṇa**
Section 'B'	**Laghusiddhāntakaumudī : Sandhi prakaraṇa**
Section 'C'	**Laghusiddhāntakaumudī : Vibhakti prakaraṇa**

Unit-Wise Division:

Section 'A'
Laghusiddhantakaumudi: Saṁjñā Prakaraṅa

Unit: I	*Samjñā Prakaraṇa*

Section 'B'
Laghusiddhantakaumudi: Sandhi Prakaraṇa

Unit: I	ac sandhi: *yaṇ, guṇa, dīrgha, ayādi, vṛddhi* and *pūrvarūpa.*
Unit: II	hal sandhi: *ścutva, ṣṭutva, anunāsikatva, chhatva* and *jaśtva*
Unit: III	visarga sandhi: *utva, lopa, satva* and *rutva*

Section 'C'
Laghusiddhāntakaumudī: Vibhaktyartha Prakaraṇa

Unit: I	Vibhaktyartha Prakaraṇa

Downloaded from Vidyasagar University by 157.43.216.201 on 04 December 2020 : 21:24:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)4.pdf

1. धरानन्द शास्त्री, लघुसिद्धान्तकौमुदी, मूल एवं हिन्दी व्याख्या, दिल्ली।
2. भीमसेन शास्त्री, लघुसिद्धान्तकौमुदी भैमी व्याख्या (भाग-1), भैमी प्रकाशन, दिल्ली।
3. चारुदेव शास्त्री, व्याकरण चन्द्रोदय (भाग-1,2 एवं 3), मोतीलाल बनारसीदास, दिल्ली।
4. सत्यपाल सिंह (संपा.), लघुसिद्धान्तकौमुदी: प्रकाशिका नाम्नी हिन्दी व्याख्या सहिता, शिवालिक पब्लिकेशन, दिल्ली, 2014।
5. V.S. Apte, The Students' Guide to Sanskrit Composition, Chowkhamba Sanskrit Series, Varanasi (Hindi Translation also available).
6. M.R. Kale, Higher Sanskrit Grammar, MLBD, Delhi (Hindi Translation also available).
7. Kanshiram, Laghusiddhāntakaumudī (Vol. I), MLBD, Delhi, 2009.
8. Online Tools for Sanskrit Grammar developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi: http://sanskrit.du.ac.in.

Downloaded from Vidyasagar University by 157.43.216.201 on 04 December 2020 : 21:24:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)4.pdf

Skill Enhancement Course (SEC)

SEC-2: Basic Elements of Āyurveda **Credits 02**

SEC2T: Basic Elements of Āyurveda

Prescribed Course:

Section 'A'	Introduction of Āyurveda
Section 'B'	Carakasaṃhitā – (Sūtra-sthānam)
Section 'C'	Taittirīyopaniṣad

Unit-Wise Division:

Section 'A'
Introduction of Āyurveda

Unit: I	Introduction of Āyurveda, History of Indian Medicine in the pre-caraka period, The two schools of Āyurveda: Dhanvantari and Punarvasu.
Unit: II	Main Ācāryas of Āyurveda – Caraka, Suśruta, Vāgbhaṭṭa, Mādhava, Sārṅgadhara and Bhāvamiśra

Section 'B'
Carakasaṃhitā – (Sūtra-sthānam)

Carakasaṃhitā – (Sūtra-sthānam): Division of Time and condition of nature and body in six seasons.

Unit: I	Regimen of Fall Winter (Hemanta), Winter (Śiśira) & Spring (Vasanta) seasons. Regimen of Summer (Grīṣma), Rainy (Varṣā) and Autumn (Śarada) seasons.

Downloaded from Vidyasagar University by 157.43.216.201 on 04 December 2020 : 21:24:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)4.pdf

Section 'C'
Taittirīyopaniṣad

Unit: I Taittirīyopanishad—Bhṛguvalli, anuvak 1- 3

Unit: II Taittirīyopanishad—Bhṛguvalli, anuvak 1- 3

Suggested Books/Readings:

1. Brahmananda Tripathi (Ed.), Carakasamhitā, Chaukhamba Surbharati Prakashana, Varanasi, 2005.
2. Taittirīyopaniṣad –Bhṛguvalli.
3. Atridev Vidyalankar, Ayurveda ka Brhad itihasa.
4. Priyavrat Sharma, Caraka Chintana.
5. V. Narayanaswami, Origin and Development of Āyurveda (A brief history), Ancient Science of life, Vol. 1, No. 1, July 1981, pages 1-7.

Downloaded from Vidyasagar University by 157.43.216.201 on 04 December 2020 : 21:24:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)4.pdf

Or

SEC-2: Yogasūtra of Patanjali **Credits 02**

SEC2T: Yogasūtra of Patanjali

Prescribed Course:

Section 'A'	**Yogasūrta of Patanjali: Samādhi Pāda**
Section 'B'	**Yogasūrta of Patanjali: Sādhana Pāda**
Section 'C'	**Yogasūrta of Patanjali: Vibhūti Pāda**

Unit-Wise Division:

Section 'A'
Yogasūrta of Patanjali – Samādhi Pāda

Unit: I	Yogasūrta of Patanjali: Samādhi Pāda (Sutras: 1-15)
Unit: II	Yogasūrta of Patanjali: Samādhi Pāda (Sutras: 16-29)

Section 'B'
Yogasūrta of Patanjali: Sādhana Pāda

Unit: I	Yogasūrta of Patanjali: Sādhana Pāda (Sutra: 29-45)
Unit: II	Yogasūrta of Patanjali: Sādhana Pāda (Sutras: 46-55)

Section 'C'
Yogasūrta of Patanjali: Vibhūti Pāda

Unit: I	Yogasūrta of Patanjali: Vibhūti Pāda (Sutras: 1-3)

Suggested Books/Readings:

1. Pātanjala Yogadarśana, Gita Press, Gorakhpur
2. Yogapradīpa, Gita Press, Gorakhpur.

Downloaded from Vidyasagar University by 157.43.216.201 on 04 December 2020 : 21:24:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)4.pdf

Vidyasagar University

Curriculum for B.A (General) in Sanskrit [Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1A		Any one from Discipline-1(Sanskrit) **DSE1AT:** Philosophy, Religion and Culture in Sanskrit Tradition **or** Indian Perspectives in Personality Development	Core Course	5	1	0	6	75
DSE-2A	TBD	Other Discipline (Any one from Discipline-2)/**TBD**	Core Course	5	1	0	6	75
GE-1		**GE1T: TBD**	Generic Elective	5	1	0	6	75
SEC-3		**SEC3T: TBD**	Skill Enhancement Course	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE=** Discipline Specific Electives**, GE=** Generic Elective, **SEC=** Skill Enhancement Course, **TBD** = To be decided.

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Semester-V

Discipline specific Elective (DSE)

DSE-1A: Philosophy, Religion and Culture in Sanskrit Tradition

Or

DSE-1A: Indian Perspectives in Personality Development

Skill Enhancement Course (SEC)

SEC-3: Basic Elements of Jyotisha

Or

SEC-3: E- Learning Tools and Techniques for Sanskrit

Generic Elective (GE)

GE- 1: Nationalistic Thoughts in Sanskrit Literature

Or

GE-1: Political Thoughts in Sanskrit

Or

GE-1: Sanskrit Media

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Semester-V

Discipline specific Elective (DSE)

DSE-1A: Philosophy, Religion and Culture in Sanskrit Tradition Credits 06

DSE1AT: Philosophy, Religion and Culture in Sanskrit Tradition

Course contents:

Prescribed Course:

Section 'A' **Dharma**

Section 'B' **Saṁskāra and Puruṣārtha**

Section 'C' **Swadharma**

Section 'A'
Dharma

Unit: I	Form of God, Mode of worship, Bhakta as a morally evolved person - Gita Chapter XII
Unit: II	dharma – ten fold dharma and its versions, definitions of satya, ahiṁsā, asteya, aparigraha, pañcha mahā yajña; theory of three debts.
Unit: III	Man's initiative and God's design; God's līlā and Kṛpā, Daiva versus puruṣakāra, adṛṣṭa, three types of karma – saṁchita, kriyamāṇa and prārabdha, karma.

Section 'B'
Saṁskāra and Puruṣārtha

Unit: I	Process of acculturation – importance of Saṁskāra.
Unit: II	Aim of human life – theory of Puruṣārtha.

Section 'C'
Swadharma

Unit: I	An 'amoral' person – svadharma and karmayoga, sthita prajna in the Gita (Chapter II).

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Unit: II	Prakṛti – three guṇas and their impact on personality.

Suggested Books/Readings:

1. Radhakrushana, Gītā.
2. Gītā with Hindi Translation, Gita Press, Goraphpur.
3. Rajbali Pandey, Hindu Samskar.
4. शिवदत्त ज्ञानी, भारतीय संस्कृति ।
5. राजबली पाण्डेय, हिन्दू संस्कार ।
6. पी.बी. काणे, धर्मशास्त्र का इतिहास (खण्ड-I) ।

Or

DSE-1A: Indian Perspectives in Personality Development Credits 06

DSE1AT: Indian Perspectives in Personality Development

Course contents:

Prescribed Course:

Section: 1	**Historical Perspective**
Section: 2	**Concept of a person**
Section: 3	**Personality Types**
Section: 4	**Measures for behavioral Improvement**

Section 'A'
Historical Perspective

Unit: 1	Historical Perspective : Ṛgveda, 1.164.37; Chāndogyopaniṣad, VI. 2.3, VI.8.6, VIII.1.4 Bṛhadāraṇyakopaniṣad, II.5.18-19

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Section 'B'
Concept of a person

Unit: 2	Concept of a person, Gītā, Chapter:1, Verses:1-30 Jīva as Core and Eight-fold Nature as Cover Kṣetrajña as Core and Kṣetra as Cover Chapter-13, Verses-1-2, Chapter-13, Verses: 5-6, Chapter-13, Vrses-19-23. Akṣara as Core and Kṣara as Cover, Chapter-15, Verses:7-11 and 6-19).

Section 'C'
Personality Types

Unit 3	Personality Types Gītā, Chapter-14, Verses:5-14, Chapter-17, Verses:2-6, Chapter-17, Verses:11.21

Section 'D'
Measures for behavioral Improvement

Unit: 4	Measures for behavioral Improvement Control of Senses and Mind (Gītā: Chapter-2, Verses:59-60, 64 and 68, Chapter:3, Verses:41-43, Chapter: 6, Verses:19-23. Right Faith (Gītā, Chapter: 9, Verses:3, 22, 23-28, 30-34) Recognition of Svadharma - Inner Urge; (Gītā, Chapter: 2, Verses:31,41-44, Chapter:3, Verses:4, 5, 8, 9, 27-30, 33-34, Chapter:4, Verses:18-22, Chapter:5, Verses:11-12, Chapter:7, Verses:15, 18, 20- 23, 27-29) Channelizing Innate Urges on Social Lines: (Gītā, Chapter:18, Verses:41-62)

Suggested Books/Readings:

1. Radhakrishana, The Bhagvadgītā.
2. Gītā with Hindi Translation, Gita Press, Gorakhpur

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Skill Enhancement Course (SEC)

SEC-3: Basic Elements of Jyotisha — Credits 02

SEC3T: Basic Elements of Jyotisha

Course contents:

Prescribed Course:

Section 'A' Origin, Development and Branches of Jyotiṣ

Section 'B' Jyotiṣachandrikā: Sañjñā- Prakaraṇam

Section 'C' Jyotiṣa Chandrikā: Sañjñā- Prakaraṇam

Unit-Wise Division:

Section 'A'
Origin, Development and Branches of Jyotiṣa

Unit: I	Origin and Development of Jyotiṣa
Unit: II	General introduction to following branches of Astrology : Siddhānta, Saṃhitā, Horā, Tājika, Praśna, Vāstuśāstra and Muhūrtaśāstra.

Section 'B'
Jyotiṣa Chandrikā: Sañjñā- Prakaraṇam

Unit: I	Jyotiṣachandrikā- Sañjñā- Prakaraṇam, Verses:1-29)
Unit: II	Jyotiṣachandrikā- Sañjñā- Prakaraṇam, Verses: 30-65)

Section 'C'
Jyotiṣa Chandrikā: Sañjñā- Prakaraṇam

Unit: I	Jyotiṣachandrikā- Sañjñā- Prakaraṇam, Verses: 66 – 90.
Unit: II	Jyotiṣachandrikā- Sañjñā- Prakaraṇam, Verses: 91-115.

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Suggested Books/Readings:

1. Rewati Raman Sharma, Jyotisa Chandrika.
2. Aehutanand Jha (Trans.), Brihadsamhita, Chaukhamba Vidyabhavan Varanasi.
3. Shankar Balkrishna Dixit and Shiv Nath Jharkhandi (Trans.), Bharatiya Jyotisa Hindi Samiti, Uttar Pradesh, Lucknow.
4. Nincichandra Shastri, Bharatiya Jyotisa, Bharatiya Gyanpeeth, Varanasi.
5. M. Ramakrishna Bhat (Trans.), Brhatsamhita, Motilal Banarasidas. Vol-1 & 2 Delhi.
6. Devi Prasad Tripathi ब्रह्माण्ड एवं सौरपरिवार, Delhi.
7. Devi Prasad Tripathi, भुवनकोश, Delhi.

Or

SEC-3: E- Learning Tools and Techniques for Sanskrit Credits 02

SEC3T: E- Learning Tools and Techniques for Sanskrit

Course contents:

Prescribed Course:

Section 'A' **Interactive Sanskrit Teaching Learning Tools**

Section 'B' **Standard for Indian Languages (Unicode)**

Section 'C' **E-Content Creation for Sanskrit Text**

Unit-Wise Division:

Section 'A'
Interactive Sanskrit Teaching Learning Tools

Unit: I	E-learning, E-learning a brief introduction, Is e-learning better, Pitfall of e-learning, E-learning Architecture, Learning in E-learning.
Unit: II	Brief Introduction of Interactive Tools for Sanskrit, Basics of Multimedia, Web based tools development, HTML, Web page etc., Tools and Techniques.
Unit: III	Survey of E-learning tools and Techniques.

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Section 'B'
Standard for Indian Languages (Unicode) and E-learning tools

Unit: I	Unicode Typing in Devanagari Scripts, Typing Tools and Software.
Unit: II	Introduction of Various Available E-learning Tools.

Section 'C'
E-Content Creation for Sanskrit Text

Unit: I	Digitalization of Contents, Text Processing Preservation, Techniques.
Unit: II	Introduction to database, Create, Select, Insert, Delete, Update, Handling Unicode data.

Suggested Books/Readings:

1. Tools developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi, Delhi-110007 available at: http://sanskrit.du.ac.in
2. Basic concept and issues of multimedia: http://www.newagepublishers.com/samplechapter/001697.pdf
3. Content creation and E-learning in Indian languages: a model: http://eprints.rclis.org/7189/1/vijayakumarjk_01.pdf
4. HTML Tutorial - W3Schools: www.w3schools.com/html
5. The Unicode Consortium: http://unicode.org/
6. S. B. Gupta & A. Mittal, Introduction to Database Management System, Laxmi Publications, 2010.
7. Database Tutorial - W3Schools: www.w3schools.com/sql
8. Kwok-Wing Lai, E-Learning: Teaching and Professional Development with the Internet, Otago University Press, 2001.
9. Albert Traver, E-Learning: Methods, Modules and Infrastructure, Clanrye International, 2015.
10. P. P. Singh & Sandhir Sharma, E-Learning: New Trends and Innovations, Deep & Deep Publications Pvt. Ltd, 2005.
11. Steinmetz, Multimedia Fundamentals, Volume 1: Media Coding and Content Processing, Pearson Education, 2004.

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Generic Elective (GE)

GE- 1: Nationalistic Thoughts in Sanskrit Literature — Credits 06

GE1T: Nationalistic Thoughts in Sanskrit Literature

Course contents:

Prescribed Course:

Section 'A'	**Definitions, Concepts of Nation and Indian Nationalism**
Section 'B'	**Nationalistic Thought in Vedic and Classical Literature**
Section 'C'	**Nationalistic Thought in Modern Sanskrit Poetry**

Unit-Wise Division:

Section 'A'
Definitions, Concepts of Nation and Indian Nationalism

Unit: I	**Definitions of Nation 'Rāṣṭra' in Indian Perspective** Meaning and Definitions of Nation and Nationality in Modern Context, Etymology and Meaning of 'Rāṣṭra' according to Sanskrit lexicographers, Concept of Nation with special reference to Term 'Rāṣṭra'in Samskrit Literature, Political Concept of 'Rāṣṭra' and 'Saptāṅga' Theory of State: Kautilya's Arthaśāstra, 6.1, Mahābhārata, Śāntiparva,56.5, Śukranīti,1.61-62.
Unit: II	**Factors of Nationalism, Country Name and National Symbols:** Essential Factors of Nationality: National Integration, Patriotism, Freedom, Religious Tolerance, National Pride, National Conciousness, Citizenship. Characteristics of Indian Nationalism: Social Harmony, Equality of the Religions, International Brotherhood, Unity in Diversity, and Cultural Conciousness; Different Views Regarding Name of the Country 'Bhāratavarṣa' in Purāṇa; Natonal Symbols of India: National Anthem-'Jana Gaṇa Mana', National Song 'Vande Mātaram' National Flag of India, National Emblem 'Ashok Chakra'.

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Section 'B'
Nationalistic Thought in Vedic and Classical Literature

Unit: I

Origin and Development of 'Rāṣṭra' in Vedic Literature: Nationalistic Identity of the Vedic People with 'Bharatas' and 'Bharatajana' in Ṛgveda (3 .53.12 3; 3.53.24;7.33.6); Concept of 'Rastra' in 'Bhūmisūkta' Atharvaveda (12.1,1-12; Elements of 'Rāṣṭra' in ŚuklaYajurveda (22.22); Nationalistic Significance of 'Rāṣṭrabhṛt homa' (Coronation Ceremony) in Śatapathabrāhmaṇa (9.4.1.1-5)

Unit: II

Nationalistic Identity of 'Rāṣṭra' in Classical Literature:
Geographical and Sociological Identity of 'Bhāratavarṣa' in Viṣṇupurana (2.3), Geographical Unity of 'Rāṣṭra' in Vālmīki Rāmāyaṇa (Kiṣkindhā kāṇḍa, chapters-46,47,48); Cultural Unity in Kālidasa's Raghuvaṁśa (fourth canto), Demographical Unification of 'Rāṣṭra' in Mahābhārata (Śāntiparva, 65.13-22).

Section 'C'
Nationalistic Thought in Modern Sanskrit Poetry

Unit: I

Nationalistic Trends of Modern Sanskrit Poetry before Independence:
Survey of nationalistic trends in modern Sanskrit poetry before Independence with special reference to 'Bhāratavijayanātakam' of Mathura Prashad Dikshita, 'Satyāgrahagītā' of Pandit Kāmṣārāva, 'Gāndhicaritam' of Charudeva Shastri, and 'Śivarājavijayaḥ' of Ambikadatta Vyasa.

Unit: II

Nationalistic Trends of Modern Sanskrit Poetry After Independence
Survey of nationalistic trends in modern Sanskrit poetry after Independence with special reference to Dr.Satyavrat Shstri, Dr Harinarayan Dikshit, Dr. Radha Vallabh Tripathi, Dr. Abhiraja Rajendra Mishra and Dr. Hari Datt Sharma.

Suggested Readings:

1. R.P Kangale (ed.) Arthashastra of Kautilya, Motilal Banarasidas, Delhi, 1965.
2. R.T.H. Griffith (Trans.), Atharvaveda Samhita, 1896-97, rept. (2 Vols) 1968.
3. H.P. Shastri, Mahabharata (7 Vols), London, 1952-59.
4. H.P. Shastri (trans), Ramayana of Valmiki (3 Vols), London, 1952-59.
5. Jeet Ram Bhatt (ed.), Satapatha Brahmana (3 Vols), EBL, Delhi, 2009.
6. H.H. Wilson (trans.), Ṛgveda samhita (6 Vols), Bangalore Printing & Publishing Co. Bangalore, 1946.

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

7. B. Chakrabarty and R. Pandey, Modern Indian Political Thought, Sage Publications New Delhi, 2010.
8. P. Chatterjee, The Nation and its Fragments: Colonial and Postcolonial Histories Oxford University Press, New Delhi, 1993.
9. M.K. Gandhi, The Collected Works of Mahatma Gandhi, Navajivan, Ahmedabad 1958.
10. M.N Jha, Modern Indian Political Thought, Meenakshi Parkashan, Meerut.
11. R. Pradhan, Raj to Swaraj, Macmillan, New Delhi, 2008.
12. Hiralal Shukla, Modern Sanskrit Literature, Delhi, 2002.
13. उदयवीर शास्त्री (अनुवा.), कौटिल्यीय अर्थशास्त्र, मेहरचन्द लक्ष्मनदास, दिल्ली, 1968।
14. रामनारायण दत्त शास्त्री पाण्डेय (अनु.), महाभारत (1-6 भाग) हिन्दी अनुवाद सहित, गीताप्रेस गोरखपुर।
15. शतपथब्राह्मण (1-5 भाग) माध्यन्दिनीय शाखा, सायणाचार्य एवं हरिस्वामी टीकासहित, दिल्ली।
16. ब्रह्मशंकर मिश्र, शुक्रनीति हिन्दी अनुवाद, चौखम्भा संस्कृत सीरीज, वाराणसी, 1968।
17. जानकीनाथ शर्मा (संपा), श्रीमद्वाल्मीकिरामायणम् (1-2 भाग) हिन्दी अनुवाद सहित, गीताप्रेस गोरखपुर।
18. अनूप चन्द कपूर, राजनीतिविज्ञान के सिद्धान्त, प्रीमियर पब्लिशिंग हाउस, दिल्ली, 1967।
19. पण्डिता क्षमाराव, सत्याग्रहगीता, पेरिस, 1932।
20. सातवलेकर, यजुर्वेद हिन्दी अनुवाद सहित, श्रीपाद दामोदर, पारडी।
21. मुनिलाल गुप्त (अनुवा.), विष्णुपुराण हिन्दी अनुवाद सहित, गीताप्रेस गोरखपुर।
22. कुमुद टंडन, महात्मागांधीपरक संस्कृत काव्य, ईस्टर्न बुक लिंकर्स, दिल्ली, 1991।
23. शशि तिवारी, राष्ट्रीयता एवं भारतीय साहित्य, विद्यानिधि प्रकाशन दिल्ली, 2007।
24. शशि तिवारी, संस्कृत साहित्य में राष्ट्रवाद एवं भारतीय राजशास्त्र, विद्यानिधि प्रकाशन दिल्ली, 2013।

Or

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

GE-1: Political Thoughts in Sanskrit — Credits 06
GE1T: Political Thoughts in Sanskrit

Course contents:

Prescribed Course:

Section 'A'	**Basic Features of Ancient Indian Political Thought**
Section 'B'	**Ancient Indian Political Thought : Origin and Development**
Section 'C'	**Cardinal Theories and Ancient Indian Political Thinkers**

Unit-Wise Division:

Section 'A'
Basic Features of Ancient Indian Political Thought

Unit: I	**Name, Scope and Sources of Ancient Indian Political Thought:** Name of the Science: 'Daṇḍanīti', 'Dharmaśāstra', 'Nītiśāstra'. Scope of Indian Political Thought: relation with Dharma, Artha and Nīti; Sources of Ancient Indian Political Thought :Vedic Literature, Purāṇa, Rāmāyaṇa, Mahābhārata, Dharmaśāstra, Nītiśāstra Kautilya's Arthaśāstra and Rajaśāsana (Inscriptions).
Unit: II	**Nature, Types and Theories of the State:** Nature of the State in Arthaśāstra (6.1) and Manusmṛti (9.294) with Special reference to Saptāṅga-Theory: Svāmi, Amātya, Janapada, Pura, Kośa, Daṇḍa and Mitra. Types of the State: Rājya, Svarājya, Bhojya, Vairājya, Mahārājya, Sāmarājya (Aitreya Brāhmaṇa, 8.3.13-14; 8.4.15-16).

Section 'B'
Ancient Indian Political Thought: Origin and Development

Unit: I	**Indian Political Thought from Vedic Period to Buddhist Period:** Election of King by the People' Visas 'in Vedic period: (Ṛgveda,10.173;10.174, Atharvaveda,3.4.2;6.87.1-2), Parliamentary Institutions: 'Sabhā ,'Samiti' and 'Vidatha' in Vedic period (Atharvaveda, 7.12.1;12.1.6 ; Ṛgveda, 10.85.26), King-maker Council: 'Rajakartarah 'and Ratnis' in Vedic period (Atharvaveda, 3.5.6-7 and

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Śatapathabrahmaṇa, 5.2.5.1); Coronation Ceremony of the King 'Samrāṭa' (Śatapathabrāhmaṇa, 51.1.8-13; 9.4.1.1-5) Republics in the Buddhist Period (Diggnikāya, Mahāparinibbāṇa Sūtta, Anguttaranikāya, 1.213;4.252,256)

Unit: II

Indian Political Thought from Kauṭilya to Mahatma Gandhi:
Kauṭilya's concept of Welfare State (Arthaśāstra, 1.13); Essential Qualities of King (Arthaśāstra, 6.1.16-18); Duties of King and State 'Rajadharma' (Mahābhārata, Śāntiparva, 120.1-15; Manusmṛti, 7.1-15; Śukranīti,1.1-15) Constituent Elements of Jain political thought (Somadeva's Nītivākyāmṛta, 9.1.18 and,19.1.10); Relevance of Gandhian political thoughts in modern period (Gandhi Gītā of Prof. Indra, 5.1-25)

Section 'C'
Cardinal Theories and Ancient Indian Political Thinker

Unit: I

Cardinal Theories of Indian Political Science:
'Saptāṅga' Theory of State: Svāmī, Amātya, Janapada, Pura, Kośa, Daṇḍa and Mitra (Arthaśāstra-6.1, Mahābhārata-Śantiparva-56.5, Śukranīti, 1.61-62).

'Maṇḍala 'Theory of Inter-State Relations: 'Sadguṇya' Policy of War and Peace Diplomacy: Sandhi, Vigraha, Yāna, Āsana, Sanśraya and Dvaidhībhāva.

'Caturvidha Upāya' for balancing the power of State: Śāma, Dāma, Daṇḍa, Bheda.

Three types of State power 'Śakti': Prabhu Śakti, Mantra Śakti, Utsāha Śakti.

Unit: II

Prominent Indian Political Thinkers:
Manu, Śukrācārya, Kauṭilya, Kāmandaka, Somadeva Suri and Mahatma Gandhi.

Suggested Books/Readings:

1. R.P Kangale (ed.) Arthashastra of Kautilya, Motilal Banarasidas, Delhi, 1965.
2. R.T.H. Griffith (Trans.), Atharvaveda Samhita, 1896-97, rept. (2 Vols) 1968.
3. H.P. Shastri, Mahabharata (7 Vols), London, 1952-59.
4. P. Olivelle (ed. & trans.), Manu's Code of Law: A Critical Edition and Translation of the Manava- Dharamashastra, OUP, New Delhi, 2006.
5. H.P. Shastri (trans), Ramayana of Valmaki (3 Vols), London, 1952-59.
6. H.H. Wilson (trans.), Rgveda samhita (6 Vols), Bangalore Printing & Publishing Co. Bangalore, 1946.
7. Jeet Ram Bhatt (ed.), Satapatha Brahmana (3 Vols), EBL, Delhi, 2009.
8. A.S. Altekar, State and Government in Ancient India, Motilal Banarsidass, Delhi 2001.

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

9. S.K. Belvalkar, Mahabharata: Santi Parvam, 1954.
10. D.R. Bhandarkar, Some Aspects of Ancient Indian Hindu Polity, Banaras Hindu University.
11. J.R. Gharpure, Teaching of Dharmashastra, Lucknow University, 1956.
12. U.N. Ghosal, A History of Indian Political Ideas, Bombay, 1959.
13. K.P. Jayaswal, Hindu Polity, Bangalore, 1967.
14. N. S Law, Aspect of Ancient Indian Polity, Calcutta, 1960.
15. S.R. Maheshwari, Local Government in India, Orient Longman, New Delhi,
16. Beni Prasad, Theory of Government in Ancient India, Allahabad, 1968.
17. B.A. Saletore, Ancient Indian Political Thought and Institutions, Bombay, 1963.
18. R. S. Sharma, Aspects of Political Ideas and Institutions in Ancient India, Delhi, 1996
19. K.N. Sinha, Sovernity in Ancient Indian Polity, London,1938.
20. V.P. Verma, Studies in Hindu Political Thought and its Metaphysical Foundations Delhi, 1954.
21. उदयवीर शास्त्री (अनुवा.), कौटिल्यीय अर्थशास्त्र, मेहरचन्द लक्ष्मनदास, दिल्ली, 1968।
22. रामनारायण दत्त शास्त्री पाण्डेय (अनु.), महाभारत (1-6 भाग) हिन्दी अनुवाद सहित, गीताप्रेस गोरखपुर।
23. शतपथब्राह्मण (1-5 भाग) माध्यन्दिनीय शाखा, सायणाचार्य एवं हरिस्वामी टीकासहित, दिल्ली।
24. ब्रह्मशंकर मिश्र, शुक्रनीति हिन्दी अनुवाद, चौखम्भा संस्कृत सीरीज, वाराणसी, 1968।
25. जानकीनाथ शर्मा (संपा), श्रीमद्वाल्मीकिरामायणम् (1-2 भाग) हिन्दी अनुवाद सहित, गीताप्रेस गोरखपुर।
26. शशि तिवारी, संस्कृत साहित्य में राष्ट्रवाद एवं भारतीय राजशास्त्र, विद्यानिधि प्रकाशन दिल्ली, 2013।
27. जे. कश्यप, दीर्घनिकाय (1-2 भाग), बिहार।

Or

GE-1: Sanskrit Media — Credits 06

GE1T: Sanskrit Media

Course contents:

Prescribed Course:

Section 'A'	**Television and Radio**
Section 'B'	**Magazines and Newspapers**
Section 'C'	**Internet, Social Networks, Blogs, Important sites, Sanskrit Wikipedia (general awareness only)**

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Unit-Wise Division:

Section 'A'
Television and Radio

Unit: I	News Translation, Editing, Anchoring,
Unit: II	Graphics, Voice-over, Para Dubbing, Band, Packaging

Section 'B'
Magazines and Newspapers

Unit: I	Journey of Sanskrit Magazines, Various Sanskrit Magazines, Types of Sanskrit Magazines.
Unit: II	Article Collection, Editing, Reporting, Packaging

Section 'C'
Internet, Social Networks, Blogs, Important sites, Sanskrit Wikipedia

Unit: I	**Internet, blogs, important sites, Sanskrit Wikipedia (general awareness only)**

Downloaded from Vidyasagar University by 47.11.213.40 on 25 December 2020 : 12:02:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)5.pdf

Vidyasagar University

Curriculum for B.A (General) in Sanskrit [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1B		Any one from Discipline-1(Sanskrit) **DSE1BT: TBD**	Core Course	5	1	0	6	75
DSE-2B	TBD	Other Discipline (Any one from Discipline-2)/TBD	Core Course	5	1	0	6	75
GE-2		**GE2T:** Indian Theatre	Generic Elective	5	1	0	6	75
SEC-4		**SEC4T: TBD**	Skill Enhancement Course	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE=** Discipline Specific Electives**, GE=** Generic Elective, **SEC=** Skill Enhancement Course, **TBD** = To be decided.

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Semester-VI

Discipline Specific Elective (DSE)

DSE-1B: Literary Criticism
Or
DSE-1B: Nationalism in Sanskrit Literature
Or
DSE-1B: Mathematical Tradition in Sanskrit

Skill Enhancement Course (SEC)

SEC-4: Indian Theatre

Generic Electives (GE)

GE-2: Sanskrit Meter and Music
Or
GE-2: Ethical and Moral Issues in Sanskrit Literature
Or
GE-2: Basics of Sanskrit Linguistics

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Semester-VI

Discipline Specific Elective (DSE)

DSE-1B: Literary Criticism — Credits 06

DSE1BT: Literary Criticism

Course contents:

Prescribed Course:

Section 'A'	**Kāvya Prakāśa: Kāvya vaiśiṣṭya and Kāvya Prayojana**
Section 'B'	**Kāvya Prakāśa: Kāvya Kāraṇa**
Section 'C'	**Kāvya Prakāśa: Kāvya Svarūpa and Kāvyabheda**

Unit-Wise Division:

Section 'A'
Kāvya Prakāśa: Kāvya Vaiśiṣṭya and Kāvya Prayojana

Unit: I Kāvya Prakāśa: Kāvya Vaiśiṣṭya and Kāvya Prayojana

Section 'B'
Kāvya Prakāśa: Kāvya Kāraṇa

Unit: I Kāvya Prakāśa: Kāvya Kāraṇa

Section 'C'
Kāvya Prakāśa: Kāvya Svarūpa and Kāvyabheda

Unit: I Kāvya Prakāśa: Kāvya Svarūpa and Kāvyabheda

Suggested Books/Readings:

1. Nagendra (Ed.), Kāvyaprakāśa of Mammat, Commentary in hindi by Acharya Vishveshvar, Jñānamaṇḍala Varanasi, 2014.
2. Parasnath Dwivedi (ed.), Kāvyaprakāśa of Mammat, Vinod Pustak Mandir, Agra, 1986.

Or

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

DSE-1B: Nationalism in Sanskrit Literature — Credits 06

DSE1BT: Nationalism in Sanskrit Literature

Course contents:

Prescribed Course:

Section 'A'	**Concepts and Basic Features of Indian Nationalism**
Section 'B'	**Name of Country, National Symbols and Rise of Nationalism**
Section 'C'	**Nationalistic Thought and Modern Sanskrit Literature**

Unit-Wise Division:

Section 'A'
Concepts and Basic Features of Indian Nationalism

Unit: I

Meaning, Definitions and Elements of Indian Nation 'Rāṣṭra':
Meaning of Nation, Definitions and Constituent Elements of Nation in Western Perspective. Indian Concept of Nation: 'Rastra', Meaning, Etymology and Definitions, Essential Elements of 'Rāṣṭra' in Sanskrit Literature (Atharvaveda,11.9.17; 12.1,1-12 SuklaYajurveda, 22.22) 'Rāṣṭra' in the Context of 'Saptāṅga' Theory of State (Kauṭilya's Arthaśāstra, 6.1, Mahābhārata, Śāntiparva, 56.5; Śukranīti, 1.61-62)

Unit: II

Meaning, Definitions and Elements of Indian Nationality:
Meaning of Nationality, Definitions and Constituent Elements of Nationality, Essential Factors of Nationality: National Integration, Patriotism, Freedom, Religious Tolerance, National Pride, National Consciousness and Citizenship.

Special Features of Indian Nationalism: Social Harmony (Sāmājika Samarsata), Equality of the Religions, International Brotherhood, Unity in Diversity and Cultural Conciousness.

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Section 'B'
Name of Country, National Symbols and Rise of Nationalism

Unit: I

Name of the Country 'Bharatavarsha' and National Symbols:
Different views regarding name of 'Bharatavarsha' in Vedic and Pauranic Literature, National Symbols of India: National Anthem-'Jana Gana Mana', National Song-'Vande Mataram', National Flag of India, National Emblem 'Ashok Chakra', National Calendar of India 'Śaka Saṁvat'.

Unit: II

Rise of Indian Nationalism and Freedom Struggle Movement:
Major Factors which led to the rise of nationalist sentiments in modern period with special reference to Western Thought and Education, Rediscovery of India's Past, Socio-religious reform movements and Impact of contemporary national movements worldwide.
Brief survey of Socio-religious nationalistic thought of modern India with special reference to Raja Ram Mohan Rai, Swami Dayanand Saraswati, Swami Vivekanand, Bankim Chandra Chatopadhyay, Mahatma Gandhi, Madan Mohan Malaviya, Vir Savarkar and Dr. B.R.Ambedkar.

Section 'C'
Nationalistic Thought and Modern Sanskrit Literature

Unit: I

Contributions of Sanskrit Literature to Freedom Struggle Movement:
Survey of nationalistic trends in modern Sanskrit literature before Independence; Survey of nationalistic trends in modern Sanskrit literature after Independence.

Unit: II

Modern Nationalistic Thought and Gandhian Sanskrit Literature: Social, political and religious background of Gandhian Thought with special reference to 'Grama Svaraja' (Local Self Government), 'Satyāgraha' (Truth Fullness), 'Ahiṁsā' (Non Violence), 'Prajātantra' (People's Democracy) and 'Dhārmika Sahisnuta' (Religious Tolerance).
Contemporary Sanskrit Literature on Gandhian Thought with special reference to 'Satyagrahagita' of Pandita Ksamarava, 'Bhāratavijayanātakam' of Mathura Prisad Dikshita, 'Gandhicaritam' of Charudeva Shastri, 'Gandhi Gita' of Prof. Indra.

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Suggested Books/Readings:

1. R.P. Kangale (ed.), Arthashastra of Kautilya, Motilal Banarasidas, Delhi, 1965.
2. R.T.H. Griffith (Trans.), Atharvaveda Samhita (2 Vols), Banaras, 1968.
3. H.P. Shastri (English Trans.), Mahabharata (7 Vols), London, 1952-59.
4. H.P. Shastri (Eng. Tr.), Ramayana of Valmaki (3 Vols), London, 1952-59.
5. H.H. Wilson (Eng. Tr.), Visnu purana, Punthi Pustak, Calcutta, 1961.
6. उदयवीर शास्त्री (अनु.), कौटिल्यीय अर्थशास्त्र, मेहरचन्द लक्ष्मनदास, दिल्ली, 1968।
7. रामनारायण दत्त शास्त्री पाण्डेय (अनु.), महाभारत (1-6 भाग) हिन्दी अनुवाद सहित, गीताप्रेस, गोरखपुर।
8. सातवलेकर, यजुर्वेद हिन्दी अनुवाद सहित, श्रीपाद दामोदर, पारडी।
9. मुनिलाल गुप्त (अनु.), विष्णुपुराण हिन्दी अनुवाद सहित, गीताप्रेस गोरखपुर।
10. शतपथब्राह्मण (1-5 भाग) माध्यन्दिनीय शाखा, सायणाचार्य एवं हरिस्वामी टीकासहित, दिल्ली।
11. ब्रह्माशंकर मिश्र, शुक्रनीति हिन्दी अनुवाद, चौखम्भा संस्कृत सीरीज, वाराणसी, 1968।
12. पण्डिता क्षमाराव, सत्याग्रहगीता, पेरिस, 1932।
13. जानकीनाथ शर्मा (संपा), श्रीमद्वाल्मीकिरामायणम् (1-2 भाग) हिन्दी अनुवाद सहित, गीताप्रेस गोरखपुर।
14. अनूप चन्द कपूर, राजनीतिविज्ञान के सिद्धान्त, प्रीमियर पब्लिशिंग हाउस, दिल्ली, 1967।
15. योगेन्द्र गोस्वामी (सम्पा.), राष्ट्रीय एकता और भारतीय साहित्य, काशी अधिवेशन स्मृति ग्रन्थ, 2001।
16. कुमुद टंडन, महात्मागांधीपरक संस्कृत काव्य, ईस्टर्न बुक लिंकर्स, दिल्ली, 1991।
17. शशि तिवारी, राष्ट्रीयता एवं भारतीय साहित्य, विद्यानिधि प्रकाशन दिल्ली, 2007।
18. शशि तिवारी, संस्कृत साहित्य में राष्ट्रवाद एवं भारतीय राजशास्त्र, विद्यानिधि प्रकाशन दिल्ली, 2013।
19. हरिनारायण दीक्षित, संस्कृत साहित्य में राष्ट्रीय भावना, ईस्टर्न बुक लिंकर्स, दिल्ली, 2006।
20. इकबाल नारायण,आधुनिक राजनीतिक विचारधाराएं, ग्रन्थ विकास, जयपुर, 2001।
21. पुष्पेन्द्र कुमार (सम्पा.), पुराणों में राष्ट्रीय एकता, नाग प्रकाशन दिल्ली।
22. अजय कुमार मिश्र, मथुरा प्रसाद दीक्षित के नाटक, प्रकाशन विभाग, दिल्ली विश्वविद्यालय दिल्ली, 2002।
23. बाबू गुलाब राय, राष्ट्रीयता, किताब घर दिल्ली, 1996।
24. सत्या एम. राय, भारत में उपनिवेशवाद और राष्ट्रवाद, दिल्ली, 1953।
25. S.K. Belvalkar, Mahabharata: Santi Parvam, 1954.
26. B. Chakrabarty, and R. Pandey, Modern Indian Political Thought, Sage Publications, New Delhi, 2010.

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

27. P. Chatterjee, The Nation and its Fragments: Colonial and Postcolonial Histories, New Delhi, Oxford University Press, 1993.
28. M.K. Gandhi, The Collected Works of Mahatma Gandhi, Ahmedabad, Navajivan, 1958.
29. M. N. Jha, Modern Indian Political Thought, Meenakshi Parkashan, Meerut.
30. R. Pradhan, Raj to Swaraj, Macmillan, New Delhi, 2008.
31. Hiralal Shukla, Modern Sanskrit Literature, Delhi, 2002.

Or

DSE-1B: Mathematical Tradition in Sanskrit — Credits 06

DSE1BT: Mathematical Tradition in Sanskrit

Course contents:

Prescribed Course:

Section 'A' **Indian Mathematics**

Section 'B' **Brief History of Mathematics in Sanskrit**

Section 'C' **Ancient Indian Mathematicians**

Unit-Wise Division:

Section 'A'
Indian Mathematics

Unit: I	Lagadh Jyotiṣa (Yajuṣ Jyotiṣa) Verses: 4 and 42 Importance of Science of Mathematics and The Rule of Three.
Unit: II	Līlavatī of Bhāskarācārya, Verses:1-20.
Unit: III	Vedic Mathematics – First 5 sūtras.
Unit: IV	Technical Terms In Mathematics: Algebra (बीजगणित), Calculus (कलन), Numbers (संख्या), Digit (अंक), Zero (शून्य), Infinity (अनन्त), Decimal (दशमलव), Square & Square root (वर्ग एवं वर्गमूल), Cube & Cube root (घन एवं घनमूल)
Unit: V	Āryabhaṭṭīyam of Āryabhaṭṭ गीतिकापाद (सम्पूर्ण) एवं गणितपाद: 1-5 verses

Section 'B'
Brief History of Mathematics in Sanskrit

Unit: I	Vedic period, medieval Vedic period, Post Vedic Period.
Unit: II	Classical Period, Post classical Period.

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Section 'C'
Ancient Indian Mathematicians

Unit: I

Vararuchi,
Āryabhaṭṭa –I
Varāhmihira
Brahmgupta
Shrīdhar
Āryabhaṭṭa-II
Śrīpati
Bhāskarācārya
Ganeshdaivajña
Kamalākar
Jaisingh
Sudhākar Dwivedī.

Suggested Books/Readings:

1. Krishnaji Shankara Patwardhan, S. A. Naimpally and Shyam Lal Singh, Līlāvatī of Bhāskarācārya: A Treatise of Mathematics of Vedic Tradition, Motilal Banarsidass Publ., 2001
2. Shankar Keshav Abhyankar (Trans), Bhāskarāchārya's Bījagaṇita and Its English Translation, Bhāskarāchārya Pratishthana, 1980.
3. Frank J. Swetz and Victor J. Katz, "Mathematical Treasures - Lilavati of Bhaskara," Loci, 2011.
4. K. V. Sarma, Līlāvatī of Bhāskarācārya with Kriyā-kramakarī, Hoshiarpur: VVBIS & IS, Panjab University
5. भास्कराचार्य विरचित लीलावती, चौखम्भा कृष्णदास अकादमी, 2001।
6. सुरकान्त झा, आर्यभटीयम् आर्यभटविरचितम्, चौखम्भा।
7. Studies in the History of Science in India (Anthology edited by Debiprasad Chattopadhyaya)
8. A P Juskevic, S S Demidov, F A Medvedev and E I Slavutin: Studies in the history of mathematics, "Nauka" (Moscow, 1974), 220-222; 302.

Skill Enhancement Course (SEC)

SEC-4: Indian Theatre — Credits 02

SEC4T: Indian Theatre

Course contents:

Prescribed Course:

Section 'A'	**Tradition and History of Indian Theatre**
Section 'B'	**Theatre: Types and Constructions**
Section 'C'	**Acting: Āṅgika, Vācika, Sāttvika and Āhārya**
Section D	**Drama: Subject-Plot (*vastu*), Hero (*netā*) and Sentiment (*rasa*).**

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Unit-Wise Division:

Section 'A'
Tradition and History of Indian Theatre

Unit: I	Origin and development of stage in different ages: pre-historic, Vedic age.
Unit: II	Epic-puranic age, court theatre, temple theatre, open theatre, modern theatre, folk theatre, commercial theatre, national and state level theatre.

Section 'B'
Theatre: Types and Constructions

Unit: I	Theatre: Types and Constructions

Section 'C'
Acting: Āṅgika, Vācika, Sāttvika and Āhārya

Unit: I	Acting: Āṅgika, Vācika
Unit II	Sāttvika and Āhārya

Section 'D'
Drama : Subject-Matter (vastu), Actor (netā) and rasa

Unit I	***Vastu*** (Subject-Matter)
Unit II	**Netā** (Hero)
Unit II	***Rasa*** (Sentiment)

Suggested Books/Readings:

1. राधावल्लभ त्रिपाठी (सम्पा. एवं संक.), संक्षिप्तनाट्यशास्त्र हिन्दी भाषानुवादसहित, वाणी प्रकाशन दिल्ली 2008।
2. राधावल्लभ त्रिपाठी, भारतीय नाट्य: स्वरूप एवं परम्परा, संस्कृत परिषद्, सागर मध्य प्रदेश 1988।
3. हजारी प्रसाद द्विवेदी (सं.), नाटशास्त्र की भारतीय परम्परा एवं दशरूपक,राजकमल प्रकाशन, दिल्ली 1963।
4. सीताराम झा, नाटक और रंगमंच, बिहार राष्ट्रभाषा परिषद् पटना 1982।
5. बाबूलाल शुक्ल शास्त्री (सम्पा.), नाट्यशास्त्र (1-4 भाग), चौखम्भा संस्कृत संस्थान, वाराणसी, 1984

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

6. राधावल्लभ त्रिपाठी, नाट्यशास्त्र विश्वकोश (1-4 भाग), प्रतिभा प्रकाशन दिल्ली 1999।
7. राधावल्लभ त्रिपाठी, भारतीय नाटशास्त्र की परम्परा और विश्व रंगमंच, प्रतिभा प्रकाशन दिल्ली।
8. व्रजमोहन चतुर्वेदी, नाट्यशास्त्रम्, विद्यानिधि प्रकाशन दिल्ली, 2003।
9. केशवरामुसलगांवकर, संस्कृत नाट्य मीमांसा, परिमल प्रकाशन, दिल्ली।
10. शिवशरण शर्मा, आचार्य भरत, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल।
11. रामलखन शुक्ल, संस्कृत नाट्य कला, मोतीलाल बनारसीदास, नई दिल्ली, 1970
12. गोविन्द चन्द्र राय, नाट्यशास्त्र में रंगशालाओं के रूप, काशी, 1958।
13. भानुशंकर मेहता, भरत नाट्यशास्त्र तथा आधुनिक प्रासंगिकता, वाराणसी।
14. वाचस्पति मेहता, भारतीय नाट्य परम्परा एवं अभिनयदर्पण, इलाहाबाद, 1967।
15. लक्ष्मी नारायण लाल, रंगमंच और नाटक की भूमिका, दिल्ली, 1965।
16. लक्ष्मी नारायण गर्ग, भारत के लोकनाट्य, हाथरस संगीत कार्यालय, 1961।
17. सीताराम चतुर्वेदी, भारतीय तथा पाश्चात्य रंगमंच, हिन्दी समिति, लखनऊ 1964।
18. जगदीशचन्द्र माथुर, परम्पराशील नाट्य, बिहार राष्ट्रभाषा परिषद्, पटना, 1961।
19. C.B. Gupta, Indian Theatre, Varanasi, 1954.
20. R.K. Yajnick, Indian Theatre, London, 1933.
21. Tarla Mehta, Sanskrit Play Production in Ancient India, MLBD, Delhi, 1999.
22. Allardyce Nicoll, The Theatre and Dramatic Theory, London, 1962.

Generic Electives (GE)

GE-2: Sanskrit Meter and Music — Credits 06

GE2T: Sanskrit Meter and Music

Course contents:

Prescribed Course:

Section 'A'	**Brief Introduction to Chandaśāstra**
Section 'B'	**Classification and Elements of Sanskrit Meter**
Section 'C'	**Analysis of Selected Vedic Meter and their Musical Rendering (गान-पद्धति)**
Section 'D'	**Analysis of Selected Classical Meter and their Musical Rendering (गान-पद्धति)**

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Unit-Wise Division:

Section 'A'
Brief Introduction to Chandaśāstra

Unit: I	Brief Introduction to Chandaśāstra

Section 'B'
Classification and Elements of Sanskrit Meter

Unit: I	Syllabic verse (akṣaravṛtta): Syllabo-quantitative verse (varṇavṛtta) Quantitative verse (mātrāvṛtta) Syllables: laghu and guru
Unit: II	Gaṇa Feet

Section 'C'
Analysis of Selected Vedic Meter and their Lyrical Methods (गान-पद्धति)

Unit: I	Definition, Example, Analysis and Lyrical Methods of following Meters: *gāyatrī, uṣṇik, anuṣṭup, bṛhatī, paṃkti, triṣṭup* and *jagatī.*

Section 'D'
Analysis of Selected Classical Meter and their Musical Rendering
(गान- पद्धति)

Unit: I	Definition, Example, Analysis and Lyrical Methods of following Meters: *bhujaṅgaprayāta, sragviṇī, toṭaka, harigītikā, vidyunmālā, anuṣṭup, āryā, mālinī, śikhariṇī, vasantatilakā, mandākrāntā, sragdharā* and *nyuśārdūlvikrīḍita*

Suggested Books/Readings:

1. Brown, Charles Philip (1869). Sanskrit Prosody and Numerical Symbols Explained. London: Trübner & Co.
2. Deo, Ashwini. S (2007). The Metrical Organization of Classical Sanskrit Verse, (PDF). Journal of Linguistics 43 (01): 63–114. doi:10.1017/s0022226706004452.
3. Recordings of recitation: H. V. Nagaraja Rao (ORI, Mysore), Ashwini Deo, Ram Karan Sharma, Arvind Kolhatkar.
4. Online Tools for Sanskrit Meter developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi: http://sanskrit.du.ac.in
5. धरानन्द शास्त्री (संपा.), केदारभट्ट विरचित वृत्तरत्नाकर, मोतीलाल बनारसीदास, दिल्ली, 2004

Or

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

GE-2: Ethical and Moral Issues in Sanskrit Literature — Credits 06

GE2T: Ethical and Moral Issues in Sanskrit Literature

Course contents:

Prescribed Course:

Section 'A'	Issues in the Mahābhārata
Section 'B'	Issues in the Rāmāyaṇa
Section 'C'	Issues of personal conduct
Section 'D'	Issues in Freedom

Unit-Wise Division:

Section 'A'
Issues in the Mahābhārata

Unit: I	Half-truths and false hoods – Yudhiṣṭhira's declaration of Aśvatthāma's death.
Unit: II	Choosing the lesser evil –Duṣyanata's rejection of Śakuntalā in the Abhijñāna Śakuntalam, Act V.
Unit: III	Critique of war in the Mahābhārata (strī parva, Chapters 13-15). War – as it should be and as it is – (Manusmṛti Chapter VII 199-200, 87-93 and Kriṣhṇa's stratagems in war).
Unit: IV	Yearning for revenge – Aśvatthāmā's revenge on Pāṇdava progeny; Duryodhana's revenge on Draupadi

Section 'B'
Issues in the Rāmāyaṇa

Unit: I	Conflict of duty – Rāma the king versus Rāma the Husband.
Unit: II	Obedience and Loyalty – Lakṣmaṇa's challenge to Dasharatha and submission to Rāma in Vālmiki's Rāmāyana.

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Section 'C'
Issues of Personal Conduct

Unit: I Self respect – Nītiśatakam, Verses 21 – 30.

Section 'D'
Issues in Freedom

Unit: I Poetic freedom and poetic license – restraints on creative expression in Indian poetics and dramaturgy, assessment of popular Indian cinema in the light of these principles.

Unit: I The person – svadharma and sthitaprajña in the Gītā: Chapter II.

Suggested Books/Readings:

1. Mahabharata with Hindi translation – Gita Press Gorakhpur
2. Matilal Bimal Krishna – Moral Dilemmas in the Mahabharata
3. Sharma Kavita A.- Ethical Dilemmas in the Mahabharata - http://www.drkavitasharma.org/pdf/Ethical%20Dilemmas%20in%20Mahabharat.pdf
4. Das Gurcharan – 2009, The Difficulty of Being Good, Penguin (hindi translation)
5. http://www.wisdomtimes.com/blog/lessons-from-the-mahabharata-dealing-with-moral-dilemmas/#
6. http://jaiarjun.blogspot.in/2011/07/epic-fictions-rashomon-like-world-of.html
7. http://blogs.bu.edu/core/2011/02/16/on-arjunas-moral-dilemma/
8. http://www.cse.iitk.ac.in/users/amit/books/matilal-2002-ethics-epics-collected-v2.html
9. Gita – with Hindi translation, Gita Press, Gorakhpur
10. Koshambi D.D., Nitisatakam, Bhartiya Vidya Bhawan, Mumbai, 1946
11. Shastri Surendra Dev, Abhijnana Sakuntalam, Sahitya Bhandar, Meerut
12. Vasudev Soma Dev, (Translation) Clay SansritSeries, New York Unievrsity Press
13. Ramayana of Valmiki, Ayodhyakanda, sanskritdocuments.org.

Or

GE-2: Basics of Sanskrit Linguistics Credits 06

GE2T: Basics of Sanskrit Linguistics

Course contents:

Prescribed Course:

Section 'A' **Introduction to Linguistics and Classification of Languages**

Section 'B' **Phonetics and Phonology**

Section 'C' **Morphology and Syntax**

Section 'D' **Semantics and Pragmatics**

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Unit-Wise Division:

Section 'A'
Introduction to Linguistics and Classification of Languages

Unit: I	Introduction to Linguistics, Language and Linguistics
Unit: II	Classification of Languages: Language Family in India

Section 'B'
The Study of Sound: Phonology and Phonetics

Unit: I	Phonetics and Phonology: Acoustic, Auditory and Articulatory, Places of Articulation: Bilabial: lips together Labiodental: lower lip against front teeth Interdental: tongue between teeth Alveolar: tongue near alveolar ridge on roof of mouth (in between teeth and hard palate) Palatal: tongue on hard palate Velar: tongue near velum Glottal: space between vocal folds Manners of Articulation Stop: obstruct airstream completely Fricative: partial obstruction with friction Affricate: stop airstream, then release Liquids: partial obstruction, no friction Glides: little or no obstruction, must occur with a vowel

Section 'C'
The Study of Words and Sentences: Morphology and Syntax

Unit: I	Morphology: Morphemes, Affixes: prefixes, suffixes, infixes, and circumfixes Derivational and inflectional affixes Syntax: Phrase structure rules, Passive Sentences, Active

Section 'D'
The Study of Meaning: Pragmatics and Semantics

Unit: I	Semantics: Thematic Roles, Sentential Meaning Pragmatics:

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

Suggested Books/Readings:

1. An Introduction to Language by Victoria Fromkin and Robert Rodman, 6th Ed
2. Schmitt, N. (2002). An Introduction to Applied Linguistics. Oxford: Oxford University Press.
3. Noam Chomsky, David W. Lightfoot, Syntactic Structures, Walter de Gruyter, 2002.
4. कर्ण सिंह, भाषा विज्ञान, साहित्य भण्डार, मेरठ
5. भोलानाथ तिवारी, तुलनात्मक भाषाविज्ञान, मोतीलाल बनारसीदास, दिल्ली
6. कपिलदेव द्विवेदी, भाषाविज्ञान एवं भाषाशास्त्र, विश्वविद्यालय प्रकाशन, वाराणसी
7. देवेन्द्रनाथ शर्मा, भाषाविज्ञान की भूमिका, राजकमल प्रकाशन दिल्ली
8. T. Burrow, Sanskrit Language.
9. B.K., Ghosh, Linguistics Introduction to Sanskrit, Sanskrit Pustaka Bhandar, Calcutta, 1977
10. S.K Verma and N. Krishnaswamy, Modern Linguistics, Oxford University Press, Delhi.

Downloaded from Vidyasagar University by 157.43.241.165 on 18 December 2020 : 19:04:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/Sanskrit(General)6.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (HONOURS)
in
Music

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

VIDYASAGAR UNIVERSITY
BA (Honours) in Music
[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: Elementary Knowledge of Music: Terminologies and Concepts	6	5-1-0	15	60	75
		Core-2		CP2: Thata-Raga Swaramalika Lakshman giti in different Talas **(Practical)**	6	0-0-12	15	60	75
		GE-1		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: Introduction of Rabindra Sangeet and Theoretical Knowledge of Ragas, Talas and Notations	6	5-1-0	15	60	75
		Core-4		CP4:Rabindra Sangeet: Themetic Variations **(Practical)**	6	0-0-12	15	60	75
		GE-2		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-1 (Elective)		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		CT5: History of Indian Music – I	6	5-1-0	15	60	75
		Core-6		CP6: Practical Knowledge of Indian Music **(Practical)**	6	0-0-12	15	60	75
		Core-7		CP7: Practical Knowledge of RAGA -I**(Practical)**	6	0-0-12	15	60	75
		GE-3		TBD	6	5-1-0 4-0-4	15	60	75
		SEC-1		TBD	2	1-1-0/ 0-0-4	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		CT8: History of Indian Music – II	6	5-1-0	15	60	75
		Core-9		CP9: Practical Knowledge of RAGA -II **(Practical)**	6	0-0-12	15	60	75
		Core-10		CP10: Rabindra Sangeet**(Practical)**	6	0-0-12	15	60	75
		GE-4		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-2		TBD	2	0-0-4	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		CP11: Practical Knowledge of Rabindra Sangeet **(Practical)**	6	0-0-12	15	60	75
		Core-12		CP12: Practical Knowledge of RAGA-III and TALA **(Practical)**	6	0-0-12	15	60	75
		DSE-1		TBD	6		15	60	75
		DSE-2		TBD	6		15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: Theoretical knowledge of music	6	5-1-0	15	60	75
		Core-14		CP14: Practical Knowledge of Bengali song/ Bangla Gaan **(Practical)**	6	0-0-12	15	60	75
		DSE-3		TBD	6		15	60	75
		DSE-4		TBD	6		15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

List of the Core Courses and Electives

Core Course (CC)

CC-1: Elementary Knowledge of Music: Terminologies and Concepts
CC-2: Thata-Raga Swaramalika Lakshman giti in different Talas (Practical)
CC-3: Introduction of Rabindra Sangeet and Theoretical Knowledge of Ragas, Talas and Notations
CC-4: Rabindra Sangeet: Themetic Variations (Practical)
CC-5: History of Indian Music – I
CC-6: Practical Knowledge of Indian Music (Practical)
CC-7: Practical Knowledge of RAGA -I (Practical)
CC-8: History of Indian Music – II
CC-9: Practical Knowledge of RAGA-II(Practical)
CC-10: Rabindra Sangeet(Practical)
CC-11: Practical Knowledge of Rabindra Sangeet (Practical)
CC-12: Practical Knowledge of RAGA-III and TALA (Practical)
CC-13: Theoretical knowledge of music
CC-14: Practical Knowledge of Bengali song/ Bangla Gaan (Practical)

Discipline Specific Electives (DSE)

DSE-1: Concept of music in Tagore Literature
DSE-2: Karnatak Music
Or
DSE-2: General Aesthetics
DSE-3: Acoustics
Or
DSE-3: Practical knowledge of Bhajan and Bengali Songs/Bangla Gan (Practical)
DSE-4: Practical knowledge of Raga (Practical)
Or
DSE-4: Project Work

Skill Enhancement Course (SEC)

SEC-1: Practical Demonstration of Khayal (Practical)
Or
SEC-1: Knowledge of Tala(Theoretical)
Or
SEC-1: Sight Singing (Practical)
SEC-2: Stage Performance of Song-I (Practical)
Or
SEC-2: Stage Performance of Song-II (Practical)

Generic Electives (GE)

[Interdisciplinary for other Department]

GE- 1: Elementary Knowledge of Music
Or
GE- 1: History of Indian Music
GE - 2: Aspects of Thata, Mela, Raga & Tala
GE - 3: Theoretical knowledge of music (including advanced theory of Rabindranath)
GE - 4: Practical Songs of Panchakobi except Rabindranath(Practical)
Or
GE - 4: Knowledge of Rabindra sangeet (Practical)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

CORE COURSE (CC)

CC- 1 : Elementary Knowledge of Music : Terminologies and Concepts

Credits 06

C1T : Elementary Knowledge of Music : Terminologies and Concepts

Course Content

1. Elementary study of sound : musical and non-musical.
2. Indian concept of nada.
3. Swara – suddha, komal and tibra, chal, achal.
4. Sruti - sruti and swarasthana (ancient and modern period)
5. Knowledge of the following musical terms :
   Sangit, varna, alankar, saptak, (mandra, madhya, tar) thata, raga, astak, murchhana, alap, tan, badi, sambadi, vivadi, anubadi, bandish, gayaki, nayaki, bagyeyakar, murki, jamjama.
6. Theory of mela, thata and raga
   a. Mela system as introduced by Venkatmakhi.
   b. Thata system as introduced by V. N. Bhatkhande.
   c. Difference between thata and raga / mela.

Suggested Readings:

- V. N. Bhatkhande , Bhatkhande Sangeet Shastra, Part I – II
- Indrani Chakravarti, Sangeet Manjusha.
- Indubhusan Roy, Sangeet Shastra.
- Nilratan Bandhopadhyay, Sangeet Parichiti (Part I – II)
- Debobrata Dutta , Sangeet Tattya.
- Basant, Sangeet Visharad.
- Amal Das Sharma, Sangeet Manisha.
- S.S. Paranjape , Bhartiya Sangeet Ka Itihasa.
- S.S. Paranjape, Sangeet Bodh.
- Govind Rao Rajurkar , Sangeet Shastra Parag
- Dr. Pannalal Madan , Sangeet Shastra Vigyan.

CC- 2 : Thata-Raga Swaramalika Lakshman giti in different Talas (Practical)

Credit 06

C2P : Thata-Raga Swaramalika Lakshman giti in different Talas (Practical)

Course Content

*** [Playing of (manual) tanpura is compulsory]

1. Voice culture with the tanpura (manual) : suddha swaras, komal swaras, tabra swars.
2. Basic knowledge of tanpura and its tuning.
3. Voice culture according to the array of notes of 10 thatas / thata-ragas e.g.
   i. Bilabal
   ii. Bhairab
   iii. Bhairabi
   iv. Ashabari
   v. Tori

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

vi. Marowa
vii. Purabi
viii. Kalyan / iman
ix. Bhupali
x. Khambaj
xi. Kafi

4.

a) alankar
b) swaramalika in different talas (such as tintal, jhaptal, ektal)
c) lakshman giti and drut kheyal of choosen prescribed ragas: Bhairab, Yaman, Bhupali, Bilawal

CC- 3 : Introduction of Rabindra Sangeet and Theoretical Knowledge of Ragas, Talas and Notations (Theoretical) **Credits 06**

C3T : Introduction of Rabindra Sangeet and Theoretical Knowledge of Ragas, Talas and Notations (Theoretical)

Course Contents :

1. The study and overview of Gitabitan and Swarabitan
2. Musical atmosphere of jorasanko tagore palace.
3. Introduction to the music masters of Rabindranath
4. Rabindranath's life and creativity in short.
5. Knowledge of the following ragas :
   Bilawal Khambaj Iman Kafi
   Bhairab Bhairabi Behag Ashabari
   Jounpuri Jogiya
6. Knowledge of the following talas :
   Dadra Teora Rupak Kaharba
   Jhaptal Surfanktal Ektal Choutal
   Dhamar Trital
7. Talas introduced by Rabindranath.
8. Knowledge of notations: (Bhatkhande system & Akarmatrik system).

Suggested Readings :

- Prabhat Kumar Mukhopadhyay – Rabindra Jiban Katha
- Prabhat Kumar Mukhopadhyay – Rabindra Jibani (1-4) Visva Bharati
- Prasanta Pal – Rabi Jiboni (1-9) Ananda Publishers
- Gitabitan (Visva Bharati Publications)
- Swarabitan (1-66) (Visva Bharati Publications)
- Rabindranath Tagore – (Sangit Chinta) (Visva Bharati Publications)
- Santideb Ghosh – Rabindra Sangeet
- Arun Kumar Basu – Bangla Kabya Sangit O Rabindra Sangeet
- Bishnu Narayan Bhatkhande – Kramik Pustak Malika (Parts 1,2,3,4,5,6)
- Dilip Kumar Mukhopadhyay – Bangalir Rag Sangit Charcha.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

CC- 4: Rabindra Sangeet: Themetic Variations (Practical) **Credits 06**

C4P: Rabindra Sangeet: Themetic Variations (Practical)

Course Contents :
(Any 10 Rabindra sangeet from the following list)

1. He sakha mama
2. Kanna hasir dol dolano
3. Surer guru dao go surer diksha
4. Byartha Praner aborjana purie phele
5. Oi Bhubanomohini
6. Tor aponjane charbe tore
7. Subhakarmo pathe dharo nirbhoy gan
8. Ei kathati mone rekho
9. Ami tomar sange bendhechi amar paran
10. Ajana khanir natun moni
11. Eso eso he baisakh
12. Kon puraton praner atne
13. Sarat tomar arun alor anjali
14. Hemante kon basanter bani
15. Siter haoai laglo nachan
16. Ore griha basi khol dar khol
17. Nil digante oi phuler agun
18. Dui hate kaler mandira je
19. Rangie die jao jao
20. Ognisikha eso eso
21. Aire mora phasal kati
22. Je tarani khani bhasale dujone
23. Tomari gehe palicho snehe
24. Tumi kemon kore gan karo he guni
25. Bal dao more bal dao
26. Jodi tor dak sune keu na ase
27. Jana gana mano adhi nayaka
28. Bidhir bandhan katbe tumi
29. Aj sabar rang rang misate hobe
30. Kobe tumi asbe bole
31. Amar man mane na
32. Baisakh he moni tapas
33. Eso shyamal sundar
34. Bajra manic die gatha
35. Aj pratham phuler pabo prosad khani
36. Himer rate oi ganer dip gulire
37. Siter bone kon je kothin
38. Ore bhai phagun legeche bone bone
39. Mora satyer pore mon
40. Madhur madhur dhoni baje
41. Amader santi niketan
42. Maru bijoyer ketan orao sunye
43. Ohe nobin otithi
44. Sabare kori awhan

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

CC-5 : History of Indian Music – I (Theoretical) **Credits 06**

C5T : History of Indian Music – I (Theoretical)

Course Contents :

1. History of Indian Music in :
    1) Music during the Indus Valley Civilization
    2) Music in Vedic period
    3) Information about music as available in the Epics & Purans

2. Detailed theoretical knowledge of the following Talas : Trital, Jhaptal, Chautal, Ektal, Dadra, Kaharwa, Rupak, Surphaktal, Dhamar & Tewra

3. Detailed theoretical knowledge of the following Ragas : Bilawal, Yaman, Bhairava, Khamaj, Kafi & Ashavari

4. Development of music of Sultenate Period & Mughal Period

5. Study of the following texts with reference to musical aspects : Natyashastra of Bharata. Brihaddesi of Matanga, Sangeet Ratnakar of Sarangadeva, Naradi Sikhsa of Muni Narad, Rag Tarangini of Kabi Lochan, Sangeet Parijat Of Ahobal, Gitagobinda of Jayadeva, Chaturdandi Prakashika of Pt. Venkatmokhi

6. Definition of the following : Sangeet , Nada, Swara, Saptak, Raga, Sruti, Dhwani, Aroha, Abaroha, Vadi, Samavadi, Murchhana, Thata, Sam, Tali, Khali, Tala, Laya, Anuvadi, Vivadi, Pakad, Jati, Matra, Vibhag, Gram, Alap.

7. Characteristics of musical sounds

CC-6: Practical Knowledge of Indian Music (Practical) **Credits 06**

C6P: Practical Knowledge of Indian Music (Practical)

Course Contents :

1. Ability to sing Alankaras in Barabar-Laya, Dwigun Laya & Chaugun Laya
2. Identification of 10 Thatas with Swaramalika
3. Drut Khayals with Alap, Vistars & Tanas in all the following Ragas : Khamaj, Kafi, Ashabari .
4. General study of the following talas with the ability to recite the thekas in Barabar Laya, Digun & Chaugun Laya : Trital, Dadra, Kaharwa, Ektal & Jhaptal
5. Identification of of Rabindra srista tala

CC-7: Practical Knowledge of RAGA -I(Practical) **Credits 06**

C7P: Practical Knowledge of RAGA -I (Practical)

Course Contents :

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

1. Drut khayals with alap, vistars and Tanas in all the following rags : Bhairabi, Jaunpuri, Alahiya-Bilawal, Bhupali, Desh, Brindabani- sarang.
2. Two Taranas in any two of the above mentioned rags.
3. General study of the following talas and ability to recite the Thekas in Barabar-laya, Dwigun and chaugun laya.Choutal, Surfanktal, Dhamar, Teora, Rupak.
4. Sight singing - Notation writing & reading (Hindustani and Akarmatrik system both)

CC-8 : History of Indian Music – II (Theoretical) Credits 06

C8T : History of Indian Music – II (Theoretical)

1. History of Indian Music :
   Knowledge of Paluskar Notation System, Hindusthani Notation system.
2. Life sketch & musical contribution of the following Musicians:
   Sourindra Mohon Thakur, Swami Prajyananda, Krishnadhan Bandopadhaya, Bimal Roy, khestramohan Goswami, Rajeswar Mitra K.D Brihaspati,
3. Study of the following texts: Sangeet Samaysar of Parsa Deva, Hriday Prakash of Hriday Narayan Deva, Raga Bibodh of Somenath
4. Knowledge of the Musical instruments of Tata, Abanaddha, Ghana and Susir.
5. Time theory of raga & raga bargikaran
6. Method of producing 72 Melas of pt. venkatmokhi
7. Detailed theoretical knowledge of the following ragas & comparative study of similar type of ragas: Todi, Marwa, Puriyadhaneshri, Chayanat, Jaijawanti, Darbari-Kanada, Miyan-Ki-Mallahar, Gurjari-Tdi, Goud-Mallhar.
8. Definition of the following: paramel prabesak raga, dhruba giti, suddha, chhayalag, sankirna, sandhi prakash raga, Purbanga & Uttaranga pradhan raga.
9. Ten essential characters of raga

CC- 9 : Practical Knowledge of RAGA-II (Practical) Credits 06

C9P : Practical Knowledge of RAGA-II (Practical)

Course Contents :

1. Two vilambit khayals from the mentioned ragas : behag, malkous, jaunpuri, kedar, bhimpalashri, purvi, marwa
2. Drut khayal of above mentioned ragas
3. Ability to show following talas with deferent layakaries : Jhumra, Addha, Chautal, Dhamar
4. Ability to sing Bhajan any three of the following :Meerabai, Tulsidas, Kabir, Surdas

CC- 10: Rabindra Sangeet(Practical) Credits 06

C10P: Rabindra Sangeet(Practical)

Course Contents :

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

1. Tagores song like Dhrupadanga, Dhamaranga,Khayalanga, Boulanga with reference to original Dhrupad/Dhramar/Kheyal/Boul/Folk Songs.
2. Bhanu Singher Padabali (two songs only),
3. Selected scene from one Gitinatya & Nrityanatya .

CC-11: Practical Knowledge of Rabindra Sangeet (Practical) Credits 06

C11P: Practical Knowledge of Rabindra Sangeet (Practical)

Course Contents :

1. Ability to sing Rabindra Sangeet as mentionsed below (one from each):
2. Puja Parjay, Swadesh Parjay, Prem parjai, Prakriti parjai, Bichitra Parjay, Anusthanik Parjay,etc.
3. Kabyageeti(only two songs),
4. Songs based on Rabindra srista Tala (only two songs).
5. Raga analysis of Rabindra Sangeet
6. Ability to read Notation of unknown Rabindra Sangeet

CC-12 : Practical Knowledge of RAGA-III and TALA(Practical) Credits 06

C12P : Practical Knowledge of RAGA-III and TALA(Practical)

Course Contents :

1. Two Dhrupads & two Dhamars from the following ragas with Alap,Layakari & Upaj :Bahar,Durga, Bageshri, Sohini, Sudh-Sarang, Bhairav,Yaman,Brindabani – Sarang, Hindol, Behag, MalkosTodi
2. One Thumri & one Dadra in the following Ragas : Bhairavi, Khamaj, Pilu, Kafi.
3. Ability to recite Notation.
4. Ability to recite the following talas with deferent layakaries: Jat, Deepchandi, Dhamar, Jhumra.

CC- 13 : Theoretical knowledge of music (Theoretical) Credits 06

C13T : Theoretical knowledge of music (Theoretical)

Course Contents :

1. Comparative study of suddha & vikrit swaras of Hindustani & Carnatic system
2. Placing of suddha swaras on veena & their vibretions as explained by Pt. Shrinivas
3. Detailed theoretical knowledge of the following Talas & ability to compose talalipi notation in Ada, Kuada, Viada Laya : Jhumra, Deepchandi, Ada-Chautal, Matta, Panchamswari, Shikhar
4. Merits & Demerits of a singer

CC- 14 : Practical Knowledge of Bengali song/ Bangla Gaan (Practical)
Credits 06

C14P : Practical Knowledge of Bengali song/ Bangla Gaan (Practical)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

Course Contents :

(Song of any one from each composer)

1. Puratani bangla gaan : Dasarathi Roy, Kamalakanta, Shreedhar Kathak, Girish Ghosh
2. Ability to sing Brahma Sangeet of the following : Rammohan Roy, Debendra Nath Thakur, Jyotirindra Nath Thakur
3. Ability to sing any two folk songs of the following : Baul, Bhatiyali, Jhumur, Tusu
4. Ability to sing Kirtan : Gyandas, Chandidas & Vidyapati (any one)

Discipline Specific Electives (DSE)

DSE-1 Concept of music in Tagore Literature **Credits 06**

DSE1T: Concept of music as reflected in Tagore Literature

Course Contents:

Study the following

1. "Komal Gandhar" : Punascha;
2. "Panchishe Baishakh Choleche" : Seshsaptak (43)
3. "Amar Kachhe shunte Cheyecho Ganer Katha" : Seshsaptak (17)
4. Ora Antyaja Ora Mantrabarjita : Patraput (15)
5. Ganer Basa : Punascha;
6. Sangit O Bhab : Sangit Chinta
7. Gan Sambandhe Probandha : Jiban Smriti/Sangit Chinta
8. Sangiter Mukti : Sangit Chitna
9. Shona : Santiniketan
10. Siksha O Sanskritite Sangiter Sthan : Sangit Chinta

DSE - 2 : Karnatak Music **Credits 06**

DSE2T: Katnatak Music

Course Contents :

1. Knowledge of Karnatak Swaras and their comparison with the North Indian Swaras;
2. Karnatak Melodic Concepts;
3. Karnatak Concepts of Tala with reference to the System of Tala-Subdivisions. Tala-jatis and brief knowledge of the following Talas: Dhruva, Natya, Rupaka, Triputa, Jhampa, Ata and Eka;
4. Knowledge of the following: Katapayadi, Varnam, Kriti, Rangam-Tanam-Pallavi, Tillana and Javali;
5. Muscial Contributions of Purandava Das, Tyagaraja, Shyama Sastri and Muttuswami Dixitar;
6. Brief knowledge of the following musical instruments of Karnataka Music; Karnatak Vina, Vichitra Vina, Mridanga, Ghatam and Nagas waram

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

Or

DSE-2 : General Aesthetics **Credits 06**

DSE2T: General Aesthetics

Course Contents :

1. Imitation theory as advanced by Plato & Aristotle.
2. Theory of Emotion.
3. Croce's theory of expression .
4. Role of Imagination and Fancy Art Creation.
5. Realism in Art.
6. Definition of Art.
7. Concept of Art.
8. Movements of 'Art for Arts Sake' vs. Art. with a purpose.
9. Aesthetic ideas of Tagore with reference to beauty & truth
10. Aesthetic ideas of Abanindra Nath with reference to 'Lilabada'.
11. Theory of configurationism in music

DSE- 3 : Acoustics **Credits 06**

DSE3T : Acoustics

Course Contents:

1. Musical Acoustics - its scope and concerning areas.
2. Nature of Sound Wave - Transverse and Longitudinal Wave; Definition of Sound.
3. Simple harmonic Motion.
4. Characteristics of Musical Sound - Pitch, Intensity, timbre and duration.
5. Human Vocal organ - its structure and funciton; voice Reg ister and Composs.
6. Human Ear - its Structure and function.
7. Auditory perception theories.
8. Musicality, Musical ability, Musical Talent.
9. Analysis of Musical Gift.
10. Theories of Creativity.

Or

DSE -3: Practical knowledge of Bhajan and Bengali Songs/Bangla Gan (Practical)
Credits 06

DSE3P: Practical knowledge of Bhajan and Bengali Songs/Bangla Gan (Practical)

Course Contents :

- Ability to sing Bhajan : Meera Bai, Surdas, Kabir,Tulsidas.
- Ability to sing the following songs of D.L.Roy, Atulprasad, Rajanikanta, Nazrul.
- Puratani,agamoni, bijaya, jatra gaan,ramprasadi
- Baul, kirtan, Jhumur

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

DSE- 4 : Practical knowledge of Raga (Practical) **Credits 06**

DSE4P : Practical knowledge of Raga (Practical)

Course Contents :

Ability to sing Drut khayal on the ragas as mentioned below : Yaman, Bhairav, Ashabari, Bhairavi, Jounpuri

Or

DSE-4 : Project Work **Credits 06**

Skill Enhancement Course (SEC)

SEC-1 : Practical Demonstration of Khayal (Practical) **Credits 02**

SEC1P : Practical Demonstration of Khayal (Practical)

Course Contents :

- Practical Demonstration Test of 10 minutes duration in one Raga each from khayal mentioned below : Todi, Behag, Kedar, Malkous, Marwa

Or

SEC -1 : Knowledge of Tala(Theoretical) **Credits 02**

SEC1T : Knowledge of Tala

Course Contents :

- Detailed theoretical knowledge of Tala with the ability to recite the thekas in Barabar-Laya, Dwigun-Laya,Chaugun-Laya & identification of Tala as mentioned below:
- Jhaptal, Choutal, Dhamar, Kaharwa, Jhumra, Trital, dadra, ektal, teora

Or

SEC-1 : Sight Singing (Practical) **Credits 02**

SEC1P : Sight Singing (Practical)

Course Contents :

- Sight singing - Notation reading(Hindustani & Akarmatrik)

SEC – 2 : Stage Performance of Song-I (Practical) **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

SEC2P : Stage Performance of Song-I (Practical)

Course Contents:

- Stage performance of Rabindra Sangeet, Nazrulgiti, Bangla Gaan

Or

SEC – 2: Stage Performance of Song-II (Practical) **Credits 02**

SEC2P : Stage Performance of Song-II (Practical)

Course Contents:

- Stage performance of Drut Khayal & Bhajan as mentioned below : Brindabani sarang, Yaman, Ashabari, Khamaj, Bhairavi
- Bhajan : Meera Bai, Kabir, Tulsidas

Generic Elective (GE)

[Interdisciplinary for other Department]

GE- 1: Elementary Knowledge of Music **Credit 06**

GE1T: Elementary Knowledge of Music

Course Contents:

1. Brief knowledge of the following terms:
   Sangit , Nada, Sruti, Swara (suddha, komal, tibra, chal, Achal), Saptak, Astak, Varna, Alankar, Murchhanna, Alap, Tan, Badi,Sombadi, Vivdi, Anubadi, Arohan, Abhorahan, Pakad, jati;
2. Knowledge of the Ten Thata System of V.N Bhatkhand
3. Knowledge of the Mela System of Venkatmakhi.
4. Thata and its characteristics
5. Raga and its characteristics.
6. Biography with musical contribution in the following:
   Amir Khasru, Tansen, Rabindranath Tagore, Najrul Islam, Atul Prasad Sen, Dwijendralal Roy, Rajanikanta Sen.
7. Definition of Tal, Matra, Laya.
8. Knowledge of the following:
   Som, Khali, Tali, Bibhag, Sampadi, Bisampadi, Tal Jati, Laykari, Tihai, Abartan.

Suggested Readings:

- V.N Bhatkhande , Sangeet Shastra (Part I – II)
- Indrani Chakraborty , Sangeet Manjusha .
- Indubhusan Roy , Sangeet Shastra (Part I – II – III)
- Nilratan Bandopadhyay, Sangeet Parichiti (Part I – II)
- Debobrata Dutta , Sangeet Tattya
- Basant, Sangeet Visharad.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

OR

GE- 1: History of Indian Music **Credits 06**

GE1T: History of Indian Music

Course Contents:

1) Music during the Indus Valley Civilization.
2) Music in the Vedic Period.
3) Development of Dhrupad.
4) Development of Khyal.
5) Theoretical knowledge of Akar Matric Swaralipi System.
6) Theoretical knowledge of Hindusthani Notation System.
7) Theoretical knowledge of the following Ragas. *Bhairab , Bilabal, Yaman, Bhupali, Asabari, Khambaj, kafi, Bhairabi.*
8) Theoretical knowledge of Trital, Ektal, Choutal, Dadra, and Kharba. Ability to write the thakas of the above Talas in Barabar ,Dwigun and Chowgun Laya.

Suggested Readings :

- V.N Bhatkhande , Kramik Pustakmalika (Part I to VI)
- Rabindranath Tagore , Gitabitan (Akhanda & Part I to III) Visva-Bharati Prakashana
- Atul Prashad Sen, Kakali (Part I to VI)
- Nazrul Islam, Nazrul Geeti Swaralipi
- V.N Bhatkhande, Sangeet Shastra – (Part I – II)
- Indrani Chakraborty, Sangeet Manjusha .
- Indubhusan Roy, Sangeet Shastra (Part I – II – III)
- Nilratan Bandopadhyay, Sangeet Parichiti (Part I – II)
- Debobrata Dutta, Sangeet Tattya
- Basant,Sangeet Visharad.
- Manik Lal Majumdar, Taal – Tattwa .

GE - 2: Aspects of Thata, Mela, Raga & Tala (Theoretical) **Credits 06**

GE2T: Aspects of Thata, Mela, Raga & Tala

Course Contents:

Aspects of Thata, Mela & Raga:

a) Knowledge of the Ten Thata system of V.N. Bhatkhande

b) Definition of raga & a brief knowledge of the following:
   I. Difference between thata & raga
   II. Raga vargikaran & definition of suddha, chhayalog, sankirna, sandhiprakash raga, paramel prabesak raga
   III. Theoretical knowledge of Akarmatrik Swaralipi & Hindustani Swaralipi Paddhati
   IV. Time theory of raga

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

Aspects of Tala:

1. Theoretical knowledge of Trital, Ektal (Dwimatric & Trimatric), Chautal, Surphaktala & ability to write the thekas of the above Talas in Barabar, Dwigun & Chaugun Laya

2. Definition of Tala, Matra & Laya
   - Swara : knowledge of suddha & vikrit swaras, achal swara, ardhodarshak swara
   - Brief knowledge of sruti & swarasthana (both ancient & modern)
   - Ten Principal Features (Dasaprana) of Tala

GE-3: Theoretical knowledge of music (including advanced theory of Rabindranath)

Credits 06

GE3T: Theoretical knowledge of music (including advanced theory of Rabindranath)

a. Advanced theoretical knowledge of Rabindrasangeet – Study of Tagore's sangeet chinta,
b. Experiments with various forms of music – Deshi, bideshi.
c. Rabindrasangeet Talas, Geetinatya,Nrityanatya, Parjay, etc.- Rabindra Sangeet
d. Applied theory of Rabindra Sangeet : This part would deal with the study of :
   1. Tagore Experiments with Talas
   2. Different parjayas of Rabindra Sangeet
   3. Tagore's Experiments various forms of music (Bhanga Gaan)
   4. Tagore's Giti Natyas & Nritya Natyas
e. Description & history of Tanpura, Tabla- Banya & Pakhowaj
f. Detailed knowledge of Regional Folk Songs of West Bengal
g. Brief knowledge about : Kabi Gaan, Panchali Gaan, Akhrai, Jatra, Nataker Gaan.
h. Detailed knowledge of Kirtan

GE - 4: Practical Songs of Panchakobi except Rabindranath(Practical)

Credits 06

GE4P: Practical Songs of Panchakobi except Rabindranath

a. **<u>Any two songs from each composer</u>**
Dwijendrageeti, Rajanikanter Gann, Atulprosadi & Nazrulgeeti

b. <u>Ability to sing six Nazrul Giti as mentioned below</u> :
   1) Nishi nijhuma ghumo nahi ase
   2) Musaphir mochhre ankhi jal
   3) Aruno kanti ke go jogi
   4) Chaitali chandni rate
   5) Bulbuli nirab nargis bone
   6) Kalo meyer payer talay

Or

GE - 4: Knowledge of Rabindra sangeet (Practical) **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

GE4P: Knowledge of Rabindra sangeet (Practical)

A. Ability to sing sixe Rabindra sangeet
    1) Amaro Parano Jaha Chai
    2) Nibiro Ghano Andhare
    3) Darie Acho Tumi Amr
    4) Na chahile jare paoa jai
    5) Darao amr ankhir aga
    6) Hridayer ekul okul
B. Composition inspired by Provincial songs, Western Songs, Folk tune.
C. Compositions of Rabindra srista Talas
D. Songs of other lyricists but tune by Tagore.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Music_Hons.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (General)
in

MUSIC

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

VIDYASAGAR UNIVERSITY

BA (General) in Music

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Theory of Indian Music	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-1 (Core)		English-I	6	5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
		Semester - I : Total			**20**				**275**
	II	SEMESTER-II							
		Core-3 (DSC-1B)		History of Indian music –I	6	5-1-0	15	60	75
		Core-4 (DSC-2B)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-2 (Core)		MIL- I	6	5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
		Semester - 2 : Total			**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-5 (DSC-1C)		Practical knowledge of Rabindra Sangeet (Practical)	6	0-0-12	15	60	75
		Core-6 (DSC-2C)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-3 (Core)		English-II	6	5-1-0	15	60	75
		SEC-1		SEC-1: Knowledge of Tala	2	1-1-0	10	40	50
		Semester - 3 : Total			**20**				**275**
	IV	SEMESTER-IV							
		Core-7 (DSC-1D)		History of Indian Music -II	6	5-1-0	15	60	75
		Core-8 (DSC-2D)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-4 (Core)		MIL - II	6	5-1-0	15	60	75
		SEC-2		SEC-2: Practical performance of Khayal (Practical)	2	0-0-2	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Any one from Discipline -1(Music)	6		15	60	75
		DSE-2A		Other Discipline(any one from Discipline -2) / TBD	6		15	60	75
		GE-1		TBD	6		15	60	75
		SEC-3		SEC-3 : Stage performance of Song-I(Practical)	2	0-0-2	10	40	50
		Semester - 5 : Total			**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Any one from Discipline -1(Music)	6		15	60	75
		DSE-2B		Other Discipline (any one from Discipline -2) / TBD	6		15	60	75
		GE-2		TBD	6		15	60	75
		SEC-4		SEC-4 : Sight Singing (Practical) **Or** Stage performance of Song-II (Practical)	2	0-0-2	10	40	50
		Semester - 6 : Total			**20**				**275**
	Total in all semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

List of the Core courses & Electives
Core Course (CC)

DSC-1A: Theory of Indian Music
DSC-1B: History of Indian music –I
DSC-1C: Practical knowledge of different Prayas of Rabindra Sangeet & Nazrul geeti
DSC-1D: History of Indian Music -II

Discipline Specific Electives (DSE)

DSE-1: Elementary Knowledge of Music
Or
DSE-1: Practical knowledge of Bhajan, Bangla Gaan & Puratani Gan (Practical)
Or
DSE-1 : Acoustics
DSE-2: Concept of music in Tagore literature
Or
DSE-2 : Karnatak Music
Or
DSE-2 : General Aesthetics
Or
DSE-2 : Practical knowledge of Raga(Practical)

Skill Enhancement Course (SEC)

SEC-1: Knowledge of Tala
SEC-2: Practical performance of Khayal (Practical)
SEC-3 : Stage performance of Song-I(Practical)
SEC-4 : Sight Singing (Practical)
Or
SEC- 4 : Stage performance of Song-II (Practical)

Generic Electives (GE)
[Interdisciplinary for other Department]

GE-1: History of Indian Music-I (Bengali Song/ Bangla Gaan)
Or
GE-1: Elementary Knowledge of Music
Or
GE-1: Aspects of Thata, Mela, Raga & Tala
GE- 2: History of Indian Music-II
Or
GE - 2 : Practical knowledge of songs of Rabindranath, D L Roy, Rajanikanta Sen, Atulprasad Sen & Nazrul Islam (Practical)
Or
GE- 2: Theoretical knowledge of music (including advanced theory of Rabindranath)
Or

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

GE 2 : Applied theory of Rabindra sangeet

Core Courses (CC)

DSC-1A(CC-1): Theory of Indian Music **Credit-6**

DSC1AT: Theory of Indian Music

Course Contents:

Aspects of Dwani & Swara :

a) Nada & its basic characteristics
b) Swara : knowledge of suddha & vikrit swaras, achal swara, ardhodarshak swara
c) Brief knowledge of sruti & swarasthana (both ancient & modern)
d) Brief knowledge of the following musical terms : Saptak, Murchhana, Tana, Alankar, Varna & Tuk
e) Theoretical knowledge of Akarmatrik Swaralipi & Hindustani Swaralipi paddhati

Aspects of Thata, Mela & Raga :

a) Knowledge of the ten Thata & system of V.N. Bhatkhande
b) Definition of raga & a brief knowledge of the following :
    1. Difference between thata & raga
    2. Raga vargikaran & definition of suddha, chhayalog, sankirna, sandhiprakash raga, paramel prabesak raga
    3. Raga jati
    4. Time theory of raga
    5. Theoretical knowledge of raga prescribed in the syllabus

Aspects of Tala

1. Theoretical knowledge of Trital, Ektal(Dwimatric & Trimatric), Chautal, Surphaktala & ability to write the thekas of the above Talas in Barabar, Dwigun & Chaugun Laya
2. Detailed theoretical knowledge of Rabindra sristaTala & ability to show the Thekas in Barabar-Laya, Dwigun-Laya, Chaugun-Laya
3. Definition of Tala, Matra & Laya.
4. Ten Principal Features (Dasaprana) of Tala

DSC-1B(CC-2) :History of Indian music –I **Credits 06**

DSC1BT :History of Indian music –I

Course Contents:

Ancient period:

1. Music in Vedic period
2. Development of Deshi Sangeet as can be traced from Matanga's Brihaddeshi
3. Development of Gandharva Sangeet as can be traced from Bharats Natyashastra

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

4. Knowledge of the music as available in the Epics, Buddhists literature & the Sanskrit Drammas
5. Study of the following texts with reference to musical aspects: Naradiya Sikhsa of Muni Narad, Dattilam of Dattila
6. Music during the Indus Vally Civilization

Medieval Period:

1. Music in the Sultenata Period
2. Music in the Mughal Period
3. Development of Dhrupad
4. Development of khayal
5. Development of kirtan in Bengal
6. Development of the following musical styles: Mangalgiti, Panchali, Shaktagiti
7. Life sketch of the following Musicians: Amir khusro, Tansen, Raja Manshing Tomar, Swami Haridas, V.N. Bhatkhande, Sadarang, Adarang, V.D. Paluskar, Ramnidhi Gupta
8. Brief study of the following texts: Sangeet Ratnakar of Sarandev, Chaturdandi Prakashika of Venkatmokhi, Ragtarangini of Kabi Lochan, Sangeet Parijat of Pt. Ahobal

DSC-1C(CC-3) : Practical knowledge of different Parjayas of Rabindra Sangeet & Nazrul geeti

Credits 06

DSC1CP: Practical knowledge of different Parjayas of Rabindra Sangeet & Nazrul geeti

Course Contents:

Ability to sing six Rabindra Sangeet of different Parjayas :

1. Amaro Parano Jaha Chai
2. Nibiro Ghano Andhare
3. Darie Acho Tumi Amr
4. Na chahile jare paoa jai
5. Darao amr ankhir aga
6. Hridayer ekul okul

Ability to sing six Nazrul Giti as mentioned below :

1. Nishi nijhuma ghumo nahi ase
2. Musaphir mochhre ankhi jal
3. Aruno kanti ke go jogi
4. Chaitali chandni rate
5. Bulbuli nirab nargis bone
6. Kalo meyer payer talay

DSC-1D(CC-4) : History of Indian Music -II **Credits 06**

DSC-1DT : History of Indian Music -II

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

Course Contents:

1. Development of the following Gharanas in Hindustani Music & their characteristics: Visnupur, Jaypur, kirana, Patiala, Gwalior, Agra, Beneras, Senia
2. Evaluation of Notetion Systems with particular references to Dandamatric, Akarmatric, Bhatkhande
3. Knowledge of the following styles of music : kabi-gaan, akhrai, dhap-kirtan, panchali, jatra, brhama sangeet, bangle tappa
4. Contribution of the following persons in the field of Indian Music & Musicology : Khetramohan Goswami, Sourindra Mohan Tagor, Krishnadhan Bandopadhya, Dasharathi Ray
5. Brief History of Growth of different important Centers of Classical Music with special Reference to Kolkata

Discipline Specific Electives (DSE)

DSE -1 : Elementary Knowledge of Music **Credits 06**

DSE1T : Elementary Knowledge of Music

Course Contents:

1. *Brief knowledge of the following terms:* Sangit , Nada, Sruti, Swara(suddha, komal, tibra, chal, Achal), Saptak, Astak, Varna, Alankar, Murchhanna, Alap, Tan, Badi, Sombadi, Vivdi, Anubadi, Arohan, Abhorahan, Pakad, jati;
2. Knowledge of the Ten Thata System of V.N Bhatkhand
3. Knowledge of the Mela System of Venkatmakhi.
4. Thata and its characteristics
5. Raga and its characteristics.
6. *Biography with musical contribution in the following:* Amir Khasru, Tansen, Rabindranath Tagore, Najrul Islam, Atul Prasad Sen, Dwijendralal Roy, Rajanikanta Sen.
7. Defination of Tal, Matra, Laya .
8. *Knowledge of the following:* Som, Khali, Tali, Bibhag, Sampadi, Bisampadi, Tal Jati, Laykari, Tihai, Abartan.

Suggested Readings :

- V.N Bhatkhande – Sangeet Shastra – (Part I – II)
- Dr. Indrani Chakraborty – Sangeet Manjusha .
- Indubhusan Roy – Sangeet Shastra (Part I – II – III)
- Nilratan Bandopadhyay – Sangeet Parichiti (Part I – II)
- Debobrata Dutta - Sangeet Tattya
- Basant – Sangeet Visharad.

Or

DSE-1: Practical knowledge of Bhajan, Bangla Gaan & Puratani Gan (Practical)
Credits 06

DSE1P: Practical knowledge of Bhajan, Bangla Gaan & Puratani Gan (Practical)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

Course Contents:

Ability to sing Bhajan : Meera Bai, Surdas, Kabir
Ability to sing the following songs : D.L.Roy, Atulprasadi, Rajanikanta
Puratani,agamoni, bijaya, jatra gaan,ramprasadi
Baul, kirtan, Jhumur

Or

DSE – 1 : Acoustics **Credits 06**

DSE1T : Acoustics

Course Contents:

1. Musical Acoustics - its scope and concerning areas.
2. Nature of Sound Wave - Transverse and Longitudinal Wave; Definition of Sound.
3. Simple harmonic Motion.
4. Characteristics of Musical Sound - Pitch, Intensity, timbre and duration.
5. Human Vocal organ - its structure and funciton; voice Reg ister and Composs.
6. Human Ear - its Structure and function.
7. Auditory perception theories.
8. Musicality, Musical ability, Musical Talent.
9. Analysis of Musical Gift.
10. Theories of Creativity.

DSE-2 : Concept of music in Tagore literature **Credits 06**

DSE2T: Concept of music in Tagore literature

Course Contents:

Study the following

1. “Komal Gandhar” : Punascha;
2. “Panchishe Baishakh Choleche” : Seshsaptak (43)
3. “Amar Kachhe shunte Cheyecho Ganer Katha” : Seshsaptak (17)
4. Ora Antyaja Ora Mantrabarjita : Patraput (15)
5. Ganer Basa : Punascha;
6. Sangit O Bhab : Sangit Chinta
7. Gan Sambandhe Probandha : Jiban Smriti/Sangit Chinta
8. Sangiter Mukti : Sangit Chitna
9. Shona : Santiniketan
10. Siksha O Sanskritite Sangiter Sthan : Sangit Chinta

Or

DSE – 2 : Karnatak Music **Credits 06**

DSE2T: Karnatak Music

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

Course Contents:

Katnatak Music

1. Knowledge of Karnatak Swaras and their comparison with the North Indian Swaras;
2. Karnatak Melodic Concepts;
3. Karnatak Concepts of Tala with reference to the System of Tala-Subdivisions. Tala-jatis and Brief knowledge of the following Talas: Dhruva, Natya, Rupaka, Triputa, Jhampa, Ata and Eka;
4. Knowledge of the following:
   Katapayadi, Varnam, Kriti, Rangam-Tanam-Pallavi, Tillana and Javali;
5. Muscial Contributions of Purandava Das, Tyagaraja, Shyama Sastri and Muttuswami Dixitar;
6. Brief knowledge of the following musical instruments of Karnataka Music; Karnatak Vina, Vichitra Vina, Mridanga, Ghatam and Nagas waram

Or

DSE-2 : General Aesthetics **Credits 06**

DSE2T : General Aesthetics

Course Contents:

General Aesthetics:

1. Imitation theory as advanced by Plato & Aristotle.
2. Theory of Emotion.
3. Croces's theory of expression.
4. Role of imagination and Fancy Art Creation.
5. Realism in Art.
6. Definition of Art.
7. Concept of Art.
8. Movements of 'Art for Arts Sake' vs. Art. with a purpose.
9. Aesthetic ideas of Tagore with reference to beauty & truth
10. Aesthetic ideas of Abanindra Nath with reference to 'Lilabada'.

Or

DSE-2 : Practical knowledge of Raga(Practical) **Credits 06**

DSE2P : Practical knowledge of Raga(Practical)

Course Contents:

Ability to sing Drut khayal as mentioned below : Yaman, Bhairav, Ashabari, Bhairavi, Jounpuri

Skill Enhancement Course (SEC)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

SEC -1: Knowledge of Tala **Credits 02**

SEC1T: Knowledge of Tala

Course Contents:

Detailed theoretical knowledge of Tala with the ability to recite the thekas in Barabar-Laya,Dwigun-Laya,Chaugun-Laya & identification of Tala as mentioned below:
Jhaptal, Choutal, Dhamar, Kaharwa, Jhumra, Trital, dadra, ektal, teora

SEC-2: Practical performance of Khayal (Practical) **Credits 02**

SEC2P: Practical performance of Khayal (Practical)

Course Contents:

Practical Demonstration Test of Khayal 10 minutes duration in one Raga each from ragas mentioned below:
Todi, Behag, Kedar, Malkous, Marwa

SEC-3 : Stage performance of Song-I(Practical) **Credits 02**

SEC3P : Stage performance of Song-I(Practical)

Course Contents:

Stage demonstration of Rabindra Sangeet,Nazrulgiti,Bangla Gaan including songs of Atulprosad, D.L.Roy, Rajanikanta Sen,

SEC-4 : Sight Singing (Practical) **Credits 02**

SEC4P : Sight Singing (Practical)

Course Contents:

Sight singing - Notation reading (Hindustani & Akarmatrik).

Or

SEC – 4 : Stage performance of Song-II (Practical) **Credits 02**

SEC4P : Stage performance of Song-II (Practical)

Course Contents:
Stage performance of Drut Khayal & Bhajan from ragas mentioned below : Brindabani sarang, Yaman, Ashabari, Khamaj, Bhairavi
Bhajan : Meera Bai, Kabir, Tulsidas

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

Generic Electives (GE)
[Interdisciplinary for other Department]

GE-1: History of Indian Music-I (Bengali Song/ Bangla Gaan) Credits 06

GE1T: History of Indian Music-I (Bengali Song/ Bangla Gaan)

Course Contents:

1. Study of Regional folk songs
2. Detailed knowledge of Kirtan
3. Contribution of the following composers:
    a. Atulprasad
    b. D.L.Roy
    c. Kazi Nazrul
    d. Rabindranath & other members of Thakur bari
    e. Rajanikanta

Or

GE- 1: Elementary Knowledge of Music Credit 06

GE1T: Elementary Knowledge of Music

Course Contents:

1. Brief knowledge of the following terms:
   Sangit , Nada, Sruti, Swara (suddha, komal, tibra, chal, Achal), Saptak, Astak, Varna, Alankar, Murchhanna, Alap, Tan, Badi,Sombadi, Vivdi, Anubadi, Arohan, Abhorahan, Pakad, jati;
2. Knowledge of the Ten Thata System of V.N Bhatkhand
3. Knowledge of the Mela System of Venkatmakhi.
4. Thata and its characteristic
5. Raga and its characteristics.
6. Biography with musical contribution in the following:
   Amir Khasru, Tansen, Rabindranath Tagore, Najrul Islam, Atul Prasad Sen, Dwijendralal Roy, Rajanikanta Sen.
   Definition of Tal, Matra, Laya.
   Knowledge of the following:
   Som, Khali, Tali, Bibhag, Sampadi, Bisampadi, Tal Jati, Laykari, Tihai, Abartan.

Suggested Readings:

- V.N Bhatkhande , Sangeet Shastra (Part I – II)
- Indrani Chakraborty , Sangeet Manjusha .
- Indubhusan Roy , Sangeet Shastra (Part I – II – III)
- Nilratan Bandopadhyay, Sangeet Parichiti (Part I – II)
- Debobrata Dutta , Sangeet Tattya
- Basant, Sangeet Visharad.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

Or

GE - 1: Aspects of Thata, Mela, Raga & Tala **Credits 06**

GE1T: Aspects of Thata, Mela, Raga & Tala

Course Contents:

Aspects of Thata, Mela & Raga:

a) Knowledge of the Ten Thata system of V.N. Bhatkhande

b) Definition of raga & a brief knowledge of the following:

1. Difference between thata & raga
2. Raga vargikaran & definition of suddha, chhayalog, sankirna, sandhiprakash raga, paramel prabesak raga
3. Theoretical knowledge of Akarmatrik Swaralipi & Hindustani Swaralipi Paddhati
4. Time theory of raga

Aspects of Tala:

1. Theoretical knowledge of Trital, Ektal(Dwimatric & Trimatric), Chautal, Surphaktala & ability to write the thekas of the above Talas in Barabar, Dwigun & Chaugun Laya
2. Definition of Tala, Matra & Laya
   - Swara : knowledge of suddha & vikrit swaras, achal swara, ardhodarshak swara
   - Brief knowledge of sruti & swarasthana (both ancient & modern)
   - Ten Principal Features (Dasaprana) of Tala

GE- 2: History of Indian Music-II **Credits 06**

GE2T: History of Indian Music-II

Course Contents:

1) Music during the Indus Valley Civilization.
2) Music in the Vedic Period.
3) Development of Dhrupad.
4) Development of Khyal.
5) Theoretical knowledge of Akar Matric Swaralipi System.
6) Theoretical knowledge of Hindusthani Notation System.
7) Theoretical knowledge of the following Ragas. *Bhairab , Bilabal, Yaman, Bhupali, Asabari, Khambaj, kafi, Bhairabi.*
8) Theoretical knowledge of Trital, Ektal, Choutal, Dadra, and Kharba. Ability to write the thakas of the above Talas in Barabar ,Dwigun and Chowgun Laya.

Suggested Readings :

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

- V.N Bhatkhande , Kramik Pustakmalika (Part I to VI)
- Rabindranath Tagore , Gitabitan (Akhanda & Part I to III) Visva-Bharati Prakashana
- Atul Prashad Sen, Kakali (Part I to VI)
- Nazrul Islam, Nazrul Geeti Swaralipi
- V.N Bhatkhande, Sangeet Shastra – (Part I – II)
- Indrani Chakraborty, Sangeet Manjusha .
- Indubhusan Roy, Sangeet Shastra (Part I – II – III)
- Nilratan Bandopadhyay, Sangeet Parichiti (Part I – II)
- Debobrata Dutta, Sangeet Tattya
- Basant,Sangeet Visharad.
- Manik Lal Majumdar, Taal – Tattwa .

Or

GE - 2 : Practical knowledge of songs of Rabindranath, D L Roy, Rajanikanta Sen, Atulprasad Sen & Nazrul Islam (Practical) Credits 06

GE2P : Practical knowledge of songs of Rabindranath, D L Roy, Rajanikanta Sen, Atulprasad Sen & Nazrul Islam (Practical)

Course Contents:

Any two songs from each composer
(List of the songs is to be decided)

Ability to sing six Rabindra Sangeet :

1) Amaro Parano Jaha Chai
2) Nibiro Ghano Andhare
3) Darie Acho Tumi Amr
4) Na chahile jare paoa jai
5) Darao amr ankhir aga
6) Hridayer ekul okul

Ability to sing six Nazrul Giti as mentioned below:

1. Nishi nijhuma ghumo nahi ase
2. Musaphir mochhre ankhi jal
3. Aruno kanti ke go jogi
4. Chaitali chandni rate
5. Bulbuli nirab nargis bone
6. Kalo meyer payer talay

Or

GE - 2: Theoretical knowledge of music (including advanced theory of Rabindranath) Credits 06

GE2T: Theoretical knowledge of music (including advanced theory of Rabindranath)

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

a. Advanced theoretical knowledge of Rabindrasangeet – Study of Tagore's sangeet chinta,

b. Experiments with various forms of music – Deshi, bideshi.

c. Rabindrasangeet Talas, Geetinatya,Nrityanatya, Parjay, etc.- Rabindra Sangeet

d. Applied theory of Rabindra Sangeet : This part would deal with the study of :
   1. Tagore Experiments with Talas
   2. Different prayer's of Rabindra Sangeet
   3. Tagore's Experiments with various forms of music (Bhanga Gaan)
   4. Tagore's Giti Natyas & Nritya Natyas

e. Description & history of Tanpura, Tabla- Banya & Pakhowaj
f. Detailed knowledge of Regional Folk Songs of West Bengal
g. Brief knowledge about : Kabi Gaan, Panchali Gaan, Akhrai, Jatra,
h. Detailed knowledge of Kirtan

Or

GE 2 : Applied theory of Rabindra sangeet **Credits 06**

GE2T : Applied theory of Rabindra sangeet

Course Contents:
This part would deal with the study of :

1. Tagore Experiments with Talas
2. Different parjayas of Rabindra Sangeet
3. Tagore's Experiments various forms of music (Bhanga Gaan)
4. Tagore's Giti Natyas & Nritya Natyas

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:18:44; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Music_general.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year BSc (HONOURS)
in
Economics

Under Choice Based Credit System (CBCS)
w.e.f 2017-2018

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

VIDYASAGAR UNIVERSITY

B Sc (Honours) in Economics

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: Introductory Microeconomics	6	5-1-0	15	60	75
		Core-2		CT2: Mathematical Methods in Economics -I	6	5-1-0	15	60	75
		GE-1		TBD	6	4/5	15	60	75
						2/1			
		AECC-1		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: Introductory Macroeconomics	6	5-1-0	15	60	75
		Core-4		CT4: Mathematical Methods in Economics - II	6	5-1-0	15	60	75
		GE-2		TBD	6	4/5	15	60	75
						2/1			
		AECC-2		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		CT5: Intermediate Microeconomics - I	6	5-1-0	15	60	75
		Core-6		CT6: Intermediate Macroeconomics - I	6	5-1-0	15	60	75
		Core-7		CT7: Statistical Methods for Economics	6	5-1-0	15	60	75
		GE-3		TBD	6	4/5	15	60	75
						2/1			
		SEC-1		SEC-1: Data Analysis **Or** SEC-1: Contemporary Economic Issues	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		CT8: Intermediate Microeconomics - II	6	5-1-0	15	60	75
		Core-9		CT9: Intermediate Macroeconomics - II	6	5-1-0	15	60	75
		Core-10		CT10: Introductory Econometrics	6	5-1-0	15	60	75
		GE-4		TBD	6	4/5	15	60	75
						2/1			
		SEC-2		SEC-2: Financial Economics Or SEC-2: Research Methodology	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		CT11: International economics	6	5-1-0	15	60	75
		Core-12		CT12: Public Economics	6	5-1-0	15	60	75
		DSE-1		DSE-1: Economics of Health and Education **Or** DSE-1: Applied Econometrics **Or** DSE-1: Economic History of India (1857-1947)	6	5-1-0	15	60	75
		DSE-2		DSE-2: Political Economy – I **Or** DSE-2: Money and Financial Markets **Or** DSE-2: Financial Economics	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: Indian Economy	6	5-1-0	15	60	75
		Core-14		CT14: Development Economics	6	5-1-0	15	60	75
		DSE-3		DSE-3: Political Economy – II **Or** DSE-3: Environmental Economics **Or** DSE-3: Topics in Microeconomics – I	6	5-1-0	15	60	75
		DSE-4		DSE-4: Comparative Economic Development (1850-1950) **Or** DSE-4: Topics in Microeconomics – II **Or** DSE-4: Project Work	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

List of Core Course (CC)

CC-1: Introductory Microeconomics
CC-2: Mathematical Methods in Economics-I
CC-3: Introductory Macroeconomics
CC-4: Mathematical Methods in Economics-II
CC-5: Intermediate Microeconomics – I
CC-6: Intermediate Macroeconomics – I
CC-7: Statistical Methods for Economics
CC-8: Intermediate Microeconomics – II
CC-9: Intermediate Macroeconomics – II
CC-10: Introductory Econometrics
CC-11: International Economics
CC-12: Public Economics
CC-13: Indian Economy
CC-14: Development Economics

Discipline Specific Electives (DSE)

DSE-1: Economics of Health and Education
Or
DSE-1: Applied Econometrics
Or
DSE-1: Economic History of India (1857-1947)

DSE-2: Political Economy – I
Or
DSE-2: Money and Financial Markets
Or
DSE-2: Financial Economics

DSE-3: Political Economy – II
Or
DSE-3: Environmental Economics
Or
DSE-3: Topics in Microeconomics – I

DSE-4: Comparative Economic Development (1850-1950)
Or
DSE-4: Topics in Microeconomics – II
Or
DSE-4: Project Work

Skill Enhancement Course (SEC)

SEC-1: Data Analysis
Or
SEC-1: Contemporary Economic Issues

SEC-2: Financial Economics
Or
SEC-2: Research Methodology

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Generic Electives (GE)

GE- 1: Introductory Microeconomics

GE- 2: Introductory Macroeconomics

GE3: Environmental Economics
Or
GE3: Money and Banking

GE-4: Economic History of India (1857-1947)
Or
GE-4: Public Finance

Core Course

CC-1: Introductory Microeconomics **Credits 06**

C1T: Introductory Microeconomics

Exploring the subject matter of Economics
Why study economics? Nature, scope and method of economics; the economic themes: scarcity and efficiency; thinking like an economist: the question of what to produce, how to produce and how to distribute output; production possibility curve, positive and normative economics, marginal benefits and marginal costs; opportunity cost (private and social); the basic competitive model; prices, property rights, the role of property rights in markets and profits; incentives and information; rationing; opportunity sets; economic systems; reading and working with graphs.

Supply and Demand: How Markets Work, Markets and Welfare
Elementary theory of demand: determinants of household demand, market demand, and shifts in the market demand curve
Elementary theory of supply: factors influencing supply, derivation of the supply curve, and shifts in the supply curve
The elementary theory of market price: determination of equilibrium price in a competitive market; the effect of shifts in demand and supply; the excess demand function: Existence, uniqueness, and stability of equilibrium; consumer surplus, producer surplus and efficiency of competitive markets (graphical approach); the idea of market failure; Elasticities and their applications.
Government intervention and their impact on market equilibrium and efficiency-: controls on prices (Price ceilings and price floors); indirect taxation.

The Households
Theory of consumer behaviour – cardinal and ordinal utility approach; Indifference curve and its properties; The consumption decision - budget constraint, consumption and income and price changes, demand for all other goods and price changes; description of preferences- most preferred bundle and its properties; consumer‘s optimum choice; income and substitution effects; Marshallian and compensated demand curves; Price

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

consumption curve, income consumption curve, and Engel curve; Homothetic tastes; labour supply and savings decision - choice between leisure and consumption.

The Firm and Perfect Market Structure

Defining a firm- firm's legal forms; profit maximization hypothesis; Contractual theories and organizational theories of firms (concepts only); Behaviour of profit maximizing firms and the production process; short run costs and output decisions; costs and output in the long run.

Imperfect Market Structure

Monopoly and anti-trust policy; measuring monopoly power; government policies towards competition; various types of imperfect competition.

Input Markets

Theory of rent-Ricardo, Marshall, and Modern theory of rent; Labour and land markets - basic concepts (derived demand, productivity of an input, marginal productivity of labour, marginal revenue product); demand for labour; input demand curves; shifts in input demand curves, competitive labour markets; labour market and public policy.

Reference Books

- Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007.
- N. Gregory Mankiw, Economics: Principles and Applications, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.
- Joseph E. Stiglitz and Carl E. Walsh, Economics, W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.
- Samuelson and Nordhaus, Economics, Mc GrawHill
- S. P. S. Chauhan, Microeconomics: An Advanced Treatise, PHI Learning Private Ltd., New Delhi, 2009.
- Varian, H. R. *Intermediate Microeconomics; a modern approach*, Affiliated East West Press.1993.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-2: Mathematical Methods in Economics-I **Credits 06**

C2T: Mathematical Methods in Economics-I

Preliminaries

Logic and proof techniques; sets and set operations; relations; functions and their properties; number systems. Convex sets; geometric properties of functions: convex functions, their characterizations, properties and applications; further geometric properties of functions: quasi-convex functions, their characterizations, properties and applications; limit and continuity.

Functions of one real variable

Continuous functions of different types and their graphs- quadratic, polynomial, power, exponential, and logarithmic; Derivatives of first and second order and their properties; convex, concave and linear function. Application in economics- concept of marginal.

Single variable optimization

Local and global optima; Geometric characterizations; characterizations using calculus; Applications in Economics- profit maximization and cost minimization.

Integration of functions

Integration of different types of functions; Methods of Substitution and by parts; Applications in economics- obtaining total from the marginal.

Difference Equations

Finite difference; Equations of first and 2^{nd} orders and their solutions; Application in Economics- Cobweb model.

Elementary Probability Theory

Sample space and events; Probability axioms and properties; counting techniques; conditional probability; Bayes' rule and independence of events; Random variable and probability distributions- Discrete and continuous. Expectation of a random variable.

Reference Books

- K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Educational Asia: Delhi, 2002.
- A. Mukherji and S. Guha: Mathematical Methods and Economic Theory, Oxford University Press, 2011
- Apostol T.M. Calculus, Volume 1, One-variable calculus, with an introduction to linear algebra, (1967) Wiley, ISBN 0-536-00005-0, ISBN 978-0-471-00005-1
- K. G. Binmore, Mathematical analysis, Cambridge University Press, 1991.
- R.V. Hogg and A.T. Craig , An Introduction to Mathematical Statistics, Third Edition, Amerind, New York, London
- Kenny and Keeping, Mathematics of Statistics, Van Nostrand.
- Alpha C. Chiang and Kevin Wainwright, Fundamental Methods of Mathematical Economics, McGraw Hill Education, Fourth Edition, 2013
- Gun, A.M., Gupta, M. K., & Dasgupta, B. *Fundamental of Statistics*, Vol.1. World Press Private.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-3: Introductory Macroeconomics **Credits 06**

C3 T : Introductory Macroeconomics

National income accounting, unemployment, and open economy issues
Macroeconomic data- National Income accounting and cost of living; Concept of Growth- role of savings, investment, and financial intermediation; Open Economy- Balance of Payments, exchange rates, and capital flow; Concept of unemployment- Types and their characteristics; Growth accounting and Solow residual.

Money and Inflation
Monetary system- definitions of money and determinants of money supply – money multiplier and central bank's role in controlling money supply; quantity theory of money; inflation and its costs.

The Closed Economy in the Short Run
Theory of aggregate demand- components and their interrelations - crowing out- Factors causing shift in the function; Theory of aggregate supply- determinants of supply and shift factors; Interaction of aggregate demand and supply.

Reference Books

- Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
- N. Gregory Mankiw. Principles of Macroeconomics, Indian Imprint of South Western by Cengage India, 6th edition, 2015.
- Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
- Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011.
- J. R. Hicks. The Social Framework: An Introduction to Economics, Clarendon Press, 3rd edition, 1960
- Sikdar, Soumyen, Principles of Macroeconomics, Oxford University Press

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-4 : Mathematical Methods in Economics-II **Credits 06**

C4 T : Mathematical Methods in Economics-II

Matrix Algebra

Matrix: its elementary operations; different types of matrix; Rank of a matrix; Determinants and inverse of a square matrix; solution of system of linear equations; Eigen values and Eigen vectors. System of nonlinear equations- Jacobian determinant and existence of solution.

Function of several variables

Continuous and differentiable functions: partial derivatives and Hessian matrix. Homogeneous and homothetic functions. Euler's theorem, implicit function theorem and its application to comparative statics problems. Economic applications- theories of consumer behaviour and theory of production.

Multi-variable optimization

Optimization of nonlinear functions: Convex, concave, and quasi-concave functions; Unconstrained optimization; Constrained optimization with equality constraints- Lagrangian multiplier method; role of Hessian determinant; Inequality constraints and Kuhn-Tucker Conditions; Value function and Envelope theorem; Economic applications – consumer behaviour and theory of production.

Optimization of linear function: Linear programming; concept of slack and surplus variables (graphical solution only) concept of convex set.

Differential Equations

Solution of Differential equations of first order and second order; Economic application- price dynamics in a single market- multimarket supply demand model with two independent markets. Qualitative graphic solution to 2x2 linear simultaneous differential equation system- phase diagram, fixed point and stability.

Reference Books

- K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Educational Asia: Delhi, 2002.
- Lawrence Blume and Carl Simon. Mathematics for Economists, W. W. Norton andCompany, 1994.
- Alpha Chiang and Kevin Wainwright, Fundamental Methods of Mathematical Economics, Fourth Edition, McGraw-Hill, 2005.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-5: Intermediate Microeconomics – I **Credits 06**

C5T: Intermediate Microeconomics – I

Consumer Theory

Cardinal utility; Preference: ordering and properties of ordinal utility; existence of utility functions, different utility functions and their properties, compensating and equivalent variation, Slutsky equation; consumption-leisure choice and labour supply; choice under uncertainty (expected utility and risk aversion), inter- temporal choice and savings decision; revealed preference approach.

Production and Costs

Technology- general concept of production function; returns to factor and returns to scale, isoquants and diminishing rate of factor substitution – elasticity of substitution –some examples of technology (fixed proportion, perfect substitute, Cobb– Douglas Production Function, CES Production Function), General concept of homogenous and homothetic production function and their properties; production with one and more variable inputs; isocost line and firms equilibrium and expansion paths; short run and long run costs; cost curves in the short run and long run; relation between short run and long run costs.

Competitive Equilibrium

Short run and long run equilibrium; determination of the supply curve of the firm and the industry: with reference to external economies and diseconomies of scale.

Input market in perfect competition

Derived demand for input, marginal product and marginal revenue product, input demand for competitive firm and competitive industry, returns to scale and product exhaustion.

Suggested Readings:

- Hal R. Varian, Intermediate Microeconomics, a Modern Approach, W.W. Norton and Company/Affiliated East-West Press (India), 8th edition, 2010. The workbook by Varian and Bergstrom may be used for problems.
- C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India), 2010.
- B. Douglas Bernheim and Michael D. Whinston, Microeconomics, Tata McGraw-Hill (India), 2009.
- Hugh Gravelle and Ray Rees. Microeconomics, Prentice Hall (UK); 3rd edition, 2004.
- Anindya Sen , Microeconomics: Theory and Applications, Oxford University Press
- Pindyck, Rubinfeld and Mehta, Microeconomics, Pearson

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-6: Intermediate Macroeconomics – I **Credits 06**

C6T: Intermediate Macroeconomics – I

Income Determination in the short-run

Simple Keynesian System: Multipliers; equilibrium in both closed and open economy and stability; autonomous expenditure, balanced budget, and net exports; paradox of thrift.

IS-LM Model - equilibrium, stability and comparative statics; effects of fiscal and monetary policies, real balance effects; IS-LM in the open economy under fixed and flexible exchange rate with perfect and imperfect capital mobility (Mundell-Fleming model).

Aggregate Demand and Aggregate Supply

Derivation of aggregate demand assuming price flexibility; Derivation of aggregate supply curves both in the presence and absence of wage rigidity; equilibrium, stability, and comparative statics-effects of monetary and fiscal policies; Unemployment and its causes-possible solutions, including real balance effect and wage cut policy.

Inflation, Unemployment and Expectations

Inflation and unemployment trade-off- Short run and long- run Phillips curve under adaptive expectations-outcome under rational expectations (non-rigorous).

Suggested Readings:

- Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
- N. Gregory Mankiw. Macroeconomics, Worth Publishers, 7th edition, 2010.
- Steven M. Sheffrin, Rational Expectations, Cambridge University Press, 2nd edition, 1996.
- Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011.
- Richard T. Froyen, Macroeconomics, Pearson Education Asia, 10th edition, 2016.
- William Branson. Macroeconomic Theory and Policy, Indian reprint, East West Press, 3rd edition, 2014.
- Sikdar Soumyen, Principles of Macroeconomics, Oxford University Press
- Acharyya Rajat, International Economics, OUP
- Krugman and Obstfeld, International Economics, Pearson

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-7: Statistical Methods for Economics **Credits 06**

C7T: Statistical Methods for Economics

Descriptive Statistics
Presentation of Data; Frequency Distribution; Measures of central tendency, Dispersion, Moments, Skewness and Kurtosis; Bivariate Frequency Distribution- correlation and regression.

Univariate Probability Distribution
Discrete distribution-Binomial, Poisson; Continuous Distributions-Uniform, Normal, Exponential (Properties of each distribution; mean and variance).

Jointly Distributed Random Variables
Density function of Bivariate normal distribution and obtaining means, variances, and correlation coefficients.

Sampling
Concept of sampling and random sampling. Principal steps in a sample survey; methods of sampling;-SRSWR, SRSWOR, Stratified sampling. Sampling vs non-sampling error

Index Number
Price and quantity index number; Different formula; Tests for an ideal index application-Cost of living index; Real GDP

Estimation
Parameters and statistics; Point estimation-Properties of a good estimator; Maximum Likelihood Method and the method of moments; Estimation of population parameters using SRSWR and SRSWOR; Interval estimation.

Suggested Readings:

- Jay L. Devore, Probability and Statistics for Engineers, Cengage Learning, 2010.
- John E. Freund, Mathematical Statistics, Prentice Hall, 1992.
- Richard J. Larsen and Morris L. Marx, an Introduction to Mathematical Statistics and its applications, Prentice Hall, 2011.
- William G. Cochran, Sampling Techniques, John Wiley, 2007.R.V. Hogg . and A.T. Craig , An Introduction to Mathematical Statistics, Third Edition, Amerind, New York, London
- Mood, A.M., F.A.Greybill and D.C. Boes: Introduction to the theory of statistics, McGraw Hill, 1974

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-8: Intermediate Microeconomics – II **Credits 06**

C8T: Intermediate Microeconomics – II

General Equilibrium, Efficiency, and Welfare

a) Exchange Economy, Consumption Allocation and Pareto Optimality; Edgeworth box and contract curve; Equilibrium and efficiency under pure exchange.
b) Pareto efficiency with production: concepts of PPF, SIC, and resource allocation; Perfect competition, Pareto efficiency and market failure (externalities and public good); property right and Coase Theorem.

Market Structure and Game Theory

a) Monopoly; pricing with market power; degree of monopoly; price discrimination-different degrees; multiplant monopoly; peak-load pricing; two-part tariff; monopolistic competition.
b) Oligopoly and game theory (Cooperative and Non-cooperative static games; simultaneous move and sequential move games; non- cooperative games of perfect information; the Prisoner's dilemma, Nash equilibrium in pure and mixed strategies; Backward induction solutions and SPNE); Applications of game theory in oligopolistic markets (Cournot Equilibrium, Bertrand Equilibrium, StacklebergEquiibrium) ; concept of collusion and cartels; Solution by backward induction.

Input Market under Imperfect Competition

Monopsony, bilateral monopoly in labour market; Externalities; public goods and markets with asymmetric information.

Reference Books

- Hal Varian. Microeconomic Analysis, Third Edition, Selected chapters, W. W. Norton and Company, 2013.
- W.W. Norton and Company/Affiliated East-West Press (India), 2010.The workbook by Varian and Bergstrom could be used for problems.
- C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India), 2010
- Jean Tirole. Theory of Industrial Organization, MIT Press, 1988
- Robert Gibbons. A Primer in Game Theory, Princeton University Press, 1992.
- Erik Rasmusen. Games and Information: An Introduction to Game Theory, Basil Blackwell, 1999.
- K. Binmore. Fun and Games: A Text on Game Theory, OUP, 1991
- AnindyaSen, Microeconomics: Theory and Applications, OUP, 1999
- Pindyck and Rubinfeld, Microeconomics, Prentice Hall
- Mascollel and Green, Microeconomic Theory,OUP

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-9: Intermediate Macroeconomics – II **Credits 06**

C9T: Intermediate Macroeconomics – II

Schools of Macroeconomic Thoughts

Classical System: Say's law and quantity theory; Friedman's restatement; classical dichotomy and neutrality of money; Keynesian vs classical system; basic tenets of New Classical and New Keynesian System.

Macroeconomic Foundations

Consumption: Keynesian consumption function; Fisher's theory of optimal intertemporal choice; life-cycle and permanent income hypotheses; Dusenberry's relative income hypothesis; rational expectations and random-walk of consumption expenditure.

Investment: MEC and MEI- Jorgenson's neo-classical theory- Acceleration principle-fixed and variable.

Demand for money: Regressive expectations and Tobin's portfolio choice models; Baumol's inventory theoretic money demand

Monetary Policy

Government debt and Ricardian equivalence; high-powered money; money multiplier analysis; monetary policy – OMO, Bank rate, variable reserve ratio, repo and reverse repo.

Economic Growth

Harrod- Domar model and Solow one sector growth models; golden rule; dynamic efficiency, technological progress and elements of endogenous growth theory.

Reference Books:

- Snowdon and Vane (ed), A Macroeconomics Reader, Routledge, Taylor and Francis Group.
- R. Barro. Macroeconomics, 5th edition, The MIT Press, 1989
- W.H.Branson. Macroeconomics, Haper and Row, 3rd edition, 1989
- A.K.Sen (ed). Growth Economics, Penguin, 1970
- Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011
- J.B Hall and R.E.Taylor. Macroeconomics, W.W.Nortan and Company, 5th revised edition, 1997
- Errol D'Souza. Macroeconomics, Pearson Education (New Delhi), 2009
- Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-10: Introductory Econometrics **Credits 06**

C10T: Introductory Econometrics

Nature and Scope of Econometrics
Definition and Scope of Econometrics; Importance of Error Term.

Statistical Concepts
Sampling Distributions- χ^2, t- and F-distributions and their application in testing of hypothesis; Defining hypothesis; Distribution of test-statistics; testing hypotheses related to population parameters; Type I and Type II errors; power of a test.

Classical Linear Regression Model: Two Variable Case
The model and the role of disturbance term ; Estimation of model by method of ordinary least squares (OLS);Gauss-Markov theorem, Reverse Regression, properties of estimators; goodness of fit; testing of hypotheses and confidence intervals;scaling and units of measurement; prediction and forecasting, Problems in OLS Method

Multiple ClassicalLinearRegressionModel
Motivation for multiple regression, Estimation by OLS method; properties of OLS estimators; testing hypotheses – individual and joint; partial correlation and regression coefficients; goodness of fit –role of R^2 and adjusted R^2; Use of qualitative (dummy) independent variables**.**

Violationsof Classical Assumptions:Consequences, Detection and Remedies
Problems of Multi-collinearity, Heteroscedasticity**,** and Auto correlation; Consequences of applying OLS under Heteroscedasticity and Autocorrelation and **their** detection– Durbin-Watson Test, Glesjer Test, Goldfeld-Quandt Test.

Specification Problem
Omission of a relevant variable; inclusion of an irrelevant variable; tests of specification errors.

Reference Books

- Jay L. Devore, Probability and Statistics for Engineers, Cengage Learning, 2010.
- John E. Freund, Mathematical Statistics, Prentice Hall, 1992.
- Richard J. Larsen and Morris L. Marx, An Introduction to Mathematical Statistics and its Applications, Prentice Hall, 2011.
- D. N. Gujarati and D.C. Porter, Essentials of Econometrics, McGraw Hill, 4th edition, International Edition, 2009.
- Christopher Dougherty, Introduction to Econometrics, Oxford University Press, 3rd edition, Indian edition, 2007
- Jan Kmenta, Elements of Econometrics, Indian Reprint, Khosla Publishing House, 2nd edition, 2008
- Stock and Watson
- Maddala- Introduction to Econometrics, Wiley

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-11: International Economics **Credits 06**

C11T: International Economics

Basics of trade theory
Arbitrage as basis and direction of trade; fundamental sources of cross-country price differences and arbitrage; concept of comparative advantage; externalities, regulation and perverse comparative advantage; International equilibrium; offer curves, ToT and stability; Gains from Trade (GFT) Theorem; Concepts of Production possibility Frontier and Community Indifference curves; Illustration of GFT; Decomposition of GFT; Substitution possibilities and magnitude of GFT.

Technology and Trade (Ricardian Model):
Comparative versus Absolute Advantage, One-factor economy, production possibility frontier, relative demand and relative supply, terms of trade; Trade in Ricardian world, Determination of intermediate ToT, Complete specialization & GFT

Factor Endowment & Trade (Heckscher-Ohlin-Samuelson Model):
H-O theorem and physical vs. price definitions of factor abundance; Properties of the HO model: Factor intensity ranking, one-to-one correspondence between commodity price ratio & factor price ratio (Stolper-Samuelson theorem), One to one correspondence between endowment ratio and production proportion (Rybczysky's theorem); Proof of HO theorem; Taste bias and invalidation of HO theorem; Empirical studies- Leontief Paradox; Effects of trade on factor price and income distribution, factor price equalization, factor intensity reversal & factor price equalization.

Trade Policy:
Partial Equilibrium Analysis: Tariff - cost–benefit, Quota, Quota- Tariff equivalence & non-equivalence, effects of tariff, quota, subsidy and voluntary export restraint; General Equilibrium Analysis- distinction between large and small economy, welfare effects of a tariff on small country and large country, Offer curve and ToT, Tariff ridden offer curve, Tariff war, Optimum tariff for large economy, Metzler's Paradox.

Balance of Payments & Exchange Rate:
Balance of Payment accounts in an open economy; Determination of National Income, Transfer problem, Introduction of foreign Country & repercussion effect - open economy multiplier with & without repercussion effect; Fixed &Flexible Exchange Rate: adjustment of demand and supply of Foreign Exchange, Effect of devaluation, Effects of exchange rate on domestic prices and ToT, Marshall-Lerner Condition, J-Curve effect.

Reference Books:

- P. Krugman and M. Obstfeld- International Economics (8th Edition) ; Pearson Education
- R. Caves, J. Frankel and R.W. Jones – World Trades & Payments (9th Ed); Pearson Education..
- RajatAcharyya- International Economics; Oxford University Press
- Giancarlo Gandolfo, International Trade Theory and Policy, Springer, 2014

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-12: Public Economics **Credits 06**

C12T: Public Economics

Nature and Scope of Public Economics
Definition and Scope of Public Economics; Externalities, Market Failure and Government Intervention; Coase Theorem; Public Expenditure to finance Development.

Theory of Public Good
Overview of Public Good; Characteristics of Pure Public Good; Distinction between Pure Public Good and Private Good; Market Failure in case of Pure Public Good; Optimal provision of Public Goods; Private Provision and Public Provision of Public Goods; Lindahl Equilibrium, Voting Equilibrium.

Taxation:
Classification of Taxes; Canons of Taxation; Benefit Principle; Equal Sacrifice Principle; Ability to Pay Principle; Incidence and Burden of Taxes; Effects of taxation on income distribution, work efforts, and on savings; the Laffer curve; Optimal Taxation

Public Expenditure and Public Debt:
Meaning and Classification of Public Expenditure; government budget and its types; government expenditure and tax multiplier**s**, balanced budget multiplier; Fiscal Federalism in India; Meaning of Public Debt; Sources of Public Borrowings: internal and external borrowing; Effects of Public Debt.

Reference Books

- 1. A. B. Atkinson and J. E. Stiglitz, Lectures on Public Economics, McGraw-Hill Inc.,US, 1980.
- 2. C. V. Brown and P. M. Jackson. Public Sector Economics, Wiley-Blackwell; 4th Edition, 1991.
- 3. J. F. Due and A. F. Friedlander. Government Finance-Economics of Public Sector, AITBS Publishers and Distributors, 1994
- 4. J. Hindriks and G. D. Myles. Intermediate Public Economics, The MIT Press; Annotated Edition, 2006.
- R.A. Musgrave and P.B. Musgrave, Public Finance in Theory & Practice,
- McGraw Hill Publications, 5th edition, 1989.
- AmareshBagchi (ed), Readings in Public Finance, OUP
- 5. J. E. Stiglitz. Economics of Public Sector,W. W Norton and Company, 3rd Edition, 2000.
- R.J.Chelliah (ed), Towards Sustainable Growth, OUP, 2009
- A Ghosh and C. Ghosh, Public Finance,Prentice Hall India Learning Private Limited; 2nd Revised edition (2014)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

CC-13: Indian Economy **Credits 06**

C13T: Indian Economy

Economic Development since Independence
Major features of the economy at independence; Planning: Evolution of India's development goals and strategies -Structural constraints and Indian development strategy: Debates between Growth and distribution, Public sector vs. Private sector, Consumer goods vs. Capital goods, Import substitution vs. Export promotion ; growth and development under different policy regimes—goals, constraints, institutions and policy framework; an assessment of performance—sustainability and regional contrasts; structural changes, savings and investment including the saving-investment paradox.

Population and HumanDevelopment
Demographic trends and issues; education; health and malnutrition.

Growth and Distribution
Trends and policies in poverty including Sen's Entitlement Analysis; inequality and unemployment.

Economic Reforms in India
Monetary, Fiscal, and Trade Policy Reforms**.**

Reference Books

- Jean Dreze and AmartyaSen, 2013. An Uncertain Glory: India and its Contradictions, Princeton University Press.
- Jean Dreze and AmartyaSen: Economic Development and social opportunity, OUP
- Sukhomoy Chakraborty: Development Planning: The Indian Experience, OUP
- Uma Kapila: Indian Economy since independence, Academic Foundation
- Ahluwalia and Little (ed): India's Economic Reforms and Development, OUP
- Joshi and Little: India's Economic Reforms, OUP
- PulapreBalakrishnan, 2007, the Recovery of India: Economic Growth in the Nehru Era, Economic and Political Weekly, November.
- Rakesh Mohan, 2008, ―Growth Record of Indian Economy: 1950-2008. A Story of Sustained Savings and Investment, Economic and Political Weekly, May.
- S.L. Shetty, 2007, ―India's Savings Performance since the Advent of Planning, in
- K.L. Krishna and A. Vaidyanathan, editors, Institutions and Markets in India's Development.
- Himanshu, 2010, Towards New Poverty Lines for India, Economic and Political Weekly, January.
- Jean Dreze and Angus Deaton, 2009, Food and Nutrition in India: Facts and Intepretations, Economic and Political Weekly, February.
- Himanshu. 2011, ―Employment Trends in India: A Re-examination, Economic and Political Weekly, September.
- Rama Baru et al, 2010, ―Inequities in Access to Health Services in India: Caste, Class and Region, Economic and Political Weekly, September.
- Geeta G. Kingdon, 2007, ―The Progress of School Education in India, Oxford Review of Economic Policy

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

- J.B.G. Tilak, 2007, ―Post Elementary Education, Poverty and Development in India, International Journal of Educational Development.
- T. Dyson, 2008, ―India‘s Demographic Transition and its Consequences for Development‖ in Uma Kapila, editor, Indian Economy Since Independence, 19th edition, Academic Foundation.
- KaushikBasu, 2009, ―China and India: Idiosyncratic Paths to High Growth,
- Economic and Political Weekly, September.
- K. James, 2008, ―Glorifying Malthus: Current Debate on Demographic Dividend in India‖ Economic and Political Weekly, June.
- ReetikaKhera, 2011, ―India‘s Public Distribution System: Utilisation and Impact
- Journal of Development Studies.
- Aniruddha Krishna and DevendraBajpai, 2011, ―Lineal Spread and Radial Dissipation: Experiencing Growth in Rural India, 1992-2005, Economic and Political Weekly, September.
- KaushikBasu and A. Maertens, Eds, 2013, The New Oxford Companion to Economics, Oxford University Press.

CC-14: Development Economics **Credits 06**

C14T: Development Economics

Meaning of Economic Development

Income Approach and Capability Approach, construction and interpretation of HDI; international variations in development measures; comparing development trajectories across nations and within them. Dependency school of development.

Economic Growth

An overview and policy implications of one sector growth models- Harrod- Domar, and Solow; Sources of economic growth, international comparisons.

Poverty and Inequality

Inequality axioms; a comparison of commonly used inequality measures; Gender Inequality**,** connections between inequality and development; poverty measurement, HPI; poverty traps and path dependence of growth processes.

Political Institutions and the State

Definition of institutions, Evolution of Political and Economic Institutions; The determinants of democracy; alternative institutional trajectories and their relationship with economic performance; within-country differences in the functioning of state institutions; state ownership and regulation; government failures and corruption.

Reference Books

- Debraj Ray, Development Economics, Oxford University Press, 2009.
- ParthaDasgupta, Economics, a Very Short Introduction, Oxford University Press, 2007.
- Abhijit Banerjee, Roland Benabou and DilipMookerjee, Understanding Poverty, Oxford University Press, 2006.
- KaushikBasu, The Oxford Companion to Economics in India, OUP, 2007.
- KaushikBasu, Analytical Development Economics, OUP

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

- AmartyaSen, Development as Freedom, OUP, 2000.
- DaronAcemoglu and James Robinson, Economic Origins of Dictatorship and Democracy, Cambridge University Press, 2006.
- Robert Putnam, Making Democracy Work: Civic Traditions in Modern Italy, Princeton University Press, 1994
- Meier and Rauch (ed)- Leading Issues in Development Economics, OUP
- Todaro and Smith: Economic Development, Pearson Education, 2009
- Hayami and Godo, Development Economics, OUP
- Bardhan and Udry, Development Microeconomics, OUP

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Department Specific Electives (DSE)

DSE-1: Economics of Health and Education **Credits 06**

DSE1T: Economics of Health and Education

Role of Health and Education in Human Development
Importance in poverty alleviation; health and education outcomes and their relationship with macroeconomic performance.

Microeconomic Foundations of Health Economics
Demand for health; uncertainty and health insurance market; alternative insurance mechanisms; market failure and rationale for public intervention; equity and inequality.

Evaluation of Health Programs
Costing, cost effectiveness and cost-benefit analysis; burden of disease.

Health Sector in India: An Overview
Health outcomes; health systems; health financing.

Education: InvestmentinHuman Capital
Rate of return to education: private and social; quality of education; signaling or human capital; theories of discrimination; gender and caste discrimination in India.

Education Sector in India:An Overview
Literacy rates, school participation, school quality measures.

Reference Books

- William, Jack, Principles of Health Economics for Developing Countries, World Bank Institute Development Studies, 1999.
- World Development Report, Investing in Health, The World Bank, 1993.
- Ronald G., Ehrenberg and Robert S., Smith, Modern Labor Economics: Theory and Public Policy, Addison Wesley, 2005.

Or

DSE-1: Applied Econometrics **Credits 06**

DSE1T: Applied Econometrics

Stages in Empirical Econometric Research
Linear Diophantine equation, prime counting function, statement of prime number theorem, Goldbach conjecture, linear congruences, complete set of residues, Chinese Remainder theorem, Fermat's Little theorem, Wilson's theorem.

Regression Diagnostics and Specification
Misspecification; functional forms; model selection.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Advanced Topics in Regression Analysis
Selected Topics:Dynamic Econometric Models: distributed lag models; autoregressive models; instrumental variable estimation; simultaneous equation models.

Panel Data Models
Methods of estimation; fixed effects model; random effects model.

Introduction to Econometric Software Package
GRETL; E-VIEWS; STATA (any one).

Reference Books

- Jeffrey M. Wooldridge, Econometrics, CENGAGE learning, India Edition, 2009.
- DimitriosAsteriou and Stephen Hall, Applied Econometrics: A Modern Approach, Palgrave Macmillan, 2007.
- Damodar Gujarati, Econometrics by Example, Palgrave Macmillan, 2011.

Or

DSE-1: Economic History of India (1857-1947) **Credits 06**

DSE1T: Economic History of India (1857-1947)

Introduction: Colonial India: Background and Introduction
Overview of the colonial economy

Macro Trends
National Income; population; occupational structure.

Agriculture
Agrarian structure and land relations; agricultural markets and institutions – credit, commerce and technology; trends in performance and productivity; famines, commercialization of agriculture.

Railways and Industry
Railways; the de-industrialisation debate; evolution of entrepreneurial and industrial structure; nature of industrialisation in the interwar period; constraints to industrial breakthrough; labor relations.

Economy and Statein the ImperialContext
The imperial priorities and the Indian economy; drain of wealth; Emergence of Economic Nationalism, Laissez Faire; international trade policies, capital flows and the colonial economy – changes and continuities; government and fiscal policy, , Managing Agency System.

Reference Books

- Chandra B. (2010): Rise and Growth of Economic Nationalism in India, HarAnand Publications, 2010

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

- Lakshmi Subramanian, "History of India 1707-1857", Orient Blackswan, 2010, Chapter 4.
- SumitGuha, 1991, Mortality decline in early 20th century India', Indian Economic and Social History Review (IESHR), pp 371-74 and 385-87.
- Tirthankar Roy, The Economic History of India 1857-1947, Oxford University Press, 3rd edition, 2011.
- J. Krishnamurty, Occupational Structure, Dharma Kumar (editor), The Cambridge Economic History of India, Vol. II, (henceforth referred to as CEHI), 2005, Chapter 6.
- IrfanHabib, Indian Economy 1858-1914, A People's History of India, Vol.28, Tulika, 2006.
- Ira Klein, 1984, ―When Rains Fail: Famine relief and mortality in British India‖,
- IESHR 21.
- Jean Dreze, Famine Prevention in India in Dreze and Sen (eds.) Political Economy of Hunger, WIDER Studies in Development Economics, 1990, pp.13- 35.
- John Hurd, Railways, CEHI, Chapter 8, pp.737-761.
- Rajat Ray (ed.), Entrepreneurship and Industry in India, 1994.
- AK Bagchi, ―Deindustrialization in India in the nineteenth century: Some theoretical implications Journal of Development Studies, 1976.
- MD Morris, Emergence of an Industrial Labour Force in India, OUP 1965, Chapter 11, Summary and Conclusions.
- K.N. Chaudhuri, Foreign Trade and Balance of Payments, CEHI, Chapter 10.
- B.R. Tomlison, 1975, India and the British Empire 1880-1935, IESHR, Vol.XII.
- Dharma Kumar, The Fiscal System, CEHI, Chapter 12.
- BasudevChatterjee, Trade, Tariffs and Empire, OUP 1992, Epilogue.
- IrfanHabib, Indian Economy 1858-1914 (A People's History of India), Vol.28, Tulika 2006.
- Daniel Thorner, Agrarian Prospect in India, 1977.
- Visaria and P. Visaria, Population. CEHI, Chapter

DSE-2: Political Economy – I **Credits 06**

DSE2T: Political Economy – I

Introduction and Historical Overview

Introduction (States-markets and society) -Emergence of Private property rights- Perspective on political economy with a historical overview: capitalist development in the pre-second world war period, the golden age and later.

Changing Dynamics of Capitalist Production, Organisational Form and Labour Process

Fordist and post-fordist production; changing dynamics of organisation of production, markets and labour process; the changing nature of job security and labour rights.

The State intheEra ofGlobalisation:Welfare,Development andAutonomy

Globalisation and the limits of the welfare state, development and state autonomy.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

The Changing Role of Finance
The changing role of finance in capital accumulation and corporate structure; finance and globalisation - financialisation, financial liberalisation and financial crisis.

The Social Dimension
Globalisation and uneven development – growth, inequality, poverty and exclusion.

New Perspective
Gender in work, accumulation and globalisation; issues in environment and sustainability; alternatives ahead.

Reference Books

- Alfred Saad-Filho and Ben Fine. Marx's Capital, Fifth Edition, Pluto Press, 2010
- Michel Beaud, A History of Capitalism, 1500-2000, trans. by Tom Dickman and Anny Lefebvre, New York: Monthly Review Press, 2001.
- Ash Amin (ed.), Post-Fordism: A Reader, Blackwell, 1994.
- Fran Tonkiss, Contemporary Economic Sociology: Globalisation, Production, Inequality, Chapter 4 (Fordism and After), Routledge India 2008 reprint, 2006.
- S. Hymer, "The Multinational Corporation and the Law of Uneven Development", in H. Radice (ed.) International Firms and Modern Imperialism, Penguin Books, 1975.
- G. Gereffi, J. Humphrey and T. Sturgeon, 2005, ―The Governance of Global Value Chains‖, Review of International Political Economy, Volume 12: 78–104.
- Narasimha Reddy, ―Economic Globalisation, Past and Present – The Challenges to Labour‖ in Jomo K.S. &KhooKhay Jin (ed.) Globalization and Its Discontents, Revisited, Sephis -Tulika Books, 2003.
- David Harvey, A Brief History of Neoliberalism, OUP, 2005.
- Andrew Glyn, ―Challenges to Capital‖, in Capitalism Unleashed: Finance, Globalization and Welfare, Oxford: Oxford University Press, (Ch. One, pp. 1-24), 2006.
- G Dumenil and D Levy, The Crisis of Neoliberalism, Harvard University Press, 2011.
- K.S. Jomo (ed.), The Long Twentieth Century: The Great Divergence: Hegemony, Uneven Development and Global Inequality, OUP, 2006.
- Gary Dymsky, 2005, ―Financial Globalization, Social Exclusion and Financial Crisis‖, International Review of Applied Economics, Vol. 19: 439–457.
- E. Stockhammer, ―Financialization and the Global Economy, in G. Epstein and
- M.H. Wolfson (ed.) The Political Economy of Financial Crises, Oxford University Press, 2010. [Also in Working Paper Series, No. 240, Political Economy Research Institute, University of Massachusetts Amherst]
- J.P. Smith and M.P. Ward, 1989, ―Women in the Labour Market and in the Family, Journal of Economic Perspectives, Volume 3: 9-23.
- Marilyn Power, 2004, ―Social Provisioning as a Starting Point for Feminist Economics, Feminist Economics, Volume 10: 3-19.
- John Bellamy Foster, Ecology against Capitalism, Monthly Review Press, 2002

Or

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

DSE-2: Money and Financial Markets **Credits 06**

DSE2T: Money and Financial Markets

Introduction to money and BankingMoney
Concept, functions, measurement; theories of money supply determination.

FinancialInstitutions,Markets, Instruments and Financial Innovations

1. Role of financial markets and institutions; problem of asymmetric information – adverse selection and moral hazard; financial crises.
2. Money and capital markets: organization, structure and reforms in India; role of financial derivatives and other innovations.

Financial Markets and Interest Rates Behaviour
Determination; sources of interest rate differentials; theories of term structure of interest rates; interest rates in India.

Banking System

1. Balance sheet and portfolio management; Multiple Deposit Creation, Determinants of the Money Supply.
2. Indian banking system: Changing role and structure; banking sector reforms.

Central Banking and Monetary Policy
Functions, balance sheet;goals, targets, indicators and instruments of monetary control; monetary management in an open economy; current monetary policy of India.

Reference Books

- F. S. Mishkin and S. G. Eakins, Financial Markets and Institutions, Pearson Education, 6th edition, 2009.
- F. J. Fabozzi, F. Modigliani, F. J. Jones, M. G. Ferri, Foundations of Financial Markets and Institutions, Pearson Education, 3rd edition, 2009.
- M. R. Baye and D. W. Jansen, Money, Banking and Financial Markets, AITBS, 1996.
- Rakesh Mohan, Growth with Financial Stability- Central Banking in an Emerging Market, Oxford University Press, 2011.
- L. M. Bhole and J. Mahukud, Financial Institutions and Markets, Tata McGraw Hill, 5th edition, 2011.
- M. Y. Khan, Indian Financial System, Tata McGraw Hill, 7th edition, 2011.
- N. Jadhav, Monetary Policy, Financial Stability and Central Banking in India,
- Macmillan, 2006.
- R.B.I. – Report of the Working Group: Money Supply Analytics and Methodology of Compilation, 1998.
- R.B.I. Bulletin, Annual Report and Report on Currency and Finance (latest).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Or

DSE-2: Financial Economics **Credits 06**

DSE2T: Financial Economics

Introduction: Evolution of limited liability companies; Time value of money and concepts of security markets

Investment Theory and Portfolio Analysis

1. Deterministic cash-flow streams: Basic theory of interest; discounting and present value; internal rate of return; evaluation criteria; fixed-income securities; bond prices and yields; interest rate sensitivity and duration; immunisation; the term structure of interest rates; yield curves; spot rates and forward rates.
2. Single-period random cash flows: Random asset returns; portfolios of assets; portfolio mean and variance; feasible combinations of mean and variance; mean-variance portfolio analysis: the Markowitz model and the two-fund theorem; risk-free assets and the one-fund theorem.
3. CAPM: The capital market line; the capital asset pricing model; the beta of an asset and of a portfolio; security market line; use of the CAPM model in investment analysis and as a pricing formula.

Options and Derivatives

Introduction to derivatives and options; forward and futures contracts; options; other derivatives; forward and future prices; stock index futures; interest rate futures; the use of futures for hedging; duration-based hedging strategies; option markets; call and put options; factors affecting option prices; put-call parity; option trading strategies: spreads; straddles; strips and straps; strangles; the principle of arbitrage; discrete processes and the binomial tree model; risk-neutral valuation.

Corporate Finance

Patterns of corporate financing: common stock; debt; preferences; convertibles; Capital structure and the cost of capital; corporate debt and dividend policy; the Modigliani-Miller theorem.

Reference Books

- David G. Luenberger, Investment Science, Oxford University Press, USA, 1997.
- Hull, John C., Options, Futures and Other Derivatives, Pearson Education, 6th edition, 2005.
- Thomas E. Copeland, J. Fred Weston and KuldeepShastri, Financial Theory and Corporate Policy, Prentice Hall, 4th edition, 2003.
- Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw-Hill, 7th edition, 2002.
- Stephen A. Ross, Randolph W. Westerfield and Bradford D. Jordan,Fundamentals of Corporate Finance. McGraw-Hill, 7th edition, 2005.
- Burton G. Malkiel, A Random Walk Down Wall Street, W.W. Norton & Company, 2003.
- William Sharpe, Gordon Alexander and Jeffery Bailey, Investments, Prentice Hall of India, 6th edition, 2003.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

DSE-3: Political Economy – II **Credits 06**

DSE3T: Political Economy – II

Analysing Social Change in Historical Perspective
The method of historical materialism; the transition from feudalism to capitalism; capitalism as a historical process – alternative perspectives; Emergence of socialism: social mode of extraction of surplus and socialist planning.

Capitalism as an Evolving Economic System
Basic features; Functioning of the Capitalist System- a) Classical Political Approach of Smith, Ricardo and Marx and b) (b) Neoclassical Economics and Capitalism accumulation and crisis; the modern corporation; monopoly capitalism— alternative perspectives.

The State in Capitalism
The state and the economy – contestation and mutual interdependence; the state as an arena of conflict; imperialism – the basic foundations.

Reference Books

- J. Gurley, "The Materialist Conception of History", Ch.2.1 in R. Edwards, M. Reich and T. Weisskop (ed.), The Capitalist System, 2nd edition, 1978.
- O. Lange, Political Economy, vol. 1, 1963, Chapters 1 and 2.
- E.K. Hunt, History of Economic Thought, M.E. Sharpe, Indian edn, Shilpi Publications, 2004.
- IrfanHabib, 1995, "Capitalism in History", Social Scientist, Vol. 23: 15-31.
- R.L. Heilbroner, "Capitalism", in the New Palgrave Dictionary of Modern Economics, Macmillan, 1987. Also reprinted as Chapter 2 in Behind the Veil of Economics by R.L. Heilbroner, W.W. Norton, 1988.
- P. Sweezy, The Theory of Capitalist Development, Monthly Review Press, 1942,chapters 2, 4, 5, 6, 8 and 10.
- Anwar Shaikh, Entries on "Economic Crises" and "Falling Rate of Profit" in T. Bottomore et al (eds.), The Dictionary of Marxist Thought, OUP, Indian edition, Maya Blackwell, 2000.
- VamsiVakulabharanam, 2009, ―The Recent Crisis in Global Capitalism: Towards a Marxian Understanding, Economic and Political Weekly, March 28, Vol. 44: 144-150.
- J. Schumpeter, Capitalism, Socialism and Democracy, George Allen and Unwin 1976, Chapters 6, 7 and 8.
- P. Baran (1957), The Political Economy of Growth, Chapter 3, Pelican edition, 1973.
- R. Heilbroner, ―The Role of the State, Ch.4 in The Nature and Logic of Capitalism, 1985.
- M. Kalecki, ―Political Aspects of Full Employment, in E.K. Hunt and J.G. Schwarz (eds.), A Critique of Economic Theory, Penguin Books, 1972.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

- AmitBhaduri, ―Nationalism and Economic Policy in the Era of Globalization, Ch. 2 in Deepak Nayyar (ed), Governing Globalization: Issues and Institutions, OUP, 2002 [also WIDER Working Paper no.188, WIDER website (2000)].
- PrabhatPatnaik, ―"Lenin's Theory of Imperialism Today", in K.S. Jomo (ed.) The Long Twentieth Century: The Great Divergence: Hegemony, Uneven Development and Global Inequality, OUP.
- James O'Connor, "The Meaning of Economic Imperialism," in Robert Rhodes, ed., Imperialism and Underdevelopment, New York: Monthly Review Press, 1970, pages 101 to 111

Or

DSE-3: Environmental Economics **Credits 06**

DSE3T: Environmental Economics

Introduction
What is environmental economics; review of microeconomics and welfare economics.

The Theoryof Externalities
Pareto optimality and market failure in the presence of externalities; property rights and the coase theorem.

The Design and ImplementationofEnvironmentalPolicy
Overview; pigouvian taxes and effluent fees; tradable permits; choice between taxes and quotas under uncertainty; implementation of environmental policy.

International Environmental Problems
Trans-boundary environmental problems; economics of climate change; trade and environment.

MeasuringtheBenefitsofEnvironmentalImprovements
Non-Market values and measurement methods; risk assessment and perception.

Sustainable Development
Concepts; measurement.

Reference Books
- Charles Kolstad, Intermediate Environmental Economics, Oxford University Press, 2nd edition, 2010.
- Robert N. Stavins (ed.), Economics of the Environment: Selected Readings, W.W. Norton, 5th edition, 2005.
- Roger Perman, Yue Ma, James McGilvray and Michael Common, Natural Resource and Environmental Economics, Pearson Education/Addison Wesley, 3rd edition, 2003.
- Maureen L. Cropper and Wallace E. Oates, 1992, ―Environmental Economics: A Survey Journal of Economic Literature, Volume 30:675-740

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Or

DSE-3: Topics in Microeconomics – I **Credits 06**

DSE3T: Topics in Microeconomics – I

Introduction: Game Theory Basics: What is a game; games and decisions; different kinds of games; Zero-sum games: secure strategy, min-max theorem, value of a game.

Normal form games
The normal form; dominant and dominated strategies; dominance solvability; iterated dominance; mixed strategies and mixed strategy equilibrium; symmetric single population games; n-person games in normal form; Nash equilibrium; applications.

Extensive form games with perfect information
The game tree; strategies; sub game perfection; backward induction; sequential equilibrium; bargaining; Rubinstein bargaining, and Nash bargaining.

Reference Books

- Martin J. Osborne, An Introduction to Game Theory, Oxford University Press, New Delhi, 2004.
- Robert Gibbons. A Primer in Game Theory, Princeton University Press, 1992
- Prajit K. Dutta. Strategies and Game: Theory and Practice, MIT Press, 1999.

DSE-4: Comparative Economic Development (1850-1950) **Credits 06**

DSE4T: Comparative Economic Development (1850-1950)

Theory and Concepts

1. Introduction and Perspectives on Comparative Economic Development
2. An Overview of Economic Development of the countries selected for case studies
3. Agriculture
    a. Agrarian surplus and the role of the peasantry in economic development.
4. Industry
    a. The industrial revolution in Britain; Industrialisation in late industrialisers.
5. The Factory System and Making of the Industrial Working Class
    a. Division of labour, structure of industrial authority, organisation of work and industrial production, relationship between workers and managers.
6. The Role of the State in Industrial and Developmental Transition

Reference Books

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

- E.J. Hobsbawm, World of Labour: Further studies in the history of labour, London Weidenfeld& Nicholson, 1984.
- E.J. Hobsbawm, Industry and Empire: An Economic History of Britain since 1750, Weidenfeld& Nicholson, 1968.
- Peter Mathias, the First Industrial Nation, an Economic History of Britain, 1700-1914. 2nd edition Methuen, 1983.
- T. Nakamura, Economic Growth in Pre-War Japan, Tr. by Robert A Feldman, Yale University Press, 1983.
- Okochi, Karsh and Levine, Workers and Employees in Japan, The Japanese Employment Relations System, University of Tokyo, 1965.
- Y. Hayami, A Century of Agricultural Growth in Pre-War Japan: Its Relevance to Asian Development, University of Minnesota Press, 1975.
- Chalmers Johnson, MITI and the Japanese Miracle: The Growth of Industrial Policy 1925-1975, Stanford University Press, 1982.
- W.W. Lockwood, Economic Development of Japan, Expanded edition, Princeton University Press, 1966.
- Dobb M., Soviet Economic Development since 1917, Universal Book Stall, New Delhi, 1995.
- Paul R. Gregory and Robert C. Stuart, Soviet Economic Structure and Performance, Harper & Row, 3rd edition, 1986.
- Timothy W. Guinnane, 2002, ―Delegated Monitors, Large and Small: Germany‘s banking System, 1800 –1914‖, Journal of Economic Literature, Volume XL: 73-124.
- Richard A. Easterlin, Davis and Parker, American Economic Growth: An economist’s History of the United States, Harper & Row, 1972.
- Hughes and Cain, American Economic History, HarperCollins College Publishers, 4thedition, 1994.
- Angus Maddison, Dynamic Forces in Capitalist Development, a Long-Run Comparative View, Oxford University Press, 1991.
- P.K.O‘Brien, 1986, ―Do we have a Typology for the Study of European Industrialization in the XIXthCentury, Journal of European Economic History, XV 3:291-333.

Or

DSE-4: Topics in Microeconomics – II **Credits 06**

DSE4T: Topics in Microeconomics – II

Repeated Games with complete information
Repeated games: Folk theorem and repeated prisoner’s dilemma; Finitely repeated games and backward induction; infinitely repeated games; credibility and sub game perfect Nash equilibrium, one-step deviation property;

Simultaneousmove games with incomplete information (Bayesian games)
Strategies; Bayesian Nash equilibrium; higher order beliefs.

Extensive form games with imperfect information
Strategies; beliefs and sequential equilibrium; applications.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Uncertainty and Information
Expected utility Theory; measures of risk aversion, applications- investment in risky assets, insurance, the principal agent problem: adverse selection and moral hazard, signalling, introduction to auction and mechanism design, VCR mechanisms.

Reference Books

- Martin J. Osborne, An Introduction to Game Theory, Oxford University Press, New Delhi, 2004.
- R. Gibbons. Game Theory for Applied Economists, Princeton University Press, 1992
- Eric. Rasmusen, Games and Information: An Introduction to Game Theory, Wiley-Blackwell, 2006

Or

DSE-4: Project Work **Credits 06**

Skill Enhancement Course (SEC)

SEC-1 – Data Analysis **Credits 02**

SEC1T: Data Analysis

Unit 1

1. Sources of data. Population census versus sample surveys. Random sampling.
2. Frequency distribution and summary Statistics.

Unit 2
Analysis of Indian Data: Economic Survey, RBI Bulletin on currency and finance, ASI DATA, Foreign Trade Statistics, NSS Consumer surveys.

Suggested Readings:

- P.H. Karmel and M. Polasek (1978), Applied Statistics for Economists, 4th edition, Pitman.
- M.R. Spiegel (2003), Theory and Problems of Probability and Statistics (Schaum Series).
- Official websites of RBI, Government of India, NSS, ASI.

OR

SEC-1 – Contemporary Economic Issues **2 Credits**

SEC1T : Contemporary Economic Issues

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Concepts

Fiscal Policy, need for government spending, area of government spending in India.
Capital Expenditure, revenue expenditure, plan expenditure, non-plan expenditure.
Deficits (fiscal, primary, revenue), impact of fiscal deficits on economy, need to control fiscal deficits.

Capital receipts, revenue receipts, tax and non-tax revenue, direct and indirect taxes, need to rationalize tax structure. Goods and Services Tax (GST).
Actuals, Revised Estimates, Budget Estimates,Zero-base budgeting, Gender budgeting
Fiscal devolution and centre-state financial relations in India
Index Numbers: Laspeyres, Paasche and Ideal index numbers, WPI, CPI and implicit deflators

Economic Survey

Understanding Economic Survey

Understanding Union Budget

Need for the budget, Understanding the process of budget making in India, Analysis of budget in terms of various parameters such as:

a. Deficits: trends in fiscal deficit and revenue deficit
b. Receipts: proposed sources of revenue and expected growth in revenue; steps taken to increase revenue such as tax simplification, improvement in tax administration, expansion of tax net;
c. Expenditure: expenditure pattern and expected growth in expenditure;
   The thrust areas of the budget; areas/ sectors which have received higher or lower share of expenditure, reasons and consequences thereof; steps proposed to ensure effective spending

Suggested Readings:

- Economic Survey (latest), Government of India, Ministry of Finance. Full chapter (excluding boxed items) on 'Economic Outlook, Prospects, and Policy Challenges' and 'Fiscal Framework'. Other selections to be determined each year.
- 'Understanding the Budget Concepts and Terminologies', Centre for Budget and Governance Accountability
  http://www.cbgaindia.org/files/documents/Understanding%20the%20Budget%20Concepts%20and%20Terminologies.pdf
- The Key to Budget Documents, Budget At A Glance, Macroeconomic Framework Statement, Medium Term Fiscal Policy Statement and Fiscal Policy Strategy Statement , all available at indiabudget.nic.in.
- Economic and Social Classification of the Budget, available at http://finmin.nic.in/reports/FunClass201415.pdf.
- http://www.unionbudget.nic.in/ub2016-17/bh/bh1.pdf (For Budget 2016-17 highlights)
- Pranab Mukherjee (2012), "Budget Making", in K. Basu and A. Maertens (eds), The New Oxford Companion to Economics in India, OUP.
- DipakDasgupta and Supriyo De (2012), "Fiscal Deficit", in Basu and Maertens.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

- Uma Kapila (2016), "Fiscal and Budgetary Developments", in Indian Economy Since Independence, Academic Foundation, latest edition.
- Y V Reddy (2015), "Continuity, Change and The Way Forward: Fourteenth Finance Commission", EPW Vol. 50, Issue No. 21, 23 May, 2015
- 14th Finance Commission Report http: //finmin.nic.in/14fincomm/14th Finance Commission.htm

SEC-2: Financial Economics **Credits 02**

SEC2T: Financial Economics

Deterministic cash-flow streams
Basic theory of interest; discounting and present value; internal rate of return; evaluation criteria; fixed-income securities; bond prices and yields; interest rate sensitivity and duration; immunisation; the term structure of interest rates; yield curves; spot rates and forward rates.

Single-period random cash flows
Random asset returns; portfolios of assets; portfolio mean and variance; feasible combinations of mean and variance; mean-variance portfolio analysis: the Markowitz model and the two-fund theorem; risk-free assets and the one-fund theorem.

Capital Asset Pricing Model (CAPM)
The capital market line; the capital asset pricing model; the beta of an asset and of a portfolio;security market line; use of the CAPM model in investment analysis and as a pricing formula.

Reference Books

- David G. Luenberger, Investment Science, Oxford University Press, USA, 1997.
- Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw- Hill, 7th edition, 2002.
- Burton G. Malkiel, A Random Walk Down Wall Street, W.W. Norton & Company, 2003.
- Simon Benninga, Financial Modeling, MIT Press, USA, 1997.

Or

SEC-2: Research Methodology **Credits 02**

SEC2T: Research Methodology
Unit 1
Understanding the nature of research.
Formulating the research topic
Review of Literature

Unit 2

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Approaches to research and research strategy
Research Ethics
Using Secondary data
Using Primary data- collecting data through observations/ interviews/ questionnaire

Unit 3
Sample Selection Methods
Analyzing Data
Writing Project Report – Referencing Styles

Reference Books

- Ranjit Kumar (2014), Research Methodology: A Step by Step Guide for beginners, 4th Edition, Sage Publications.
- Uwe Flick (2012), Introducing Research Methodology: A Beginner's Guide to Doing a Research Project, Sage Publications.
- Bethlehem, J.(2009), Applied Survey Methods: A Statistical Perspective, Wiley.
- Cochran, William G. (2008), Sampling Techniques, Third Edition, Wiley India, ISBN 978-81-265-1524-0. Reprint: 2008.
- Groves, R. M., Fowler, F.J., Couper, M.P., Lepkowski, J.M., Singer, E. and Tourangeau, R. (2009). Survey Methodology, Wiley.

Generic Elective (GE)

[Interdisciplinary for other department]

GE- 1: Introductory Microeconomics **Credits 06**

GE1T: Introductory Microeconomics

Exploring the subject matter of Economics
Why study economics? Scope and method of economics; the economic problem: scarcity and choice; the question of what to produce, how to produce and how to distribute output; science of economics; the basic competitive model; prices, property rights and profits; incentives and information; rationing; opportunity sets; economic systems; reading and working with graphs.

Supply and Demand: How Markets Work, Markets and Welfare
Markets and competition; determinants of individual demand/supply; demand/supply schedule and demand/supply curve; market versus individual demand/supply; shifts in the demand/supply curve, demand and supply together; how prices allocate resources; elasticity and its application; controls on prices; taxes and the costs of taxation; consumer surplus; producer surplus and the efficiency of the markets.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

The Households
The consumption decision - budget constraint, consumption and income/price changes, demand for all other goods and price changes; description of preferences (representing preferences with indifference curves); properties of indifference curves; consumer's optimum choice; income and substitution effects; labour supply and savings decision - choice between leisure and consumption.

The Firm and Perfect Market Structure
Behaviour of profit maximizing firms and the production process; short run costs and output decisions; costs and output in the long run.

Imperfect Market Structure
Monopoly and anti-trust policy; government policies towards competition; imperfect competition.

Input Markets
Labour and land markets - basic concepts (derived demand, productivity of an input, marginal productivity of labour, marginal revenue product); demand for labour; input demand curves; shifts in input demand curves; competitive labour markets; and labour markets and public policy.

Reference Books

- Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007.
- N. Gregory Mankiw, Economics: Principles and Applications, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.
- Joseph E. Stiglitz and Carl E. Walsh, Economics, W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.

GE- 2: Introductory Macroeconomics **Credits 06**

GE2T: Introductory Macroeconomics

Introduction to Macroeconomics and National Income Accounting
Basic issues studied in macroeconomics; measurement of gross domestic product; income, expenditure and the circular flow; real versus nominal GDP; price indices; national income accounting for an open economy; balance of payments: current and capital accounts

Money
Functions of money; quantity theory of money; determination of money supply and demand; credit creation; tools of monetary policy.

Inflation
Inflation and its social costs; hyperinflation.

The Closed Economy in the Short Run

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

Classical and Keynesian systems; simple Keynesian model of income determination; IS-LM model; fiscal and monetary multipliers.

Reference Books

- 1. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
- 2. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 7th edition, 2010.
- 3. Olivier Blanchard, Macroeconomics, Pearson Education, Inc., 5th edition, 2009.
- 4. Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
- 5. Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011.
- 6. Errol D'Souza, Macroeconomics, Pearson Education, 2009.
- Paul R. Krugman, Maurice Obstfeld and Marc Melitz, International Economics, Pearson Education Asia, 9th edition, 2012.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

GE3: Environmental Economics **Credits 06**

GE3T: Environmental Economics

Introduction
Key environmental issues and problems, economic way of thinking about these problems, basic concepts from economics; Pareto optimality and market failure in the presence of externalities; property rights and other approaches.

The Design and Implementation of Environmental Policy
Overview, Pigouvian taxes and effluent fees, tradable permits, implementation of environmental policies in India and international experience; transboundary environmental problems; economics of climate change.

Environmental Valuation Methods and Applications
Valuation of non-market goods and services--theory and practice; measurement methods; cost-benefit analysis of environmental policies and regulations.

Sustainable Development
Concepts; measurement, perspectives from Indian experience

Suggested Readings:

- Roger Perman, Yue Ma, Michael Common, David Maddison and James McGilvray, "Natural Resource and Environmental Economics", Pearson Education/Addison Wesley, 4th edition, 2011.
- Charles Kolstad, "Intermediate Environmental Economics", Oxford University Press, 2nd edition, 2010.
- Robert N. Stavins (ed.), "Economics of the Environment: Selected Readings", W.W. Norton, 6th edition, 2012.
- Robert Solow, "An Almost Practical Step toward Sustainability," Resources for the Future 40th anniversary lecture, 1992.
- Kenneth Arrow et al., "Are We Consuming Too Much?" Journal of Economic Perspectives, 18(3): 147-172, 2004.
- IPCC (Intergovernmental Panel on Climate Change), Fifth Assessment Report (forthcoming 2014).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

OR

GE3: Money and Banking **Credits 06**

GE3T: Money and Banking

Money and Banking

Money
Concept, functions, measurement; theories of money supply determination.

Financial Institutions, Markets, Instruments and Financial Innovations

1. Role of financial markets and institutions; problem of asymmetric information – adverse selection and moral hazard; financial crises.
2. Money and capital markets: organization, structure and reforms in India; role of financial derivatives and other innovations.

Interest Rates
Determination; sources of interest rate differentials; theories of term structure of interest rates; interest rates in India.

Banking System

1. Balance sheet and portfolio management.
2. Indian banking system: Changing role and structure; banking sector reforms.

Central Banking and Monetary Policy
Functions, balance sheet; goals, targets, indicators and instruments of monetary control; monetary management in an open economy; current monetary policy of India.

Suggested Readings:

- F. S. Mishkin and S. G. Eakins, Financial Markets and Institutions, Pearson Education, 6th edition, 2009.
- F. J. Fabozzi, F. Modigliani, F. J. Jones, M. G. Ferri, Foundations of Financial Markets and Institutions, Pearson Education, 3rd edition, 2009.
- M. R. Baye and D. W. Jansen, Money, Banking and Financial Markets, AITBS, 1996.
- Rakesh Mohan, Growth with Financial Stability- Central Banking in an Emerging Market, Oxford University Press, 2011.
- L. M. Bhole and J. Mahukud, Financial Institutions and Markets, Tata McGraw Hill, 5th edition, 2011.
- M. Y. Khan, Indian Financial System, Tata McGraw Hill, 7th edition, 2011.
- N. Jadhav, Monetary Policy, Financial Stability and Central Banking in India,
- Macmillan, 2006.
- R.B.I. – Report of the Working Group: Money Supply Analytics and Methodology of Compilation, 1998.
- R.B.I. Bulletin, Annual Report and Report on Currency and Finance (latest).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

GE-4: Economic History of India (1857-1947) **Credits 06**

GE4T: Economic History of India (1857-1947)

Introduction: Colonial India: Background and Introduction
Overview of the colonial economy

Macro Trends
National Income; population; occupational structure.

Agriculture
Agrarian structure and land relations; agricultural markets and institutions – credit, commerce and technology; trends in performance and productivity; famines.

Railways and Industry
Railways; the de-industrialisation debate; evolution of entrepreneurial and industrial structure; nature of industrialisation in the interwar period; constraints to industrial breakthrough; labor relations.

Economy and Statein the ImperialContext
The imperial priorities and the Indian economy; drain of wealth; international trade, capital flows and the colonial economy – changes and continuities; government and fiscal policy.

Reference Books

- Lakshmi Subramanian, "History of India 1707-1857", Orient Blackswan, 2010, Chapter 4.
- SumitGuha, 1991, _Mortality decline in early 20th century India', Indian
- Economic and Social History Review (IESHR), pp 371-74 and 385- 87.
- Tirthankar Roy, The Economic History of India 1857-1947, Oxford University Press, 3rd edition, 2011.
- J. Krishnamurty, Occupational Structure, Dharma Kumar (editor), The Cambridge Economic History of India, Vol. II, (henceforth referred to as CEHI), 2005, Chapter 6.
- IrfanHabib, Indian Economy 1858-1914, A People's History of India, Vol.28, Tulika, 2006.
- Ira Klein, 1984, ―When Rains Fail: Famine relief and mortality in British India‖, IESHR 21.
- Jean Dreze, Famine Prevention in India in Dreze and Sen (eds.) Political Economy of Hunger, WIDER Studies in Development Economics, 1990, pp.13- 35.
- John Hurd, Railways, CEHI, Chapter 8, pp.737-761.
- Rajat Ray (ed.), Entrepreneurship and Industry in India, 1994.
- AK Bagchi, ―Deindustrialization in India in the nineteenth century: Some theoretical implications, Journal of Development Studies, 1976.
- MD Morris, Emergence of an Industrial Labour Force in India, OUP 1965, Chapter 11, Summary and Conclusions.
- K.N. Chaudhuri, Foreign Trade and Balance of Payments, CEHI, Chapter 10.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

- B.R. Tomlison, 1975, India and the British Empire 1880-1935, IESHR, Vol.XII.
- Dharma Kumar, the Fiscal System, CEHI, Chapter 12.
- BasudevChatterjee, Trade, Tariffs and Empire, OUP 1992, Epilogue.
- IrfanHabib, Indian Economy 1858-1914 (A People's History of India), Vol.28, Tulika 2006.
- Daniel Thorner, Agrarian Prospect in India, 1977

Or

GE-4: Public Finance **Credits 06**

GE4T: Public Finance

Combinatorial Mathematics

Theory

1. Overview of Fiscal Functions, Tools of Normative Analysis, Pareto Efficiency, Equity and the Social Welfare.
2. Market Failure, Public Good and Externalities.
3. Elementary Theories of Product and Factor Taxation (Excess Burden and Incidence).

Issues from Indian Public Finance

1. Current Issues of India's Tax System.
2. Working of Monetary and Fiscal Policies.
3. Analysis of Budget and Deficits
4. Fiscal Federalism in India
5. State and Local Finances

Reference Books

- Musgrave, R.A. and P.B. Musgrave, Public Finance in Theory and Practice, Mc-Graw
- Hill, 1989.
- Mahesh Purohit , "Value Added Tax: Experience of India and Other Countries", Gayatri
- Publications, 2007.
- KaushikBasu, and A. Maertens (ed.), The Oxford Companion to Economics in India,
- Oxford University Press, 2007.
- M.M Sury, Government Budgeting in India, Commonwealth Publishers, 1990.
- Shankar Acharya, "Thirty years of tax reform" in India, Economic and Political Weekly,
- May 2005.
- Government of India, Report of the 13th Finance Commission.
- Economic Survey, Government of India (latest).
- State Finances: A Study of Budgets, Reserve Bank of India (latest).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:23:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Economics_Hons.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year BSc (General)
in

Economics

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Economics

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		**Microeconomics**	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
	II	SEMESTER-II							
		Core-4 (DSC-1B)		**Macroeconomics**	6	5-1-0	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-7 (DSC-1C)		**Features of Indian Economy**	6	5-1-0	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0/ 1-0-2	10	40	50
				Semester - 3 : Total	**20**				**275**
	IV	SEMESTER-IV							
		Core-10 (DSC-1D)		**Development Economics**	6	5-1-0	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0/ 1-0-2	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Economics)	6	5-1-0	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0/ 1-0-2	10	40	50
				Semester - 5 : Total	**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Economics)	6	5-1-0	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0/ 1-0-2	10	40	50
				Semester - 6 : Total	**20**				**275**
				Total in all Semester :	**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

List of Core Courses and Electives

Core Course (CC)

DSC-1A: Microeconomics
DSC-1B: Macroeconomics
DSC-1C: Development Economics
DSC-1D: Features of Indian Economy

Discipline Specific Electives (DSE)

DSE - 1: Economic Development and Policy in India–I
Or
DSE - 1: Money & Banking
Or
DSE - 1: Environmental Economics
Or
DSE - 1: Applied Statistics
Or
DSE - 1: Econometrics
DSE - 2: Economic Development and Policy in India–II
Or
DSE - 2: Public Finance
Or
DSE - 2: Economic History of India (1857-1947)
Or
DSE - 2: Basic Statistics
Or
DSE- 2: Project Work

Skill Enhancement Course (SEC)

SEC- 1: Basic Computer Applications
Or
SEC- 1: Indian Financial System
Or
SEC- 1: Indian Official Statistics
SEC- 2: Computer Application in Economics
Or
SEC- 2: Business Project Proposal
Or
SEC- 2: Financial Economics
SEC- 3: Research Methodology
Or
SEC- 3: Contemporary Economic Issues
Or
SEC- 3: Indian Stock Market Trading
SEC- 4: Data Analysis
Or
SEC- 4: Entrepreneurship Development
Or
SEC- 4: Insurance Market and its Products

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Core Courses (CC)

DSC-1A (CC-1): Microeconomics **Credits 06**

DSC1AT (CC-1): Microeconomics

Course Contents:

1. **Consumer's Behaviour:**
   A. Utility: Total and Marginal Utility- Law of Diminishing Marginal Utility – Law of Demand.
   B. Indifference Curve: Definition, Characteristics. Consumer's equilibrium, Price effect, Income effect and Substitution effect.
   C. Elasticity of Demand – price and income elasticity, cross price elasticity of demand, Measurement of price elasticity.

2. **Producer's Behaviour:**
   A. Production Function: AP, MP and their derivation from TP Curve, Returns to Factor and Returns to Scale.
   B. Cost of Production: Real cost and Opportunity cost – Fixed and Variable cost. Shape of cost curves -- short run and long run. Relation between Average cost and Marginal cost.
   C. Total Revenue, Marginal Revenue and Average Revenue – Relation between TR, AR and MR curves. Relation between AR, MR and Price elasticity of Demand.

3. **Market Morphology:**
   A. Perfect competition, Monopoly, Monopolistic Competition, Oligopoly and Duopoly (concepts only).
   B. Short run and Long run equilibrium of firm and industry under Perfect competition, Price discrimination.
   C. Price and Output determination under Monopoly.

4. **Theory of Distribution:**
   A. Marginal Productivity Theory of Distribution, Factor price determination.
   B. Rent: Ricardian Theory and Modern Theory.
   C. Wage: Distinction between Money and Real wage – Factors determining Real wage – Role of Trade Unions in wage determination under competitive set up.
   D. Interest: Real and money Interest – Loanable fund and Liquidity Preference Theory of Interest.
   E. Profit: Alternative Theories of Profit.

5. **General concepts of Welfare Economics:**
   Graphical presentation of Pareto optimality

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Suggested Readings:

1. Samuelson, P.A and William. D. Nordhaus,: Economics , McGraw Hill Book Co. Singapore.
2. Lipsey, R.G: An Introduction to positive Economics, Weidenfeld and Nicholson, London.
3. Ferguson and Gould: Microeconomic Theory, published by All India Traveller Book Seller.

DSC-1B (CC-2): Macroeconomics **Credits 06**

DSC1BT (CC-2): Macroeconomics

Course Contents:

1. The National Income and products accounts

- Definition, concepts and measurement of GNP, NNP, GDP, NDP, NI, DI, GNP deflator, GDP deflator and price indices.
- Different methods of measuring national income – product method, income method and expenditure method.
- Problems of using national income as a measure of Economic welfare.
- Problems of measuring national income in any country
- Circular flow of income – equilibrium condition – concepts of injection, withdrawal etc.

2. Money market

- Motives of holding money – Transactions, Precautionary and Speculative motives.
- Keynesian liquidity preference theory – indeterminacy of rate of interest in the liquidity preference theory – the liquidity trap.
- Supply of money – Different sources of money supply – M1, M2, M3, and M4 – functions of money

3. Simple Keynesian theory of income and employment:

Concept of effective demand – Keynesian consumption function, relation between average propensity to consume and marginal propensity to consume – Simple Keynesian static multiplier theory – investment

4. IS-LM model:

IS – LM model- construction of IS and LM curves – shapes – determination of equilibrium values of rate of interest and level of income.

5. The classical system

- The Classical view of macroeconomics in respect of the determination of employment, output and prices – Say's law of market..
- The Classical quantity theory of money and its criticisms – Fischer's transaction version - Cambridge cash balance version.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

6. Theory of inflation

- Concept of inflation - Demand pull inflation and cost push inflation – comparison between them.
- Inflationary gap – Limitations of it.
- Consequences of inflation – measures to control inflation.

7. Banking

- Functions of Commercial Banks
- Functions of Central Bank
- Credit creation by Commercial Banks – credit creation multiplier.
- Credit control by Central Bank – Different methods of credit control.

Suggested Readings:

1. Gupta S.B: Monetary Economics, S.Chand and Co. New Delhi.
2. Sampat Mukherjee and Debesh Mukherjee – Samakalin Arthabidya – New Central Book Agency, Kolkata.
3. Haridas Acharya – Adhunik Arthaniti – Prativa Publication, Kolkata
4. Alok Ghosh and Anil Basak – Arthaniti - Prativa Publication, Kolkata

DSC-1C (CC-3): Development Economics **Credits 06**

DSC1CT (CC-3): Development Economics

Course Contents:

Meaning of Economic Development and Growth:
Distinction between Economic Growth and Economic Development. Net National Income and Per Capita Income as Growth Indicators construction and interpretation of HDI; international variations in development measures; comparing development trajectories across nations and within them, Dependency school of development.

Economic Growth:
An overview and policy implications of one sector growth models- Harrod- Domar, and Solow; Sources of economic growth, international comparisons, Development Planning and its necessity–balanced vs. Unbalanced Growth

Poverty and Inequality:
Inequality axioms; a comparison of commonly used inequality measures; Gender Inequality – Gender Development Index, connections between inequality and development; poverty measurement, HPI; poverty traps and path dependence of growth processes.

Political Institutions and the State:
Definition of institutions, Evolution of Political and Economic Institutions; The determinants of democracy; alternative institutional trajectories and their relationship with economic

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

performance; within-country differences in the functioning of state institutions; state ownership and regulation; government failures and corruption.

Foreign investment:
Different forms, Their Roles in Economic Development

Suggested Readings:

1. Debraj Ray, Development Economics, Oxford University Press, 2009.
2. Partha Dasgupta, Economics, a Very Short Introduction, Oxford University Press, 2007.
3. Abhijit Banerjee, Roland Benabou and Dilip Mookerjee, Understanding Poverty, Oxford University Press, 2006.
4. Kaushik Basu, The Oxford Companion to Economics in India, OUP, 2007.
5. Kaushik Basu, Analytical Development Economics, OUP
6. Amartya Sen, Development as Freedom, OUP, 2000.
7. Todaro, M.P: Economic Development in the Third World,Longman, New York.
8. Salvatore, D and E.Dowling: Development Economics,Schaum's Outline Series in Economics, Mc Grawhill, NewYork.
9. Meier, G.M. (ed) :Leading Issues in Economic Development, Oxford University Press, NewYork

DSC-1D (CC-4): Features of Indian Economy **Credits 06**

DSC1DT(CC-4): Features of Indian Economy

Course Contents:

1. Structure of Indian Economy:
- Sectoral distribution of National Income and its change since inception of Planning.
- Occupational pattern in India-A trend analysis since 1901.
- Inequalities in Income distribution.
- Economic reforms and reduction of poverty; Poverty eradication programmes and their effectiveness.
- Structure and quality if employment in India; Government undertaken different schemes to reduce unemployment and underemployment.

2. Human resources and economy development:
- Size and growth rate of population in India.
- Changes in sex composition since inception of planning.
- Population policy and population projections for India.

3. Agriculture:
- Causes for low productivity.
- Targeted public distribution system.
- New agricultural policy; Green revolution and its prospects.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

- Land reforms and its appraisal.
- Effects of GATT on Indian Agriculture.

4. Industry:

- Review of Industrial growth under planning.
- Role of small-scale industries and policy perspective to help them.
- Role of trade union and social security measures in India.

5. Banking:

- Role of Indian Commercial Banks and Reserve Bank of India.
- Monetary Policy of the Reserve Bank of India.
- Profitability of banks in India.
- Call money market, Repo, reverse repo rate, TBs, CDs.

6. Indian Public Finance:

- Sources of Revenue and Expenditure of Union and State Government.
- Union-State Financial Relation.
- Centre-State Conflict on Finances.

7. Foreign trade

- Volume and direction of India's foreign trade in the post-Liberalization period.

Suggested Readings:

1. Dutta R. and K.P.M. Sundaram: Indian Economy, S. Chand and Co. New Delhi
2. Misra S.K.V. K. Puri: Indian Economy, Himalayas Publishing Co. Mumbai.
3. Agarwal A.N: Indian Economy, Vikash Publishing Co. Delhi
4. Gupta, S.B.: Monetary Planning in India, Oxford University Press, Delhi.
5. P. N. Dhar: Indian Economy

Discipline Specific Electives (DSE)

DSE - 1: Economic Development and Policy in India–I **Credits 06**

DSE1T: Economic Development and Policy in India–I

Course Contents:

1. Issues in Growth, Development and Sustainability

2. Factors in Development

Capital formation (Physical and Human); technology; institutions.

3. Population and Economic Development

Demographic trends; urbanisation.

4. Employment

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Occupational structure in the organised and the unorganised sectors; open, under and disguised unemployment (rural and urban) ; employment schemes and their impact.

5. Indian Development Experience

Critical evaluation of growth, inequality, poverty and competitiveness, pre and post reforms era; savings and investment; mobilisation of internal and external finance; monetary and fiscal policies; centre-state financial relations.

Suggested Readings:

1. Michael P Todaro and Stephen Smith. *Economic Development*, Pearson, 11th edition (2011).
2. Uma Kapila, *Indian Economy since Independence*, Academic Foundation, 19th edition (2009).
3. United Nations Development Programme, Human Development Report 2010, Palgrave Macmillan (2010).
4. Government of India, Economic Survey (latest)
5. Government of India, Five Year Plan (latest)
6. Government of India, Finance Commission Report

Or

DSE-1: Money & Banking **Credits 06**

DSE1T: Money & Banking

Course Contents:

A. Money

- Definition of Money – Kinds of Money: Fiduciary/ Debt/ Credit Money – Coins, Paper Currency & Deposit Money - Legal Tender or Fiat Money and Non-legal Tender or Credit Money Proper - Limited & Unlimited Legal Tender – e-Money & Plastic Money – Functions of Money – Money Vs. Near Money – Examples of Near Money - Value of Money – High-powered Money or Monetary Base - Measures of Money Supply.

B. Overview of the Financial System

- Meaning & the Role/Functions of the Financial System - Constituents of the Financial System: Financial Assets/ Instruments; Financial Intermediaries/ Institutions; and Financial Markets
- Definition & Role of Financial Markets – Classification of Financial Markets: Money Market & Capital Market – Basic Distinction between Money Market & Capital Market
- Definition & Role of Financial Intermediaries – Classification of Financial Intermediaries: Banks and Non- Bank Financial Institutions (NBFIs)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

- Financial Assets/Instruments: Distinction between Primary & Secondary Securities – Debt & Equity Instruments of Various Types – Bonds, Shares, Debentures etc. – Distinction between Bonds & Shares

C. Money Market

- Features, Importance & Functions of the Money Market - Characteristics of Developed and Underdeveloped Money Markets
- Components of Money Market: Call Money Market - Commercial Bill Market - Treasury Bill Market – Repo & Reverse Repo Markets.

D. Capital Market

- Features, Importance & Functions of the Capital Market - Characteristics of Developed and Underdeveloped Capital Markets
- Components of Capital Market: Gilt-edged Market and the Industrial Securities Market – Distinction between Primary Market and Secondary Market
- Features, Role & Functions of Stock Market or Stock Exchange

E. Banks: Commercial Banks & the Central Bank

- Definition & Functions of Commercial Banks – Concepts of Primary & Derivative Deposits and the Process of Credit Creation by Commercial Banks – Role of Commercial Banks in Economic Development.
- Definition & Functions of Central Bank – Distinction between Central Bank & Commercial Bank & Monetary Policy: Definition, Goals, Targets, Indicators & Instruments of Monetary Policy – Various Types of Quantitative & Qualitative Instruments of Credit Control.

F. Non-Bank Financial Intermediaries

- Distinction Between Commercial Banks & NBFIs – Validity of the Distinction - Examples of NBFIs – Development Banks, Mutual Funds, Insurance Companies - Central Bank's Control Over NBFIs.

G. Financial Markets and Interest Rates Behaviour

- Real & Nominal Interest Rates – Sources of Interest Rate Differentials – Meaning of Term Structure of Interest Rates - Theories of Term Structure of Interest Rates: The Expectations Theory – The Liquidity or Risk Premium Theory – The Market Segmentation Theory

Suggested Readings:

1. Suraj B. Gupta: Monetary Economics- Institutions, Theory & Policy (S.Chand & Co)
2. S. Gurusami: Indian Financial System (Tata McGraw Hill).
3. L. M. Bhole: Financial Institutions and Markets (Tata McGraw Hill).
4. R. R. Paul: Monetary Economics (Kalyani Publishers)
5. F. S. Mishkin and S. G. Eakins, Financial Markets and Institutions (Pearson Education)
6. F. J. Fabozzi, F. Modigliani, F. J. Jones & M. G. Ferri: Foundations of Financial Markets and Institutions (Pearson Education).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Or

DSE -1: Environmental Economics **Credits 06**

DSE1T: Environmental Economics

Course Contents:

1. Introduction

- Key environmental issues and problems, Link between economy and environment: basic ideas

2. The Theory of Externalities

- Market failure in the presence of externalities;

3. Issues of property right

- Concept of property rights, the Coase theorem. Distinction among public, private, open access and common property resources

4. The Design and Implementation of Environmental Policy

- Overview, Pigouvian taxes and effluent fees, tradable permits, choice between taxes and quotas,

5. International Environmental Problems

- Trans-boundary environmental problems; economics of climate change; trade and environment.

6. Sustainable Development

- Concepts, rules and measurement.

Suggested Readings:

1. Charles, Kolstad, Intermediate Environmental Economics, Oxford University Press, 2nd Edition, 2010. .Robert N. Stavins (ed.), Economics of the Environment: Selected Readings, W.W.Norton, 5th edition, 2005.
2. Roger Perman, Yue Ma, James McGilvray and Michael Common, Natural Resource and Environmental Economics, Pearson Education/Addison Wesley, 3rd edition, 2003.
3. Pearce and Turner: Economics of natural resource and environment, Prentice Hall
4. Rabindra Nath Bhattacharyya: Environmental Economics, Oxford.
5. Peter Berck and Gloria Helfand: The Economics of the Environment, Pearson.

Or

DSE-1: Applied Statistics **Credits 06**

DSE1T: Applied Statistics

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Course Contents:

Economics Statistics:
Time Series Analysis - economic time series, different components, Illustrations, additive and multiplicative models, determination of trend, analysis of seasonal fluctuations.
Index numbers - criteria for a good index number. Different types of index numbers, Construction of index numbers of prices and qualities. Cost of living index number. Uses and limitations of index numbers.

Statistical Quality Control:
Importance of statistical methods in industrial research and practice, determination of tolerance limits, general theory of control charts, process and product control, causes of variation in quality, control limits, summary of out of control criteria, charts for attributes-p-chart, np-chart, c-chart; charts for variables, R and s-charts, principles of acceptance sampling, problem of lot acceptance, producer's and consumer's risks, single sampling instruction plan and its OC and ASN functions, concepts of AQL, LTPD, AOQL, ATI functions; Dodge and Romig Tables.

Demographic Methods:
Sources of demographic data - census, register, ad hoc surveys, hospital records, demographic profiles of Indian census, questionnaire, errors in these data and their adjustment.
Measurements of Mortality - CDR, SDR (w.r.t. age and sex), IMR, standardized death rate, complete life table, its main features and uses.
Measurements of fertility and reproduction - CBR, General, Age-specific and total fertility rates, GRR, NRR.

Suggested Readings:

1. A.M. Goon, M.K. Gupta and B. Dasgupta, *An Outline of Statistical Theory* (Vol. I), 4th Ed., World Press, Kolkata, 2003.
2. S.C. Gupta and V.K. Kapoor, *Fundamentals of Mathematical Statistics*, 11th Ed., Sultan Chand and Sons, 2007.
3. P. Mukhopadhyay, *Mathematical Statistics*, 2nd Ed. Books and Allied (P) Ltd., 2000.
4. F.E. Croxton and D.J. Cowden, *Applied General Statistics*, Prentice Hall of India, 1969.
5. M.G. Kendall and A. Stuart, *The Advanced Theory of Statistics* (Vol. III), Macmillan Publishing Co. Inc., 1977.
6. D.C. Montgomery, *Introduction to Statistical Quality Control*, John Wiley and Sons, New York, 1996.

Or

DSE-1: Econometrics **Credits 06**

DSE1T: Econometrics

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Nature and Scope of Econometrics. Statistical Concepts Normal distribution; chi-square, t and F-distributions; estimation of parameters; properties of estimators;

Testing of hypotheses: defining statistical hypotheses; distributions of test statistics; testing hypotheses related to population parameters; Type I and Type II errors; power of a test; tests for comparing parameters from two samples.

Simple Linear Regression Model: Two Variable Case Estimation of model by method of ordinary least squares; properties of estimators; goodness of fit; tests of hypotheses; scaling and units of measurement; confidence intervals; Gauss-Markov theorem; forecasting. Multiple Linear Regression Model Estimation of parameters; properties of OLS estimators; goodness of fit - R2 and adjusted R2 ; partial regression coefficients; testing hypotheses – individual and joint; functional forms of regression models; qualitative (dummy) independent variables.

Violations of Classical Assumptions: Consequences, Detection and Remedies Multi-collinearity; heteroscedasticity; serial correlation. Specification Analysis Omission of a relevant variable; inclusion of irrelevant variable; tests of specification errors.

Suggested Readings:

1. Jay L. Devore, *Probability and Statistics for Engineers*, Cengage Learning, 2010.
2. John E. Freund, *Mathematical Statistics*, Prentice Hall, 1992.
3. Richard J. Larsen and Morris L. Marx, *An Introduction to Mathematical Statistics and its Applications*, Prentice Hall, 2011.
4. D.N. Gujarati and D.C. Porter, *Essentials of Econometrics*, 4th Ed., McGraw Hill, International Edition, 2009.
5. Christopher Dougherty, *Introduction to Econometrics*, 3rd Ed., Oxford University Press, 2007.
6. Jan Kmenta, *Elements of Econometrics*, 2nd Ed., Khosla Publishing House, 2008.

DSE - 2: Economic Development and Policy in India–II **Credits 06**

DSE2T: Economic Development and Policy in India–II

Course Contents:

1. Agriculture: Policies and Performance

- Production and productivity; credit; labour; markets and pricing; land reforms; regional variations.

2. Industry: Policies and Performance

- Production trends; small scale industries; public sector; foreign investment.

3. Foreign Trade: Trends and Policies

- Balance of trade and balance of payments; India and the World Trade Organisation.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Suggested Readings:

1. Uma Kapila, *Indian Economy since Independence*, Academic Foundation, 19th edition (2009).
2. Government of India, *Economic Survey* (latest)
3. Government of India, *Five Year Plan* (latest)

Or

DSE - 2: Public Finance **Credits 06**

DSE2T: Public Finance

Course Contents:

1. Fiscal Functions

- Overview of Fiscal Functions. Tool of Normative Analysis, Pareto Efficiency, Equity and Social Welfare

2. Public Goods:

- Characteristics; Exclusion Principle; Non-Applicability of exclusion Principle; Market Failure and Externalities.

3. Principles of Taxation:

- Benefit and Ability to Pay Approach-Direct and Indirect Taxation–Regressive, Progressive, Proportional Taxation. Public Debt- Internal and External-Burden of Debt.

4. Issues from Indian Public Finance:

- Current Issues of India's Tax System
- Working of (Monetary and) Fiscal Policies
- Analysis of Budget and Deficits
- Fiscal Federalism in India
- State and Local Finance

Suggested Readings:

1. R .A. Musgrave and P. B. Musgrave, Public Finance in Theory & Practice, Mc Graw-Hill Publications 5th Edition
2. Mahesh Purohit. Value Added Tax: Experience of India and Other Countries. Gayatri Publications.
3. Kaushik Basu and A Maertens(ed). The Oxford Companion to Economics in India. OUP.
4. M. M. Sury. Government Budgeting in India. Commonwealth Publishers
5. Government of India. Report of 13th Finance Commission.
6. Economic Survey. Government of India(latest)
7. State Finance: A Study of Budgets. RBI (latest)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

8. J. E. Stiglitz: Economics of Public Sector (W.W. Norton & Company, 3rd Edn. 2000)
9. A. Ghosh & C. Ghosh: Public Finance (Prentice-Hall India, 2nd Edn. 2014)
10. Subrata Ganguly - Public Finance
11. Datt and Sundharam: Indian Economy (S. Chand, Latest Edition)
12. Misra and Puri: Indian Economy (Himalaya Publishing House, Latest Edition)

Or

DSE - 2: Economic History of India (1857-1947) **Credits 06**

DSE2T: Economic History of India (1857-1947)

Course Contents:

1. Introduction: Colonial India: Background and Introduction
Overview of colonial economy.

2. Macro Trends
National Income; population; occupational structure.

3. Agriculture
Agrarian structure and land relations; agricultural markets and institutions – credit, commerce and technology; trends in performance and productivity; famines.

4. Railways and Industry
Railways; the de-industrialisation debate; evolution of entrepreneurial and industrial structure; nature of industrialisation in the interwar period; constraints to industrial breakthrough; labor relations.

5. Economy and State in the Imperial Context
The imperial priorities and the Indian economy; drain of wealth; international trade, capital flows and the colonial economy – changes and continuities; government and fiscal policy.

Suggested Readings:

1. Lakshmi Subramanian, *"History of India 1707-1857"*, Orient Blackswan, 2010, Chapter 4.
2. Sumit Guha, 1991, _Mortality decline in early 20th century India', *Indian Economic and Social History Review (IESHR)*, pp 371-74 and 385-87.
3. Tirthankar Roy, *The Economic History of India 1857-1947*, Oxford University Press, 3rd edition, 2011.
4. J. Krishnamurty, *Occupational Structure*, Dharma Kumar (editor), The Cambridge Economic History of India, Vol. II, (henceforth referred to as CEHI), 2005,Chapter 6.
5. Irfan Habib, *Indian Economy 1858-1914*, A People's History of India, Vol.28, Tulika, 2006.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

6. Ira Klein, 1984, ―When Rains Fail: Famine relief and mortality in British India, *IESHR* 21.
7. Jean Dreze, *Famine Prevention in India in Dreze and Sen (eds.) Political Economy of Hunger*, WIDER Studies in Development Economics, 1990, pp.13- 35.
8. John Hurd, *Railways*, CEHI, Chapter 8, pp.737-761.
9. Rajat Ray (ed.), *Entrepreneurship and Industry in India*, 1994.
10. AK Bagchi, ―Deindustrialization in India in the nineteenth century: Some theoretical implications‖, *Journal of Development Studies*, 1976.
11. MD Morris, *Emergence of an Industrial Labour Force in India*, OUP 1965, Chapter 11, Summary and Conclusions.
12. K.N. Chaudhuri, *Foreign Trade and Balance of Payments*, CEHI, Chapter 10.
13. B.R. Tomlison, 1975, *India and the British Empire 1880-1935,* IESHR, Vol.XII.
14. Dharma Kumar, *The Fiscal System,* CEHI, Chapter 12.
15. Basudev Chatterjee, *Trade, Tariffs and Empire*, OUP 1992, Epilogue. Background reading
16. Irfan Habib, *Indian Economy 1858-1914* (A People's History of India), Vol.28, Tulika 2006.
17. Daniel Thorner, *Agrarian Prospect in India*, 1977.
18. L. Visaria and P. Visaria, *Population*. CEHI, Chapter 5.

Or

DSE - 2: Basic Statistics **Credits 06**

DSE2T: Basic Statistics
Course Contents:

1. Meaning and scope of statistics:
Variable, Attribute, Primary and Secondary Data, Population and Sample, Census and Sample Survey, Classification of data and Tabulation.

2. Frequency Distributions:
Frequency distribution of an Attribute, Frequency distribution of a discrete variable, Frequency distribution of a continuous variable, Construction of Frequency distribution from raw data, Cumulative Frequency distribution.

3. Charts and Diagrams:
Meaning and functions of Graphs – Types of Charts and Diagrams – Line Diagram, Bar Diagram, Pie Diagram, Pictogram, Statistical Map, Frequency Polygon, Histogram, Step Diagram, Ogive or Cumulative Frequency Polygon, Frequency Curve.

4. Measures of Central Tendency:
Arithmetic Mean (AM), Geometric Mean (GM), Harmonic Mean (HM), Median, Mode (Definitions, formulae and simple numerical problems).

5. Measures of Dispersion:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Meaning and necessity, Range, Quartile Deviation (QD), Mean Deviation (MD), Standard Deviation (SD), Coefficient of Variation(CV),(Concepts only).

Suggested Readings:

1. Goon. A.M, Gupta M.K. and Dasgupts. B.. Basic Statistics , M. Das and Co.,Calcutta.
2. Das, N.G., Statistical Methods, The EWorld Press Pvt. Ltd., Calcutta.
3. Gupta, S.P., Statistical Methods, Sultan Chand and Sons, New Delhi.
4. Raj Kumar Sen, Sankha Totya, Paschhim Banga Rajya Pustak Parshad.
5. Sailesh Bhusan Choudhury, Arijit Choudhury, Biswanath Das., Rasi Bigganer Mul Totya (First Part),Paschhim Banga Rajya Pustak Parshad.

Or

DSE -2: Project Work **Credits 06**

Skill* Enhancement *Course (SEC)

SEC-1: Basic Computer Applications **Credits 02**

SEC1T: Basic Computer Applications **Credits 01**

Course Contents:

1. File Creation and Management System

- The File Tree; File Naming Conventions;

2. Word Processing

- Basic features of Text formatting; Creating documents; Heading Styles; Creating Reference Lists

3. Spread Sheet Solutions

- Basic features of Spreadsheets; Data entry, Mathematical Functions, Financial functions, Statistical Functions, Creating simple Line, Bar and Pie charts;

4. Presentations

- Creating Presentations; Pasting Charts etc in Presentations; Exporting Presentations as PDF

SEC1P: Practical **Credits 01**

1. File Creation and Management System
2. Word Processing
3. Spread Sheet Solutions
4. Presentations

Suggested Readings:

1. Data Analysis using Microsoft Excel – Ash Narayan Sah, Excel Books India

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

2. Excel 2010 ,r Dummies Colin Banfield, John Walkenbach

Or

SEC-1 : **Indian Financial System** **Credits 02**

SEC1T : **Indian Financial System**

Course Contents:

1. **Definition of Money Market:**
   - Basic Concepts of Call money market, Commercial Bills market, Treasury Bills market, Short-Term loan market, Features and objectives of Money Market, Features of Developed Money Market

2. **Commercial and the Central Bank**
   - Nature and function of Central Bank and the money supply-different concept of money supply and their uses-credit creation and credit multiplier-theories of asset management- Role of commercial banks in development
   - Central Bank's functions- Central Bank and money market– Techniques of management-bank rate policy, open market operations and variable reserve ratio and selective instruments of credit control.

3. Non-Banking Financial Intermediaries (NBFIs)
   - Distinction between commercial banks and NBFIs- validity of the distinction-Central bank's control over the NBFIs.

4. Introduction to Capital Market
   - Basic Concept of organized and unorganized Capital Market Distinction between Primary Market and Secondary market. Differences between Share and Bond

5. Operations of Indian Stock Market
Stock Exchanges in India–national and regional, Market Players, types of traded instruments, Trading–floor based and screen based, Stock Indices, Credit rating and Credit rating agencies.

6. Capital Market Regulatory Authority
   - Role and Functions of Regulatory Authorities
   - Securities and Exchange Board of India (SEBI)

Suggested Readings:
1. S.B.Gupta: Monetary Economics Institutions, Theory and Policy.
2. E. Gordon, K.Natarajan: Financial Markets and Services.
3. Varshney & Mittal: Indian Financial System
4. A. M. Mithani: Money Banking International Trade and Public Finance. (Chapters 11, 13, 14, 16, 17, 18).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

5. Desai,V.: The Indian Financial System.
6. Bharati Pathak: Indian Financial System, 4th Edn. Pearson

Or

SEC- 1: Indian Official Statistics **Credits 02**

SEC1T: Indian Official Statistics

Course Contents:

1. Introduction:
What is Official Statistics? Methods of Collecting Official Statistics, Aims and Objectives, Indian Statistical System: Main functions of Statistical System in Indian, Institutional Framework- Official Organizations for collecting/compiling/ publishing national/state level data on different variables

2. Economic Census:
Economic Statistics, Population Statistics, Employment Statistics, Agriculture Statistics, Financial Statistics - Main Publications, Who collects - Periodicity and Features

3. Economic Survey:
Understanding Economic Survey

4. Sources of demographic data:
Registration of Vital events. Rates and ratios. Measures of mortality. Measures of fertility and Reproduction. Use of demographic data for policy formulation.

5. International Statistical System:
Comparison of major macro variables - National Income/GDP. Selected topics from: Purchasing power parity; Indicators relating to Energy, environment, Gender, Industry, National accounts, Social Statistics and Trade.

Suggested Readings:

1. M. R. Saluja: Indian Official Statistical Systems.
2. CSO (MOSPI) Publication: Statistical System in India.
3. United Nations publications
4. RBI: Handbook of Statistics for the Indian Economy (various years)
5. Economic Survey, Govt. of India, Ministry of Finance (various years)
6. R. Ramkumar: Technical Demography.
7. K. Srinivasan: Demographic Techniques and Applications.
8. B. D. Mishra: An Introduction to the Study of Population.
9. H. S. Shryock: The Methods and Materials in Demography.
10. Economic Survey (latest), Government of India, Ministry of Finance.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

SEC-2: Computer Application in Economics **Credits 02**

SEC2T: Computer Application in Economics **Credits 01**

Course Contents:

A. File Creation and Management System
- The File Tree - File Naming Conventions

B. Word Processing
- Basic Features of Text formatting - Creating Documents - Heading Styles - Creating Reference Lists.

C. Introduction to Excel/Spreadsheet for Economic Analysis of Data
- Types of Data – Time Series, Cross Section –Excel Basic – Data Entry & Creation of Tables - Formula and Functions - Sort and Filter.

D. Graphical Representation of Data Sets
- Pie Chart, Bar Chart, Histogram, Frequency Polygon, Ogive, Bivariate Scatter Diagram.

E. Using Spreadsheet / Excel for Calculation of Descriptive Statistics
- Mean Median, Mode, Standard Deviation, Simple Correlation, and Regression.

F. Presentations
- Creating Presentations - Pasting Charts etc in Presentations - Exporting Presentations as PDF.

SEC2P: Practical **Credits 01**

1. File Creation and Management System
2. Word Processing
3. Excel/Spreadsheet for Economic Analysis of Data
4. Graphical Representation of Data Sets
5. Using Spreadsheet / Excel for Calculation of Descriptive Statistics
6. Presentations

Suggested Readings:

1. Ash Narayan Sah: Data Analysis Using Microsoft Excel (Excel Books India)
2. Gray Koop: Analysis of Economic Data (John Wiley & Sons Ltd)
3. Richard L.Kerns: Essentials of Microsoft Windows, Word & Excel (Prentice Hall India)
4. V. RajaRaman: Fundamentals of Computers (PHI, New Delhi)
5. Stephan Levine & Krehbiel Berenson: Statistics for Managers Using Microsoft Excel (PHI Learning)
6. A. Leon & M. Leon: Introduction To Computers with MS Office (TMH)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Or

SEC-2: Business Project Proposal **Credits 02**

SEC2T: Business Project Proposal

Course Contents:

1. Identification of business opportunity: Idea of a good business opportunity, Business opportunities in India, The RAMP (Return, Advantage, Market and Potential) model for business opportunity evaluation.

2. Purpose of a business plan, contents of a business plan: Marketing plan, Operations plan, Financial plan, Presenting a business plan

3. Procedure for setting up a business project: Meaning of project , project identification and selection, project report , its significance and contents, formulation of a project report

4. Project evaluation and selection: The payback period, Net present value (NPV), Internal rate of return (IRR), Benefit-cost ratio

5. Project financing: Equity financing, Angel Financing, Debt financing, other sources

Suggested Readings:

1. S.S Khanka--- Entrepreneurial Development, S.Chand & Company Ltd
2. Poornima .M. Charantimath – Entrepreneurship Development and small business enterprises, Pearson
3. Prasanna Chandra: Project Preparation, Appraisal and Implementation; Tata McGraw Hill, New Delhi, 7th edition, 2009
4. Maylor : Project Management; Pearson Education (FT), 3rd edition, 2005
5. Desai : Project management and entrepreneurship; Himalaya Publishing House, 1st edition, 2002
6. Users' manual for MS Project, Microsoft
7. Dasgupta and Pearce : Cost benefit analysis: theory and practice,

Or

SEC-2: Financial Economics **Credits 02**

SEC2T: Financial Economics

Course Outline

1. Deterministic cash-flow streams

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Basic theory of interest; discounting and present value; internal rate of return; evaluation Criteria; fixed-income securities; bond prices and yields; interest rate sensitivity and duration;
immunisation; the term structure of interest rates; yield curves; spot rates and forward rates.

2. Single-period random cash flows

Random asset returns; portfolios of assets; portfolio mean and variance; feasible combinations of mean and variance; mean-variance portfolio analysis: the Markowitz model and the two-fund theorem; risk-free assets and the one-fund theorem.

3. Capital Asset Pricing Model (CAPM)

The capital market line; the capital asset pricing model; the beta of an asset and of a portfolio; Security market line; use of the CAPM model in investment analysis and as a pricing formula.

Suggested Readings:

1. David G. Luenberger, *Investment Science*, Oxford University Press, USA, 1997.
2. Richard A. Brealey and Stewart C. Myers, *Principles of Corporate Finance*, McGraw-Hill, 7th edition, 2002.
3. Burton G. Malkiel, *A Random Walk Down Wall Street*, W.W. Norton & Company, 2003.
4. Simon Benninga, *Financial Modeling*, MIT Press, USA, 1997

SEC-3: Research Methodology **Credits 02**

SEC3T: Research Methodology

Course Contents:

Unit-1

1. Understanding the Nature of Research
2. Formulation of the Research Topic
3. Review of Literature

Unit-2

1. Approaches to Research and Research Strategy
2. Research Ethics
3. Using Secondary Data
4. Using Primary Data – Collecting Data through Observations/ Interviews/ Questionnaire

Unit-3

1. Sample Selection Methods
2. Analysing Data
3. Writing Project Report - Referencing Styles

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Suggested Readings:

1. Ranjit Kumar: Research Methodology - A Step by Step Guide for Beginners (Sage Publications, 4th Edn.)
2. Uwe Flick: Introducing Research Methodology - A Beginner's Guide to Doing a Research Project, (Sage Publications)
3. J. Bethlehem: Applied Survey Methods- A Statistical Perspective (Willey)
4. Wilkinson & Bhandarkar: Research Methodology.

Or

SEC-3: Contemporary Economic Issues **Credits 02**

SEC3T: Contemporary Economic Issues

Course Contents:

A. Understanding Economic Development

- Conceptual Issues about the Relationship between Growth & Development
- Evolution of the Concept of Economic Development & its Measurement:
- Traditional View of Development - Use of National & Per Capita Income as Index of Economic Development
- Modern View of Development: PQLI & Basic Needs Approach in the Seventies – Concept of Human Development & Introduction of "Human Face" in the Nineties – Construction & Use of Human Development Index (HDI) for Measuring & Comparing Levels of Development – Concept of Human Deprivation – The Human Poverty Index (HPI) – Gender Related Development Index (GDI)
- Sen's Capabilities Approach to Development – Development as Freedom & Poverty as a Measure of Capability Failure. Alternative Concepts of Development: Top-Down Development, Participatory Development, Inclusive Development & Sustainable Development

B. Understanding Fiscal Policy & Government Budget

- Meaning & Objectives of Fiscal Policy – Need for Govt. Spending & Areas of Govt. Spending
- Government Budget-Types, Structure & Elements: Balanced, Surplus, and Deficit Budgets - Expenditure & Receipts – Concepts of Current & Capital Account
- Classification of Expenditure: Capital Expenditure & Revenue expenditure – Plan & Non-Plan Expenditure
- Sources of Revenue: Tax & Non-Tax Revenue.
- Tax Revenue: Types of Tax – Direct Tax & Indirect Tax – Concepts of VAT & Goods and Services Tax (GST).
- Non-Tax Revenue: Earnings from Public Undertakings, Interest on Loans.
- Concepts of Budget Deficit: Fiscal Deficit, Primary Deficit & Revenue Deficit – Impact of Fiscal Deficits on Economy & Needs to Control Fiscal Deficits.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

- Understanding the Process of Budget Making in India – Analysis of Budget in Terms of Different Parameters like Trends in Deficits, Proposed Sources of Revenue & Expected Growth in Revenue, Expenditure Pattern and the thrust areas of the Budget.

C. Some Contemporary Issues of the Indian Economy

Competing & Complementary roles of agriculture & industry in economic development of India.

- Urban bias in Development strategies and the Migration & Urbanization Dilemma.
- Problems of Land acquisition and Industrialisation.
- Growth of Service Sector & Service-led Growth.
- Food Security, Food Procurement & PDS.
- The Parallel Economy in India: Concept of Black Money – Estimates – Sources – Impacts – Measures to Tackle Black Money.

Suggested Readings:

1. Michael P. Todaro & Stephen C. Smith: Economic Development (Pearson, 10th Edn.)
2. Debraj Ray: Development Economics (Oxford University Press, 2009)
3. Musgrave: Theory of Public Finance
4. H.L. Bhatia. Public Finance. (Fifteenth Revised Edition).
5. Sampat Mukherjee: Contemporary Development Economics (New Central Book agency)
6. Datt and Sundharam: Indian Economy (S. Chand, Latest Edition)
7. Misra and Puri: Indian Economy (Himalaya Publishing House, Latest Edition)
8. Pranab Mukherjee (2012): " Budget Making" in K. Basu & A. Maertens (Eds), The New Oxford Companion to Economics in India (OUP)
9. Uma Kapila (2016): "Fiscal & Budgetary Developments", in Indian Economy Since Independence (Academic Foundation, Latest Edn.)
10. " Understanding the Budget Concepts & Terminologies", in Centre for Budget & Governance Accountability Website

Or

SEC-3: Indian Stock Market Trading **Credits 02**

SEC3T: Indian Stock Market Trading

Course Contents:

1. A Review of Share Market

Market segments: Primary Market, Secondary Market.

Key indicators of Stock Markets: Index, Market Capitalisation, Turnover.

Participants: Investors: Hedgers, Speculators, Arbitragers, Stock Brokers: Eligibility. Members: Eligibility Criteria for Membership, Suspension & Expulsion of Membership,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

Sub-brokers: Eligibility, Registration and Cancellation of Registration. (Examples from NSE).

2. Stock Trading

Broker - Clients Relations : Client registration documents, Unique Client Code, Margins from the clients, Execution of orders, Contract note, Payments/Delivery of securities to the clients, Brokerage, Segregation of Bank Accounts, Segregation of Demat accounts.

Sub – Broker – Clients relations: Relationship with clients, Contract notes, Securities/ Funds.

Neat System: Order types, Entering Orders, Order modification, Order cancellation, Order matching, Trade cancellation.

Market Phases: (Examples from NSE)

3. Clearing and Settlement

Terminologies used In clearing and settlement process, Transaction cycle, Settlement agencies, Clearing and Settlement process, Securities and Funds Settlement, Shortages Handling, Risks in Settlement,

Suggested Readings:

1. www.nseindia.com
2. www.sebi.gov.in
3. Rules, Regulations and Byelaws of NSEIL & NSCCL
4. Indian Securities Market: A Review - NSEIL publication
5. NSE Newsletter – NSEIL publication
6. L. M. Bhole and J. Mahukud: Financial Institutions and Markets, Tata McGraw Hill, 5th edition, 2011.
7. Larry Harris: Trading and Exchanges –Market Microstructure for practitioners, OUP
8. Modules for NCFM, NSE.
9. R. Nangalia and S. Kothari: Basics of Stock Market, Flame Investment Lab.

SEC-4: Data Analysis **Credits 02**

SEC4T: Data Analysis

Course Contents:

A. Statistical Data: **Classification, Collection & Presentation**

- Meaning of Statistical Data – Classification of Data -Variable & Attribute - Primary Data & Secondary Data - Methods of Collection of Data - Population & Sample - Complete Enumeration (Census) & Sample Survey- Random Sampling (Concept only).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

- Tabulation & Diagrammatic Presentation of Data – Line, Bar & Pie Diagram.
- Frequency Distribution and its Diagrammatic Presentation: Construction of Frequency Distribution (Simple & Grouped) –Histogram, Ogive & Frequency Polygon.

B. Descriptive Statistics

- Measures of Central Tendency – Mean, Median & Mode (Concepts & Formulae Only)
- Measures of Dispersion – Range, Mean Deviation, Standard Deviation, Co-efficient of Variation (Concepts & Formulae Only)
- Concepts of Skewness & Kurtosis
- Concept of Simple Correlation & Regression

C. Analysis of Indian Data

- Economic Surveys – RBI Bulletins – Handbook of Statistics for the Indian Economy (RBI) – ASI Data – Census Data - Foreign Trade Statistics – NSS Data

Suggested Readings:

1. N. G. Das – Statistical Methods ((Tata McGrawhill)
2. Nagar and Das – Basic Statistics for Business and Economics
3. Goon, Gupta and Dasgupta: Basic Statistics
4. R Spiegel and L.J. Stephen: Statistics (Schaum Series)
5. Official Websites of RBI, Govt. of India, CSO, NSS, ASI

Or

SEC- 4: Entrepreneurship Development **Credits 02**

SEC4T: Entrepreneurship Development
Course Contents:

1. Evolution of the concept of Entrepreneur

- Basic features - Entrepreneurship and economic development - Growth of entrepreneurship in India—Role of Entrepreneurship in Economic Development, Problem of Rural entrepreneurship in India

2. Entrepreneurship motivation

- Motivation theories, Maslow's need Hierarchy Theory, McCell and Acquired Needs Theory, Kakinada Experiment

3. Project identification and selection

- Meaning of project- project report--- planning commission's guidelines for formulating a project report

4. Financial resources for new ventures

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

- Sources of finance---capital structure - institutional support to enterprises—national small industries board – state small industries development corporation--- district industries center--- industrial estates

5. Growth strategies in small business

- Stages of growth, Types of growth strategies, Expansion, Diversification, Joint Venture, Merger, Subcontracting

6. Sickness in Small Business

- Concept of industrial sickness, Symptoms of sickness, Causes and consequences of industrial sickness

Suggested Readings:

1. S.S Khanka--- Entrepreneurial Development, S. Chand & Company Ltd
2. Bill Bolton and John Thompson ---- Entrepreneurs: Talent, Temperament and Technique, Butterworth and Heinemann.
3. David .H Holt---Entrepreneurship New Venture Creation
4. N.D.Vohra- Quantitative Techniques in Management , Tata Mcgraw-Hill
5. Sharma - Operations Research, Macmillan India Ltd.
6. Poornima M. Charantimath: Entrepreneurship Development and Small Business Enterprises (2nd Edition) Pearson.

Or

SEC-4: Insurance Market and its Products **Credits 02**

SEC4T: Insurance Market and its Products

Course Contents:

1. Evolution of insurance:

Meaning of Insurance; Nature, Functions, Different Classifications: Comparison of Life Insurance with other Insurances, Health insurance, Postal Life Insurance, Credit Insurance, Marine Insurance; Insurance organizations in India; Impact of privatization on insurance product diversification; IRDA Act, 1999, The Insurance (Amendment) Act, 2002.

2. Basic Principles of Insurance:

Key concepts, Economic Principles, Principles of insurance viz. Utmost good faith, Insurable interest, Indemnity, Subrogation, Contribution and Proximity Cause.
Methods of reinsurance: shopping reinsurance, facultative reinsurance, automatic or treaty reinsurance.

3. Claim management in insurance:

Significance of claims settlement, Claims under various classes of insurance, Disputes, Arbitration and Litigation, Trends in claims.

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

1. Insurance Institute of India (2011). *Principles of Insurance*, Available at: https://www.insuranceinstituteofindia.com/documents/10156/7b65c3ab-b4a8-426c-bc64-61b36ad41618, Mumbai
2. Periasamy, P. (2013). *Principles & Practice of Insurance*, 2nd Edition, Himalaya Publishing House
3. Sharma, R.S. (1953). *Insurance Principles and Practice*, Vora, Delhi.
4. Singh, A. *Principles of Insurance Law*, Easter Book Co.
5. Tripathy, N.P. & Pal, P. (2006). *Insurance: Theory & Practice*, 2nd Edition, Prentice –Hall of India P Ltd, New Delhi

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:24:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Economics_General.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B. A (HONOURS)
in

Sociology

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

VIDYASAGAR UNIVERSITY
B A (Honours) in Sociology
[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: Introduction to Sociology I	6	5-1-0	15	60	75
		Core-2		CT2: Sociology of India I	6	5-1-0	15	60	75
		GE-1		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-1		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: Introduction to Sociology II	6	5-1-0	15	60	75
		Core-4		CT4: Sociology of India II	6	5-1-0	15	60	75
		GE-2		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-2		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		CT5: Political Sociology	6	5-1-0	15	60	75
		Core-6		CT6: Sociology of Religion	6	5-1-0	15	60	75
		Core-7		CT7: Sociology of Gender	6	5-1-0	15	60	75
		GE-3		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-1		TBD	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		CT8: Economic Sociology	6	5-1-0	15	60	75
		Core-9		CT9: Sociology of Kinship	6	5-1-0	15	60	75
		Core-10		CT10:Social Stratification	6	5-1-0	15	60	75
		GE-4		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-2		TBD	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		CT11: Sociological Thinkers I	6	5-1-0	15	60	75
		Core-12		CT12: Sociological Research Methods I	6	5-1-0	15	60	75
		DSE-1		TBD	6	5-1-0	15	60	75
		DSE-2		TBD	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: Sociological Thinkers II	6	5-1-0	15	60	75
		Core-14		CT14: Sociological Research Methods II	6	5-1-0	15	60	75
		DSE-3		TBD	6	5-1-0	15	60	75
		DSE-4		TBD	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

List of Core Courses and Electives

Core Course(CC)

CC1 : Introduction to Sociology - I
CC 2 : Sociology of India – I
CC 3 : Introduction to Sociology II
CC 4 : Sociology of India – II
CC 5 : Political Sociology
CC 6 : Sociology of Religion
CC 7 : Sociology of Gender
CC 8 : Economic Sociology
CC 9 : Sociology Of Kinship
CC 10 : Social Stratification
CC 11 : Sociological Thinkers–I
CC 12 : Sociological Research Methods – I
CC 13 : Sociological Thinkers II
CC 14 : Research Methods II

Discipline Specific Electives (DSE)

DSE 1 : Urban Sociology
Or
DSE 1 : Agrarian Sociology
DSE 2 : Environmental Sociology
Or
DSE 2 : Sociology of Work
Or
DSE 2 : Sociology of Health and Medicine
DSE 3 : Indian Sociological Traditions
Or
DSE 3 : Visual Culture
DSE 4 : Reading Ethnographies
Or
DSE 4 : Project : Field work and Dissertation

Skill Enhancement Course (SEC)

SEC 1: Reading, Writing and Reasoning for Sociology
Or
SEC 1: Ethnographic Filmmaking
Or
SEC-1: Framing questionnaire and Conducting Interview
SEC-2: Handling Data: Coding and Tabulation
Or
SEC 2: Counseling
Or
SEC 2: Statistical Reasoning for Sociology

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Generic Electives (GE)

[Interdisciplinary for other Department]

GE 1 : Indian Society: Images and Realities
Or
GE 1 : Family and Intimacy
GE 2 : Rethinking Development
Or
GE 2: Gender and Violence
GE 3 : Sociology of Social Movements
Or
GE 3 : Sociology of Education
GE 4 : Sociology of Media
Or
GE 4 : Population and Society

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

CORE COURSE (CC)

CC-1 : Introduction to Sociology – I **Credits 06**

C1T : Introduction to Sociology – I

Course outline:

1. Sociology: Discipline and Perspective

1.1 Thinking Sociologically

1.2 Emergence of Sociology and Social Anthropology

2. Sociology and Other Social Sciences

2.1 Sociology and Social Anthropology

2.2 Sociology & Psychology

2.3 Sociology & History

3. Basic Concepts

3.1 Individual and Group

3.2 Associations and Institutions

3.3 Culture and Society

3.4 Social Change

Course contents and Itinerary

1. Sociology: Discipline and Perspective (1-3 Weeks)

1.1 Thinking Sociologically

1.1.1 Johnson, Allan G. 2008, *The Forest and the Trees: Sociology as Life Practice and Promise*, Philadelphia: Temple University Press, Introduction and Chapter 1, 'The Forest, the Trees and One Thing', Pp. 1-36

1.1.2 Beteille, Andre, 2009, *Sociology: Essays in Approach and Method*, Delhi: Oxford University Press, Chapter 1, 'Sociology and Common Sense', Pp. 13-27

1.1.3 Garner, James Finn, 1994, *Politically Correct Bedtime Stories: Modern Tales for Our Life and Times*, New Jersey: John Wiley & Sons Inc., Chapters, 'Little Red Riding Hood' & 'Rumpelstiltskin'

1.2 Emergence of Sociology

1.2.1 Ritzer, George, 1996, *Classical Sociological Theory*, New York: McGraw Hill, Chapter 1, 'A Historical Sketch of Sociological Theory- The Early Years', pp. 13-46

2. Sociology and Other Social Sciences (4-6 Weeks)

2.1 Sociology and Social Anthropology

2.1.1 Béteille, André, 1985, *Six Essays in Comparative Sociology*, New Delhi: Oxford University Press, Chapter 1, 'Sociology and Social Anthropology', Pp. 1-20

2.1.2 Beteille, André, 2002, *Sociology: Essays in Approach & Method*, Oxford University Press, Chapter 2, 'Sociology and Social Anthropology', Pp. 28-54

2.2 Sociology & Psychology

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.2.1 Bottomore, T. B. 1971, *Sociology: A Guide to Problems and Literature*, London: Allen and Unwin. Chapter 4, 'The Social Sciences, History and Philosophy', Pp. 65-80

2.2.2 Beattie, J., 1966, *Other Cultures*, London R.K.P., Chapter 2, 'Social Anthropology and Some Other Sciences of Man', pp. 25- 29

2.3 Sociology & History

2.3.1 Burke, Peter, 1980, *Sociology and History*, George Allen and Unwin, Chapter 1, 'Sociologists and Historians', Pp. 13-30

3. Basic Concepts (7-14 Weeks)

3.1. Individual and Group

3.1.1 MacIver, Robert M, and Charles Hunt Page. 1949. *Society*, New York: Rinehart. Chapter 10, 'Types of Social Groups', Pp. 213-237

3.1.2 Horton, Paul B., Chester L. Hunt. 2004, *Sociology*. New Delhi: Tata McGraw-Hill, Chapter 8, Pp. 185-209

3.2 Associations and Institutions

3.2.1. Horton, Paul B., Chester L. Hunt. 2004, *Sociology*. New Delhi: Tata McGraw Hill. Chapter 9, Pp. 210- 229

3.2.2 Firth, Raymond, 1956, *Human Types*, Thomas Nelson & Sons, Chapter 3, 'Work and Wealth of Primitive Communities', Pp. 71-97

3.3 Culture and Society

3.3.1 Bierstedt, Robert, 1974, *The Social Order*, New York: McGraw Hill Book Company Part 3, Chapter 5, 'The Meaning of Culture', p. 125-151, Chapter 6, 'The Content of Culture' Pp. 152-187, Chapter 7, 'The Acquisition of Culture', Pp. 188-212

3.3.2 Redfield, Robert 1956, Chapter 16, 'How Human Society Operates', in Harry L Shapiro (ed.) *Man, Culture and Society*. New York: Oxford University Press, Pp. 345-368

3.4 Social Change

3.4.1 Bierstedt, Robert 1974, *The Social Order*, McGraw Hill, Chapter 20, 'The Problem of Social Change' Pp. 527-567

3.4.2 Ritzer, George, 2004, The *McDonaldisation of Society*, Pine Forge Press, Chapter 1, 'An Introduction to McDonaldisation', Pp. 1-20, Chapter 2, McDonaldisation and Its Precursors' Pp. 21-39, Chapter 9, 'McDonaldisation In a Changing World', Pp. 167-199

CC- 2 : Sociology of India – I **Credits 06**

C2T : Sociology of India – I

Course outline:

1. India: An Object of Knowledge

1.1 The Colonial Discourse

1.2 The Nationalist Discourse

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.3 The Subaltern Critique

2. Indian Society: Concepts and Institutions

2.1. Caste: Concept and Critique
2.2. Agrarian Classes
2.3. Industry and Labour
2.4. Tribe: Profile and Location
2.5. Village: Structure and Change
2.6. Kinship: Principle and Pattern
2.7. Religion and Society

Course contents and Itinerary

1.1. The Colonial Discourse (Week 1)
1.1.1. Cohn, B.S., 1990, *An Anthropologist among the Historians and Other Essays*, Delhi: Oxford University Press, Pp.136-171
1.2. The Nationalist Discourse (Week 2-3)
1.2.1. Kaviraj, S., 2010, *The Imaginary Institution of India*, Ranikhet: Permanent Black, Pp.85-126
1.3. The Subaltern Critique (Week 4)
1.3.1. Guha, R., 1982, *Subaltern Studies, Volume I*. Delhi: Oxford University Press, Pp.1-8
2.1. Caste: Concept and Critique (Weeks 5-6)
2.1.1. Srinivas, M.N., 1969, The Caste System in India", in A. Béteille (ed.) *Social Inequality: Selected Readings*, Harmondsworth: Penguin Books, Pp.265-272
2.1.2. Mencher, J., 1991, „The Caste System Upside Down", in D. Gupta (ed.), *Social Stratification*, Delhi: Oxford University Press, pp.93-109
2.2. Agrarian Classes (Week 7)
2.2.1. Dhanagare, D.N., 1991, "The Model of Agrarian Classes in India", in D. Gupta (ed.), *Social Stratification*, Delhi: Oxford University Press, Pp. 271-275
2.3. Industry and Labour (Week 8)
2.3.1. Breman, J., 1999, "The Study of Industrial Labour in Post Colonial India: The Formal Sector", *Contributions to Indian Sociology*, 33(1&2), Pp.1-41
2.4. Tribe: Profile and Location (Week 9)
2.4.1. Haimendorf, C. V. F., 1967, „The Position of Tribal Population in India", in P. Mason *India and Ceylon: Unity and Diversity*, New York: Oxford University Press, Chapter 9
2.5. Village: Structure and Change (Week 10)
2.5.1. Srinvas, M. N., 1987, *The Dominant Caste and Other Essays*, Delhi: Oxford University Press, Pp.20-59
2.6. Kinship: Principle and Pattern (Week 11)
2.6.1. Karve, I., 1994, „The Kinship Map of India", in P. Uberoi (ed.) *Family, Kinship and Marriage in India*. Delhi: Oxford University Press, pp.50-73.
2.7. Religion and Society (Weeks 12-14)
2.7.1. Srinivas, M.N. and A. M. Shah, 1968, 'Hinduism', in D. L. Sills (ed.) *The International Encyclopaedia of Social Sciences*, Volume 6, New York: Macmillan, pp.358-366.
2.7.2. Momin, A.R., 1977, „The Indo Islamic Tradition", *Sociological Bulletin*, 26, pp. 242-258.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.7.3. Uberoi, J.P.S., 1997, The Five Symbols of Sikhism", in T.N. Madan (ed.) *Religion in India*, Delhi: Oxford University Press, pp. 320-332.

Note:
The students are required to explore the contemporary sources on social institutions. With the aid of visual, oral and other kinds of narratives/representations students, advised and guided by teachers, are expected to arrange discussion sessions, work on assignments, undertake projects and fieldwork, and make presentations week-wise from the onset to the end of the semester.

CC- 3 : Introduction to Sociology II **Credits 06**

C3T : Introduction to Sociology II

Course outline:

1. On the Plurality of Sociological Perspective
2. Functionalism
3. Interpretive Sociology
4. Conflict Perspective
5. Structuralism
6. Interactionism
7. Feminist Perspective

Course contents and Itinerary

1. On the Plurality of Sociological Perspective (1-2 Week)

1.1.1 Bottomore, T. B. 1971. *Sociology: A Guide to Problems and Literature*, London: Allen and Unwin, Chapter 2, Pp. 29-47

1.1.2 Gouldner, Alvin, 1977, 'Sociology's Basic Assumptions' in Thompson, Kenneth and Jeremy Tunstall, *Sociological Perspectives*, New York: Penguin Books Ltd, Pp. 13-17

2. Functionalism (3-4 Weeks)

1. Durkheim, mile, 1984, *The Division of Labour in Society*, Basingstoke: Macmillan. Pp. 149-174
2. Radcliffe Brown, A.R., 1976, *Structure and Function in Primitive Society*, Free Press Chapter 9 & 10, pp. 178-204.

3. Interpretive Sociology (4-6 Weeks)

Weber, Max, 1978, *Economy & Society: An outline of Interpretive Sociology*, Vol. 1, University of California Press, Basic Concepts, pp. 4-26.

4. Conflict Perspective (7-8 Weeks)

1. Marx, Karl, 1990, *Selected writings in Sociology and Social Philosophy*, Penguin Books Limited, Pp. 88-101
2. Dahrendorf, Ralf, 1968, *Essays in the Theory of Society*, Stanford: Stanford University Press, Chapters 4 & 5, Pp. 107-150

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

5. Structuralism (8-9 Weeks)

Leach, Edmund, 1973, 'Structuralism in Social Anthropology', In Robey, David *Structuralism: An Introduction*, 1st ed., Oxford: Clarendon Press, 37-56

6. Interactionism (9-11 Weeks)

1. Magill, Frank N., 1996, *International Encyclopedia of Sociology*, Volume 1, Routledge, Pp. 690-693
2. Giddens, Anthony, 2010, *Sociology*, 6th edition, Polity, Chapter 7, 'Social Interaction in Everyday Life', Pp. 247-280

7. Feminist Perspective (12-14)

Jackson, S. and S. Scott (eds.), 2002, Gender: A Sociological Reader, London: Routledge, Introduction, pp. 1-26.

CC - 4 : Sociology of India – II **Credits 06**

C4T : Sociology of India – II

Course outline:

1. Ideas of India

1.1. Gandhi and Ambedkar
1.2. Indological and Ethnographic Approaches

2. Resistance, Mobilization, Change

2.1. Dalit Politics
2.2. Mobility and Change
2.3. Women's Movement
2.4. Peasant Movements
2.5. Ethnic Movements
2.6. Middle Class Phenomenon

3. Challenges to Civilization, State and Society

3.1. Communalism
3.2. Secularism
3.3. Nationalism

Course contents and Itinerary

1.1. Gandhi and Ambedkar (Weeks 1-2)

1.1.1. Ambedkar, B. R., 1971 [1936], *Annihilation of Caste*, Jullunder: Bheem Patrika

1.2. Indological and Ethnographic Approaches (Weeks 3-4)

1.2.1. Uberoi, P. et al., 2007, 'Introduction: The Professionalization of Indian Anthropology and Sociology: Peoples, Places and Institutions' in P. Uberoi et al (eds.) *Anthropology in the East: Founders of Indian Sociology and Anthropology*, New Delhi: Permanent Black, pp. 1-63.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.2.2. Dumont, L. and D. Pocock, 1957, 'For a Sociology of India', *Contributions to Indian Sociology*, 1, pp.7-22.

2.1. Dalit Politics (Week 5)

2.1.1. Shah, G., 2001, *Dalit Identity and Politics*, New Delhi: Sage Publications, pp.17-43.

2.2. Mobility and Change (Week 6)

2.2.1. Srinivas, M.N., 1956, 'A Note on Sanskritization and Westernization', *The Far Eastern Quarterly*, 15(4), Pp. 481-496

2.3. Women's Movement (Week 7)

2.3.1. Menon, N., (ed.) 1999, *Gender and Politics in India*, Delhi: Oxford University Press, pp. 342-369.

2.4. Peasant Movements (Week 8)

2.4.1. Pouchepadass, J., 1980, 'Peasant Classes in Twentieth Century Agrarian Movements in India', in E. Hobsbawm (ed.) *Peasants in History*, Delhi: Oxford University Press, Pp.136-155

2.5. Ethnic Movements (Week 9)

2.5.1. Baruah, S., 2010, 'The Assam Movement' in T.K. Oommen (ed.) *Social Movements I: Issues of Identity*. Delhi: Oxford University Press, Pp.191-208

2.6. Middle Class Phenomenon (Week 10)

2.6.1. Deshpande, S., 2003, *Contemporary India: A Sociological View*, New Delhi: Penguin Books, Pp.125-150

3.1. Communalism (Week 11)

3.1.1. Dumont, L., 1997, *Religion, Politics and History in India*, Paris: Mouton, pp. 89-110.

3.2. Secularism (Weeks 12-13)

3.2.1. Kumar, R., 1986, 'The Varieties of Secular Experience', in *Essays in the Social History of Modern India*, Calcutta: Oxford University Press, pp. 31-46.

3.2.2. Madan, T. N., 1997, *Modern Myths, Locked Minds,* Delhi: Oxford University Press, pp. 233-265.

3.3. Nationalism (Week 14)

3.3.1. Oommen, T. K., 1997, *Citizenship and National identity: From Colonialism to Globalism*. New Delhi: Sage Publications, pp.143-172.

Additional Instruction:

The students are required to explore the contemporary sources on social institutions. With the aid of visual, oral and other kinds of narratives/representations students, advised and guided by teachers, are expected to arrange discussion sessions, work on assignments, undertake projects and fieldwork, and make presentations week-wise from the onset to the end of the semester.

Additional Reading:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Ray, N. R., 1973, *Nationalism in India: A Historical Analysis of its Stresses and Strains*, Aligarh: Aligarh Muslim University Press.

CC - 5: Political Sociology **Credits 06**

C5T: Political Sociology

Course Contents:

1. Contextualising the study of Politics
2. Basic Concepts
2.1 Power and Authority
2.2 State, Governance and Citizenship
2.3 Elites and the Ruling Classes
3. Political Systems: Segmentary, Totalitarian and Democratic
4. Everyday State and Local Structures of Power

Course contents and Itinerary

1. **Contextualising the study of Politics (Weeks 1-2)**

1.1.1 Eisenstadt, S. N. '1971, 'General Introduction: The Scope and Development of Political Sociology' in *Political Sociology:* A Reader Basic Books, New Your Publication, pp 3-24.

1.1.2 Lewellen, Ted. 2003, 'The Development of Political Anthropology' in *Political Anthropology: An Introduction (Third Edition)*, Praeger, pp. 1-14.

2. Basic Concepts (Weeks 3 – 8)

2.1 Power and Authority

2.1.1 Weber, Max. 1978, *Economy and Society: An Outline of Interpretative Sociology*, Berkeley: University of California Press, pp. 53-54; 941-54; 212-30; 241-54.

2.1.2 Lukes, Steven. 2005, Power: A Radical View, 2nd Ed., Hampshire : Palgrave, pp. 14-49.

2.2 State, Governance and Citizenship

2.2.1 Mitchell, Timothy. 'Society, Economy, and the State Effect', in A. Sharma and A. Gupta (Ed.), *The Anthropology of the State: A Reader*, Oxford: Blackwell, 2006, pp. 169-85

2.2.2 Burchell, Graham et al (Eds), 1991, *The Foucault Effect: Studies in Governmentality*, The University of Chicago Press, Chapter 1, pp. 1-51

2.2.3 Marshall, T.H. 1950, *Citizenship and Social Class and Other Essays*, Cambridge University Press, pp. 10-27.

2.2.4 Tilly, Charles. 1999, 'Where Do Rights Come From?' in Theda Skocpol (Ed) *Democracy, Revolution and History*, Cornell University Press, pp. 55-72.

2.3 Elites and the Ruling Classes

2.3.1 Mills, C. Wright, 1956. *The Power Elite, New Edition*, OUP, pp. 269-297.

2.3.2 Bottomore, T.B. 1993, *Elites and Society, 2nd Edition*, Routledge, pp. 15-34

3. Political Systems: Segmentary, Totalitarian and Democratic (Weeks 9 – 11)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3.1.1 Fortes, M. and E.E. Evans Pritchard (Eds), 1940. *African Political Systems.* London: Oxford University Press, Chapter 8.
3.1.2 Tapper, Richard, 1990. 'Anthropologists, Historians, and Tribespeople' in Philip Shukry and Joseph Kostiner (Ed) *Tribes and State Formation in the Middle East*, University of California Press, pp. 48-71
3.1.3 Schapiro, L. 1972. *Totalitarianism*, The Pall Mall Press, Chaps 2,3
3.1.4 Macpherson, C. B. 1966. *The Real World of Democracy*, Oxford Clarendon Press, pp. 1-45
3.1.5 Chomsky, N. 1999. *Profit over People: Neoliberlaism and Global Order.* Severn Stories Press, pp. 7-18, 43-64

4. Everyday State and Local Structures of Power: State and Politics in India (Weeks 12 -14)
4.1.1 Fuller, C.J. and V. Benei (Eds.), 2000. *The Everyday State and Society in Modern India.* Social Science Press, pp. 1-30
4.1.2 Tarlo, Emma, 2003 *Unsettling Memories: Narratives of the Emergency in Delhi*, University of California Press, pp. 62-93
4.1.3 Swartz, M.J (Ed), 1968. *Local Level Politics: Social and Cultural Perspectives*, University of London Press, pp. 281-94

CC- 6 : Sociology of Religion **Credits 06**

C6T : Sociology of Religion

Course outline:
1. Social and Religious
1.1 Formulating Religious
1.2 Asceticism and Accumulation
1.3 Theodicy and Eschatology
1.4 State, Religion and Emancipation
1.5 Religious and Solitude

2. Elements of Religious
2.1 Sacred, Myth, Ritual
2.2 Time-Space
2.3 Rationality
3. Techniques of Religious
3.1 Prayer
3.2 Craft
3.3 Body

Course Contents and Itinerary

1. Social and Religious (Weeks 1-5)
1.1 Formulating Religious
1.1.1 Emile Durkheim. 1995. *The elementary forms of religious life*. Translated by Karen E. Fields. New York: The Free Press. Book one and Conclusion, pp. 21-39, 418-440.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.2 Asceticism and Accumulation

1.2.1. Max Weber. 2001. *The Protestant ethic and the spirit of capitalism*. Translated by Stephen Kalberg. England: Roxbury Publishing Press, pp. 103-126.

1.3 Theodicy and Eschatology

1.3.1 Max Weber.1978. *Economy and society*. Edited by Guenther Roth and Claus Wittich. California: University of California Press. Volume Two, pp.518-521.

1.4 State, Religion and Emancipation

1.4.1 Marx, Karl. 2008/9 [1843]. "On the Jewish Question" in *Deutsch-Französische Jahrbücher*. Proofed and Corrected: by Andy Blunden, Matthew Grant and Matthew Carmody. www. marxists. org

1.5 Religious and Solitude

1.5.1 Malinowski, Bronislaw. 1948. *Magic, science and religion and other essays*. Selected, and with an introduction by Robert Redfield. Boston: The Free Press, pp. 37-50.

2. Elements of religious (Weeks 6-11)

2.1 Sacred, Myth, Ritual

2.1.1 Emile Durkheim. 1995. *The elementary forms of religious life*. Translated by Karen E. Fields. New York: The Free Press, Book one, pp. 27-33.

2.1.2 Srinivas, M. N. 1952. *Religion and society among the Coorgs of south India*. Clarendon: Oxford, pp100-122.

2.1.3 Malinowski, Bronislaw. 1948. *Magic, science and religion and other essays*. Selected, and with an introduction by Robert Redfield. Boston: The Free Press, pp. 119-124.

2.1.4 Emile Durkheim. 1995. *The elementary forms of religious life*. Translated by Karen E. Fields. New York: The Free Press. Book three, pp. 303-412.

2.2 Time-Space

2.2.1. E. E. Evans-Pritchard. 1963 (1940). "Time and Space." In *The Nuer*. Oxford: Clarendon Press, pp. 94-98, 100-108.

2.3 Rationality

2.3.1 Tambiah, Stanley Jeyaraja. 1990. *Magic, science, religion and the scope of rationality*. Cambridge: Cambridge University Press, pp. 1-41.

3. Techniques of religious (Weeks 12-14)

3.1 Prayer

3.1.1. Mauss, Marcel.2008 (2003). *On prayer*. USA: Berghahn Books, pp. 19-58.

3.2 Craft

3.2.1. Ginzburg, Carlo.1991. *Ecstasies*. Translated by Raymond Rosenthal. New York: Pantheon Press, pp. 1-32.

3.3 Body

3.3.1 Robert, Hertz. 1973 (1909). "The Pre-eminence of the Right Hand." In *Right and Left: Essays on Dual Symbolic Classification*, edited by R. Needham. Chicago: University of Chicago Press, pp. 3-10, 13-14, 16-17, 19-21.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

CC -7: Sociology of Gender **Credits 06**

C7T: Sociology of Gender

Course Outline:

1. Gendering Sociology
2. Gender as a Social Construct
2.1. Gender, Sex, Sexuality
2.2. Production of Masculinity and Femininity
3. Gender: Differences and Inequalities
3.1. Class, Caste
3.2. Family, Work
4. Gender, Power and Resistance
4.1. Power and Subordination
4.2. Resistance and Movements

Course contents and Itinerary

1. Gendering Sociology: [Week 1]

1.1 S. Jackson and S. Scott (eds.) 2002 *Gender: A Sociological Reader*, London: Routledge. Introduction, (pp. 1-26).

1.2 Liz Stanley. 2002. „Should Sex Really be Gender or Gender Really be Sex‟ in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*, London: Routledge (pp. 31-41)

1.3 Strathern, Marilyn. 1987. "An Awkward Relationship: The Case of Feminism and Anthropology." *Signs* 12(2):276-292.

2. Gender as a Social Construct

2.1 Gender, Sex, Sexuality [Weeks 2-3]

2.1.1 Sherry Ortner. 1974. "Is male to female as nature is to culture?" M.Z. Rosaldo and L. Lamphere (eds.) *Women, culture and society*. Stanford: Stanford University Press (pp. 67- 87).

2.1.2 Rubin, Gayle. 1984. "Thinking Sex: Notes for a Radical Theory of the Politics of Sexuality" in Carole Vance, ed., *Pleasure and anger*.London: Routledge (pp 143-179).

2.1.3 Newton, Esther. 2000. "Of Yams, Grinders and Gays: The Anthropology of Homosexuality" in *Margaret Mead Made Me Gay:Personal Essays, Public Ideas*. London: Duke University Press (pp 229- 237).

2.2 Production of Masculinity and Femininity [Weeks 4-6]

2.2.1 Halberstam, Judith. 1998. "An Introduction to Female Masculinity: Masculinity without Men" in Female Masculinity. London: Duke University Press (Also Delhi: Zubaan 2012 Reprint) (pp 1-43).

2.2.2 Alter, Joseph. 1992. *The Wrestler's Body: Identity and Ideology in North India*. California: University of California: California (pp 163-194).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.2.3 Uberoi, Patricia "Feminine Identity and National Ethos in Indian Calendar Art" In *Economic and Political Weekly* Vol. 25, No. 17 (Apr. 28, 1990), (pp. WS41-WS48).

3. Differences and Inequalities

3.1 Class, Caste [Weeks 7-8]

3.1.1 Walby, Sylvia. 2002. "Gender, Class and Stratification: Towards a new approach" in S. Jackson and S. Scott (eds.) *Gender: A Sociological reader*. London: Routledge (pp 93-96).

3.1.2 Leela Dube 1996 "Caste and Women" in M.N.Srinivas (ed.) *Caste: Its twentieth century avatar*, New Delhi: Penguin (pp 1-27).

3.1.3 Rege, S. 1998. "Dalit Women Talk Differently: A Critique of 'Difference' and Towards a Dalit Feminist Standpoint Position." Economic and Political Weekly,Vol. 33, No. 44 (Oct.31-Nov. 6, 1998) (pp 39-48)

3.2 Family, Work [Weeks 9-10]

3.2.1 Whitehead, A. 1981, "I'm Hungry Mum": The Politics of Domestic Budgeting" in K. Young et al. (eds.) *Of Marriage and the Market: Women's Subordination Internationally and its Lessons.* London: Routledge and Kegan Paul (pp. 93-116).

3.2.2 Palriwala, Rajni. 1999. "Negotiating Patriliny: Intra-household Consumption and Authority in Rajasthan (India)", in Rajni Palriwala and Carla Risseeuw (eds.), *Shifting Circles of Support: Contextualising kinship and gender relations in South Asia and Sub-Saharan Africa.* Delhi: Sage Publications [pp.190-220]

4. Gender, Power and Resistance

4.1. Power and Subordination [Weeks 11-12]

4.1.1 Candace West and Don H. Zimmerman. 2002. "Doing Gender" in S.Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge [pp 42-47].

4.1.2 Susie, Tharu and Tejaswini Niranjana. 1999. Problems for a contemporary theory of gender" in Nivedita Menon (ed.) *Gender and Politics in India*, New Delhi: Oxford University Press [pp 494-525].

4.1.3 Abu-Lughod, Lila. 2002. "Do Muslim Women Really Need Saving?: Anthropological Reflections on Cultural Relativism and its Others." *American Anthropologist* 104 (3) [pp 783-790].

4.2. Resistance and Movements (Weeks 13-14)

4.2.1 Kandiyoti, Deniz. 1991 "Bargaining with Patriarchy" in Judith Lorber and Susan A. Farrell (eds.) *The Social Construction of Gender*, New Delhi: Sage Publications [pp.104-118].

4.2.2 Hill-Collins, Patricia. 2002. "Learning from the outsider within" in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge [pp 69-78].

4.2.3 Kumar, Radha. 1999. "From Chipko to Sati: The Contemporary Indian Women"s Movement" In Nivedita Menon (ed.) *Gender and Politics in India*. New Delhi: Oxford University Press [pp. 342-369]. [Projects, feature films and documentaries screenings, field-work oriented tasks will be the integral part of the course].

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

CC- 8: Economic Sociology **Credits 06**

C8T: Economic Sociology

.

Course outline:

1. Perspectives in Economic Sociology

1.1 Formalism and Substantivism
1.2 New Economic Sociology

2. Forms of Exchange

2.1 Reciprocity and Gift
2.2 Exchange and Money

3. Systems of Production, Circulation and Consumption

3.1 Hunting and Gathering
3.2 Domestic Mode of Production
3.3 Peasant
3.4 Capitalism
3.5 Socialism

4. Some Contemporary Issues in Economic Sociology

4.1 Development
4.2 Globalisation

Course contents and Itinerary

1. Perspectives in Economic Sociology (Weeks 1-4)

1.1 Formalism and Substantivism

1.1.1 Hann, Chris. and Keith Hart. *Economic Anthropology*. Cambridge, UK: Polity Press, 2011. Chapter 5. ―After the Formalist-Substantivist Debate‖, pp. 72–99; Chapter 2.‖ Economy from the Ancient World to the Age of Internet.‖ Pp.18 – 36.

1.1.2 Karl, Polanyi. *The Livelihood of Man*. New York: Academic Press, 1977. Chapters 1 & 2, ―The Economistic Fallacy & Two meanings of Economic‖, pp. 5-34

1.1.3 Wilk, Richard R. *Economies and Cultures*. Boulder, Colo.: Westview Press, 1996. Ch. 1,‖Economic Anthropology: An Undisciplined Discipline‖, pp. 1-18.

1.2. New Economic Sociology (Weeks 3-6)

1.2.1. Granovetter, M., ―Economic Action and Social Structure: The Problem of Embeddedness‖, *American Journal of Sociology*, Vol.91, No.3 (Nov), 1985, pp. 481 - 507.

1.2.2. Swedberg,R., ―Major Traditions of Economic Sociology‖, in *Annual Sociological Review*, Vol.17, 1991, pp 251-276.

2. Forms of Exchange (Weeks 5-7)

2.1. Reciprocity and Gift

2.1.1. Mauss, M., The *Gift: Forms and Functions of Exchange in Archaic Societies*, London: Cohen and West, 1924, Introduction, Chapters.1 & 2, The Exchange of

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Gifts and the Obligation to Reciprocate (Polynesia) & The Extension of this System: Liberality, Honour, Money. Pp. 1-46.

2.1.2. Carrier, James G. *Gifts and Commodities* , London, Routledge, 1995. Ch. 1. Gifts and Commodities, People and Things. Pp. 19-39.

2.2. Exchange and Money

2.2.1. Bohannan, P. and G. Dalton (eds.). 1962. *Markets in Africa*. Evanston, Illinois, North western University. pp. 1-26.

2.2.2 Zelizer, Viviana A. 1989. ―The Social Meaning of Money: Special Monies' ―in *American Journal of Sociology*, Vol.95. (Sept.) pp. 342-377.

3. Systems of Production, Circulation and Consumption (Weeks 8-11)

3.1. Hunting and Gathering

3.1.1 Sahlins, M. *Stone Age Economics*. London, Tavistock, 1974. Ch. 1.

3.2 Domestic Mode of Production

3.2.1 Sahlins, M. *Stone Age Economics*. London, Tavistock, 1974. Ch. 2, 3.

3.3 Peasant

3.3.1 Wolf, Eric R. *Peasants*. New Jersey, Prentice Hall. 1966 Ch. 1.

3.4 Capitalism

3.4.1 Wallerstein, Immanuel Maurice. *Historical Capitalism*. London: Verso, 1983. 1. Commodification of Everything: Production of Capital. Pp. 13 – 43.

3.5 Socialism

3.5.1 Verdery, Katherine. *What Was Socialism, And What Comes Next*? Princeton, N.J.: Princeton University Press, 1996. Chapter 1. pp. 19 – 38.

4. Some Contemporary Issues in Economic Sociology (Weeks 12-14)

4.1 Development

4.1.1 Hann, Chris. and Keith Hart. *Economic Anthropology*. Cambridge, UK: Polity Press, 2011. Pp. 100-119

4.2 Globalisation

4.2.1 Tonkiss, Fran. *Contemporary Economic Socio*logy. London: Routledge, 2006. Chapter 1, Capitalism and Globalization. Pp. 3-28.

4.2.2 Howes , D. (ed) , *Cross-Cultural Consumption: Global Markets and Local Realities*, Routledge, London, 1996, pp. 1-16.

Suggested Readings:

- Smelser, Neil. J. and Richard Swedberg. 1994. ― The Sociological Perspective on the Economy in N.J. Smelser and Richard Swedberg (eds).1994.*The Handbook of Economic Sociology* Velthius, Olav. _The Changing Relationship between Economic Sociology and Institutional Economics: From Parsons to Mark Granovetter 1999. *American Journal of Economics and Sociology*, Vol. 58, No.4. pp. 629-649
- Zelizer, Viviana A. _Human Values and the Market: The Case of Life Insurance and Death in 19th Century America'.1978. *American Journal of Sociology* Vol.84, No.3. pp. 591-610

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

- Zelizer, Viviana A. _Payments and Social Ties‘.1996. *Sociological Forum*, Vol.11, No. 3. Special Issue: Lumping and Splitting. pp. 481-495.
- Sahlins, M. 1974. *Stone Age Economics*. London, Tavistock. Ch. 4. pp 149-183
- Hilton, Rodney.1973. *Bond Men Made Free*. London. Methern. Ch.1. pp. 25-40
- Appadurai, A. 1986.*The Social Life of Things: Commodities in Cultural Perspective*. Cambridge, Cambridge University Press. pp. 3-63
- Nancy,A. _Bodies, Borders,and Sex Tourism in a Globalized World: A Tale of Two Cities—Amsterdam and Havana.‘ 2001. *Social Problems*, Vol. 48. No. 4. pp. 545-571
- Sassen, Saskia . 2007. *A Sociology of Globalization*. W.W. Norton & Co. NY. London
- Hirst, Paul & G Thompson 1999. *Globalization in Question*. 2nd Edition. Polity Press. Cambridge, Oxford.

CC- 9 : Sociology of Kinship **Credits 06**

C9T : Sociology of Kinship

Course outline:

1. Introduction:

1.1 ***Key Terms***: Descent, Consanguinity, Filiation, Incest Taboo, Affinity, Family, Residence

1.2 ***Approaches***:

1.2.1 Descent
1.2.2 Alliance
1.2.3 Cultural

2. Family, Household and Marriage

3. Re-casting Kinship

3.1 Relatedness
3.2 Kinship and Gender
3.3 Re-imagining Families
3.4 New Reproductive Technologies

Representations of Kinship and Marriage in Biographies, Popular Culture and Films would be examined by students through weekly presentations and term papers.

Course contents and Itinerary

1. Key terms and approaches (Weeks 1-5)

1.1 Radcliffe-Brown, A. R. and D. Forde (eds.), 1950, *African Systems of Kinship and Marriage*, London: Oxford University Press, Introduction, pp.1-39.

1.2 Evans-Pritchard, E.E., 2004 (1940), ‘The Nuer of Southern Sudan’, in R. Parkin and L. Stone (eds.), *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, Pp. 64-78

1.3 Fortes, M., 1970, *Time and Social Structure and Other Essays*, University of London: The Athlone Press, Chapter 3, Pp. 67-95

1.4 Leach, Edmund, 1962, ‘On Certain Unconsidered Aspects of Double Descent Systems’, *Man*, Vol. 62, Pp. 130-134

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.5 Lévi-Strauss, Claude, 1969, *The Elementary Structures of Kinship*, London: Eyre and Spottiswoode, Chapters 1 & 2, pp. 3-25

1.6 Dumont, L., 1968, 'Marriage Alliance', in D. Shills (ed.), *International Encyclopedia of the Social Sciences*, U.S.A.: Macmillan and Free Press, Pp. 19-23

1.7 Schneider, D., 2004, 'What is Kinship All About?', in R. Parkin and L. Stone (eds.) *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, pp. 257-274

1.8 Das, V., 1994, 'Masks and Faces: An Essay on Punjabi Kinship', in Patricia Uberoi (ed.), *Family, Kinship and Marriage in India*, Delhi: Oxford University Press, pp.198-222

1.9 *Shah, A.M., 1998, 'Changes in the Indian Family: An Examination of Some Assumptions', in *The Family in India: Critical Essays*, New Delhi: Orient Longman, Pp.52-63

1.10 *Freeman, J. D., 1958, 'The Family Systems of the Iban of Borneo', in J. Goody (ed.), *The Developmental Cycle in Domestic Groups*, Cambridge: Cambridge University Press, Pp. 15-52

[Readings marked * are repeated in Section 2]

2. Family, Household and Marriage (Weeks 6-10)

2.1 Shah, A.M., 1998, 'Changes in the Indian Family: An Examination of Some Assumptions', in *The Family in India: Critical Essays*, New Delhi: Orient Longman, pp.52-63

2.2 Freeman, J. D., 1958, 'The Family Systems of the Iban of Borneo', in J. Goody (ed.), *The Developmental Cycle in Domestic Groups*, Cambridge: Cambridge University Press, Pp. 15-52

2.3 Leach, E.R., 1961, 'Polyandry, Inheritance and the Definition of Marriage with Particular Reference to Sinhalese Customary Law', in E. R. Leach (ed.), *Rethinking Anthropology*, London: The Athlone Press, pp. 105-113

2.4 Gough, Kathleen E., 1959, 'The Nayars and the Definition of Marriage', in *The Journal of the Royal Anthropological Institute of Great Britain and Ireland*, 89: 23-34

2.5 Uberoi, Patricia, 1995, 'When is a Marriage not a Marriage? Sex, Sacrament and Contract in Hindu Marriage', *Contributions to Indian Sociology*, n.s. 29, 1&2: 319-45

3. Re-casting Kinship (Weeks 11-14)

3.1 Relatedness

Carsten, Janet, 1995, 'The Substance of Kinship and the Heat of the Hearth: Feeding, Personhood, and Relatedness among Malays in Pulau Langkawi' *American Ethnologist*, 22 (2): 223-24.1

3.2 Kinship and Gender

Gold, Ann Grodzins, 1994, 'Sexuality, Fertility, and Erotic Imagination in Rajasthani Women's Songs ', in *Listen to the Heron's Words: Re-imagining Gender and Kinship in North India* by Gloria Goodwin Raheja and Ann Grodzins Gold, Delhi: OUP, Pp 30-72

3.3 Re-imagining Families

Weston, Kath, 1991, *Families We Choose: Lesbians, Gays, Kinship*, New York: Columbia University Press, Pp. 103-136

3.4 New Reproductive Technologies

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Kahn, Susan Martha, 2004, 'Eggs and Wombs: The Origins of Jewishness', in R. Parkin and L. Stone (eds.), *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, Pp. 362-77

CC- 10 : Social Stratification **Credits 06**

C10T : Social Stratification

Course outline:

1. Introducing Stratification (2 weeks)

2. Theories of Stratification (5 Weeks)
   - 2.1. Marx, Weber and Class
   - 2.2. Functionalism

3. Identities and Inequalities (5 Weeks)
   - 3.1. Caste, Race and Ethnicity
   - 3.2. Feminism and Gendered Stratification
4. Mobility and Reproduction (2 Weeks)

Course contents and Itinerary

1. Introducing Stratification (2 weeks)

1.1 Worsley, Peter. *Introducing Sociology*.2nd ed. Harmondsworth: Penguin Books, 1970. Chapter 8, Social Stratification: Class, Status and Power, pp. 395 – 408

1.2 tei e dr *Inequality among Men*. London: Blackwell, 1977. Chapter 1. The Two Sources of Inequality. Pp. 1-22

1.3 Tawney, R. H. *Equality*. London: Unwin Books, 1964. Chapter 1. The Religion of Inequality, pp. 33-56

2. Theories of Stratification (5 Weeks)

2.1 Marx, Weber and Class

2.1.1 McLellan, David. *The Thought of Karl Marx*. London: Papermac, 1995. Part 2. Chapter 6. Class, pp. 182-194

2.1.2 Weber, Max, Hans Heinrich Gerth, and C. Wright Mills. *From Max Weber*. New York: Oxford University Press, 1946. Chapter VII, Class, Status, Party. Pp. 180–195

2.1.3 e dix Rei hard 'I equa ity a d Socia Structure: Compariso of Marx a d Weber' *American Sociological Review*, Vol. 39, No. 2 (Apr., 1974), pp. 149-161

2.1.4 Bottomore, T. B. *Classes in Modern Society*. New York: Pantheon Books, 1966. Chapters. 2 & 3 The Nature of Social Class & Classes in Industrial Societies. 9-75

2.2 Functionalism

2.2.1 Davis, Kingsley, and Wilbert E. Moore. 'Some Principles of Stratification'. *American Sociological Review* 10.2 (1945): pp. 242-249

2.2.2 Tumin, Melvin M. 'Some Principles of Stratification: A Critical Analysis'. *American Sociological Review* 18.4 (1953): 387-394

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.2.3 Davis Ki gs ey a d Wi bert E Moore ‘Some Pri cip es of Stratificatio : Critical Analysis: Reply'. *American Sociological Review* Vol. 18, No. 4 (Aug., 1953), pp. 394-397

2.2.4 Wro g De is H ‘The Fu ctional Theory of Stratification: Some Neglected Co sideratio s’ *American Sociological Review*, Vol. 24, No. 6 (Dec., 1959), pp. 772-782

2.2.5 Sti chcombe rthur L ‘Some Empirical Consequences of the Davis-Moore Theory of Stratification**’.** *American Sociological Review* 28.5 (1963), pp. 805-808

3. Identities and Inequalities (5 Weeks)

3.1 Caste, Race and Ethnicity

3.1.1 ai ey F G ‘C osed Socia Stratificatio i I dia’, *European Journal of Sociology* Vol. 4, No. 1 (1963) pp. 107-124

3.1.2 Jain, Ravindra K. ‘Hierarchy, Hegemony and Dominance: Politics of Ethnicity in Uttar Pradesh, 1995’ *Economic and Political Weekly*, Vol. 31, No. 4 (Jan. 27, 1996), pp. 215-223

3.1.3 Omi, Michael, and Howard Winant. *Racial Formation in the United States*. New York: Routledge & Kegan Paul, 1986. Chapters 1 & 4 , pp. 14-24 and 57-69

3.1.4 Pitt-Rivers Ju ia ‘Race Co or a d C ass i Ce tra merica a d the des’ *Daedalus*, Vol. 96, No. 2, Color and Race (Spring, 1967), pp. 542-559

3.2. Feminism and Gendered Stratification (2 Weeks)

3.2.1 Mitchell, Juliet. *Woman's Estate*. Harmondsworth: Penguin, 1971. Chapter 5, Position of Women 1. Pp. 99-122

3.2.2 Acker, Joan. 'Women and Social Stratification: A Case of Intellectual Sexism'. *American Journal of Sociology* 78.4, 1973. Pp. 936-944

3.2.3 Co i s Patrica Hi ‘Toward a New Visio : Race C ass a d Ge der as Categories of a ysis a d Co ectio ’ *Race, Sex & Class*, Vol. 1, No. 1 (Fall 1993), pp. 25-45

4. Mobility and Reproduction (2 Weeks)

4.1 Bottero, Wendy. *Stratification*. London: Routledge, 2005. Chapters 12 & 14 pp. 205-223 & 246-258

4.2 ourdieu Pierre ‘Cu tura Reproductio a d Socia Reproductio’ *In The Structure of Schooling: Readings in the Sociology of Education*. Richard Arum and Irenee Beattie, Editors. NY: McGraw Hill. 1973: 56-68.

CC -11 : Sociological Thinkers–I **Credits 06**

C11T : Sociological Thinkers–I

Course outline:

1. Karl Marx

1.1. Materialist Conception of History

1.2. Capitalist Mode of Production

2. Max Weber

2.1. Social Action and Ideal Types

2.2. Religion and Economy

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3. Emile Durkheim

3.1. Social Fact
3.2. Individual and Society

Course contents and Itinerary

1. Karl Marx (Weeks 1-5)

1.1. Intro : McLellan, David. 1975. *Marx*. London: Fontana Press. Pages: 7-23(16)
1.2. Marx, K. and F. Engels. 1969. *Selected Works Vol. 1*. Moscow: Progress Publishers. pp. 13-15, 16-80, 98-106, 142-174, 502-506
1.3. Marx, K. and F. Engels. 1969. *Selected Works Vol. 1*. Moscow: Progress Publishers. pp. 13-15, 16-80, 98-106, 142-174, 502-506.

2. Max Weber (Weeks 6-9)

2.1 Poggi, Gianfranco. 2006. *Weber*. Cambridge, UK: Polity. Pages: 1-16 (16)
2.2. Weber, Max. 1947. *The Theory of Social and Economic Organization*. New York: The Free Press, pp. 87-123
2.3. Weber, Max. 2002. *The Protestant Ethic and the Spirit of Capitalism* (translated by Stephen Kalberg). London: Blackwell Publishers, pp. 3-54, 103-126, Chapters I, II, III, IV & V

3. Emile Durkheim (Weeks 10-14)

3.1 Gane, Mike. 1992. *The Radical Sociology of Durkheim and Mauss*. London: Routledge. Pages: 1-10
3.2. Durkheim, E. 1958. *The Rules of Sociological Method*. New York: The Free Press. pp. 48-107, 119-144
3.3. Durkheim, E. 1951. *Suicide: A Study in Sociology*. New York: The Free Press, pp. 41-56, 145-276

Suggested Readings:

- Ritzer, G. 1996. *Sociological Theory*. New York: McGraw Hill Companies.
- Giddens, A. 1971. *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Durkheim and Max Weber*. Cambridge: Cambridge University Press.

CC -12 : Sociological Research Methods – I **Credits 06**

C12T : Sociological Research Methods – I

.

Course outline:

1.The Logic of Social Research

1.1 What is Sociological Research?
1.2 Objectivity in the Social Sciences
1.3 Reflexivity

2. Methodological Perspectives

2.1 The Comparative Method

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.2 Feminist Method

3. Modes of Enquiry
   3.1 Theory and Research
   3.2 Analyzing Data: Quantitative and Qualitative

Course contents and Itinerary

1.1 The Logic of Social Research (Weeks 1 and 2)

1.1.1 Mills, C. W. 1959, *The Sociological Imagination,* London: OUP Chapter 1 Pp. 3-24

1.1.2 Gluckman, M. 1978, 'Introduction', in A. L. Epstein (ed.), *The Craft of Social Anthropology*, Delhi: Hindustan Publishing Corporation, Pp. xv-xxiv

1.2. Objectivity in the Social Sciences (Weeks 3-7)

1.2.1. Durkheim, E. 1958, *The Rules of Sociological Method,* New York: The Free Press, Chapter 1, 2 & 6 Pp. 1-46, 125-140

1.2.2. Weber, Max. 1949, *The Methodology of the Social Sciences,* New York: The Free Press, Foreward and Chapter 2 Pp. 49-112

1.3. Reflexivity

1.3.1 Gouldner, Alvin. 1970, *The Coming Crisis of Western Sociology*, New York: Basic Books, Chapter 13 Pp. 481-511

2. Methodological Perspectives (Weeks 8-11)

2.1. Comparative Method

2.1.1. Radcliffe-Brown, A.R. 1958, *Methods in Social Anthropology*, Delhi: Asia Publishing Corporation, Chapter 5 Pp. 91-108

2.1.2. Beiteille, A. 2002, *Sociology: Essays on Approach and Method,* New Delhi: OUP, Chapter 4 Pp. 72-94

2.3. Feminist Method

2.3.1. Harding, Sandra 1987, "Introduction: Is there a Feminist Method?" in Sandra Harding (ed.) *Feminism & Methodology: Social Science Issues,* Bloomington: Indiana University Press, Pp. 1-14

3. Modes of Enquiry (Weeks 12-14)

3.1. Theory and Research

3.1.1 Merton, R.K. 1972, *Social Theory & Social Structure,* Delhi: Arvind Publishing House, Chapters 4 & 5 Pp. 139-171

3.2 Analyzing Data: Quantitative and Qualitative

3.2.1 Bryman, Alan. 2004, *Quantity and Quality in Social Research,*New York: Routledge, Chapter 2 & 3 Pp. 11-70

CC -13 : Sociological Thinkers II **Credits 06**

C13T: Sociological Thinkers II

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Course outline:

1. Talcott Parsons
1.1. Action Systems
2. Claude Levi-Strauss
2.1. Structuralism
3. G. H. Mead and Erving Goffman
3.1. Interactional Self
4. Peter L. Berger and Thomas Luckmann
4.1. Social Construction of Reality
5. Max Horkheimar, T.W. Adorno and Herbert Marcuse
5.1. Critical Social Theory
6. Pierre Bourdieu
6.1. A Theory of Practice

Course contents and Itinerary

Orientation to Post-Classical Theories/ Schools in Sociology (Week I)

1. Talcott Parsons (Weeks 2-3)

Parsons, T. and E. Shils (eds). 1951. *Towards a General Theory of Action*. New York: Harper and Row Publishers, pp. 3-29

2. Levi-Strauss (Week 4)

Levi-Stauss, C. 1993. "Structure and Dialectics", in *Structural Anthropology Volume I*. Harmondsworth: Penguin, pp. 232-242

3. G. H. Mead and Erving Goffman (Weeks 5-7)

3.1 Mead, G.H. 1934 (Fourteenth Impression 1967) Mind Self and Society. Chicago: University of Chicago Press. Part III, pp 135-226

3.2 Goffman, E. 1956. *The Presentation of Self in Everyday Life*. Edinburgh: University of Edinburgh (Monograph No. 2), pp. 1-9, 132-151, 152-162

4. Peter L. Berger and Thomas Luckmann (Week 8)

Berger, P. L. and T. Luckmann. 1991. *The Social Construction of Reality*. London: Penguin Books, pp. 31-62

5. Max Horkheimar, T.W. Adorno and Herbert Marcuse (Weeks 9-12)

5.1 Horkheimar**.** M and Adorno. T.W. *The Dialectic of Enlightenment*. 2002. Stanford University Press. Stanford: California. pp 1-34. Chapter 1, The Concept of Enlightenment

5.2 Marcuse, H. 1964. *One Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Boston: Boston Press, pp. 7-92

6. Pierre Bourdieu (Weeks 13-14)

Bourdieu, P. 1977. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press, pp. 72-95

[Projects, feature films and documentary screenings will be an integral part of the coursework]

Suggested Readings:

- Ritzer, G. 1996. *Sociological Theory*. New York: McGraw Hill Companies.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

CC -14 : Research Methods – II **Credits 06**

C14T: Research Methods – II

Course outline:

1. Doing Social Research

1.1 The Process of Social Research
1.2 Concepts and Hypothesis
1.3 Field (Issues and Context)

2. Methods of Data Collection

2.1 Survey Methods: Sampling, Questionnaire and Interview
2.2 Observation: Participant and non-participant

3. Statistical Methods

3.1 Graphical and Diagrammatic Presentation of Data
(Bar diagrams, Pie-diagram, Histogram, Frequency Polygon, Smoothed frequency curve and Ogives).
3.2 Measures of Central Tendency (Simple Arithmetic Mean, Median and Mode).
3.3 Measures of Dispersion (Standard Deviation, Variance and Covariance).

4. Research Projects

Course contents and Itinerary

1.1 Doing Social Research (Weeks 1-4)

1.1.1 Bailey, K. (1994). The Research Process in *Methods of social research*. Simon and Schuster, 4th ed. The Free Press, New York NY 10020. Pp.3-19.

1.2 Concepts and Hypothesis

1.2.1 Goode, W. E. and P. K. Hatt. 1952. *Methods in Social Research*. New York: McGraw Hill. Chapters 5 and 6. Pp. 41-73.

1.3 Field (Issues and Contexts)

1.3.1 Gupta, Akhil and James Ferguson. 1997. *Anthropological Locations.* Berkeley: University of California Press. Pp.1-46.
1.3.2 Srinivas, M.N. et al 2002(reprint), *The Fieldworker and the Field:Problems and Challenges in Sociological Investigation*, New Delhi: OUP, Introduction Pp. 1-14.

2.1 Survey Methods of Data Collection (Weeks 5-9)

2.1.1 Bailey, K. (1994). Survey Sampling in *Methods of social research*. Simon and Schuster, 4th ed. The Free Press, New York NY 10020. Ch-5. Pp. 81-104.
2.1.2 Bailey, K. (1994). Questionnaire Construction and The Mailed Questionnaire in *Methods of social research*. Simon and Schuster, 4th ed. The Free Press, New York NY 10020. Chs-6 and 7. Pp. 105-172.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.1.3 Bailey, K. (1994). Interview Studies in *Methods of social research*. Simon and Schuster, 4th ed. The Free Press, New York NY 10020. Ch8. Pp.173-213.

2.2 Observation : Participant and non-Participant

2.2.1 Bailey, K. (1994). Observation in *Methods of social research*. Simon and Schuster, 4th ed. The Free Press, New York NY10020. Ch 10. Pp.241-273.

2.2.2 Whyte, W. F. 1955. *Street Corner Society*. Chicago: University of Chicago Press. Appendix.

3. Statistical Methods

3.1 Graphical and Diagrammatic presentation of data (Weeks 10-13)

3.1.1 Gupta, S. P. (2007). Elementary Statistical Methods. Sultan Chand & Sons. pp.101-108, 115-118, 131-137.

3.2 Measures of Central Tendency

3.2.1 Gupta, S. P. (2007). Elementary Statistical Methods. Sultan Chand & Sons. pp. 155-168, 173-180, 187-197.

3.3 Measures of Dispersion

3.3.1 Gupta, S. P. (2007). Elementary Statistical Methods. Sultan Chand & Sons. pp. 263-277.

4. Research Projects (Week 14)

No Specific readings for this section. Research Projects at the discretion of the teacher.

Note: Numericals to be taught for individual, discrete and continuous series for the topics mentioned above. No specific method for calculating the same be specified.

Discipline Specific Elective (DSE)

DSE - 1 : Urban Sociology **Credits 06**

DSE1T : Urban Sociology

Course outline:

1. Introducing Urban Sociology: Urban, Urbanism and the City
2. Perspectives in Urban Sociology

2.1. Ecological
2.2. Political Economy
2.3. Network
2.4. City as Culture

3. Movements and Settlements

3.1. Migration
3.2. Community

4. Politics of Urban Space

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

4.1. Culture and Leisure
4.2. Caste, Class and Gender

Course contents and Itinerary

1. **Introducing Urban Sociology: Urban, Urbanism and the City: (3 Weeks)**

1.1 Mumford, Lewis 1961. *The City in History: its origins and transformations and its prospects.* Mariner Books: Pp 3-29, 94-118.

1.2 Holton, R. J. *Cities, Capitalism and Civilization,* London: Allan and Unwin, Chapters. 1 & 2. pp. 1–32.

1.3 Parker, Simon. Urban Theory and Urban Experience: Encountering the City, London: Routledge. Chapter 2. Foundations of Urban Theory Pp. 8 - 26

2. Perspectives in Urban Sociology: (4 Weeks)

2.1. Hannerz, Ulf 1980. *Exploring the City: Toward an Urban Anthropology*, NY: Columbia University Press. Chapter 2. Pp 19-58

2.2 Lewis, Wirth 1938 "Urbanism as a way of Life" in *American Journal of Sociology*, Vol. 44, No.1 (July), Pp. 1-24

2.3 Harvey, David 1985 *The Urban Experience*, Baltimore: Johns Hopkins University Press, Chapter 1. Money, Time, Space and the City. pp. 1-35.

2.4 Manuel, Castells 2002, "Conceptualising the city in the information age", in I.Susser (ed.) *The Castells Reader on Cities and Social Theory*, Blackwell Publishers, Malden, Ma, Pp. 1-13

2.5 Weber, Max 1978. *The City*. The Free Press: New York. Pp 65-89

2.6 Simmel, George, 1903, "Metropolis and the Mental Life" in Gary Bridge and Sophie Watson, eds. *The Blackwell City Reader*. Oxford and Malden, MA: Wiley-Blackwell, 2002.

3. Movements and Settlements: (2 Weeks)

3.1 Rao, M.S.A, 1981, "Some aspects of the sociology of migration", *Sociological Bulletin*, Vol. 30, 1. Pp21-38

3.2 Anand, Inbanathan. 2003, "Migration and Adaptation: Lower Caste Tamils in a Delhi Resettlement Colony" in Ranvinder Singh Sandhu (ed.) *Urbanization in India*. Sage: New Delhi. pp. 232-246

3.3 Benjamin S, 2004, "Urban Land Transformation for Pro-Poor Economies", *Geoforum*, Volume 35, Issue 2, March 2004, Pp. 177-197.

4. Politics of Urban Space (5 Weeks)

4.1 Katznelson, Ira, 1981, *City Trenches: Urban Politics and Patterning of Class in United States*, Chicago: University of Chicago Press. Chapter 8. Social Theory, Urban Movements and Social Change. Pp. 193 - 215

4.2 Ayyar, Varsha ,2013. "Caste and Gender in a Mumbai resettlement site", *Economic & Political Weekly*, May 4,Vol. XLVIII, No 18, Pp 44-55

4.3 Kamath, Lalitha and Vijayabaskar, M, 2009 "Limits and possibilities of Middle Class Associations as Urban collective actors", *Economic & Political Weekly*, June 27, 2009 vol XLIV No. 26 & 27, Pp 368 -376

4.4 Grazian, David, 2009, "Urban Nightlife, Social Capital, and the Public Life of Cities" *Sociological Forum*, Vol. 24, No. 4 (Dec., 2009), pp. 908-917

4.5 Manuel Castells, 1983, "Cultural Identity, Sexual Liberation and Urban Structure: The Gay Community" in *San Francisco in City and the Grassroots*, Pp. 138-170

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

4.6 Crawford, Margaret. „The World is a Shopping Mall", From Malcom Miles and Tim Hall (Eds.) *City Cultures Reader*, London: Routledge. Pp. 125-139

Suggested Readings:

- Kumar, Nita, 1988. *The Artisans of Banaras. Popular Culture andIdentity, 1880—1986*,
- Princeton: Princeton University Press.
- Eck, Diana, 1983. *Banaras: City of light,* London: Routledge and Kegan Paul. Naidu, Ratna.
- 1990. *Old cities and New predicaments: A Study of Hyderabad*. New Delhi: Sage

Or

DSE - 1 : Agrarian Sociology **Credits 06**

DSE1T : Agrarian Sociology

.

Course outline:

1. **Agrarian Societies and Agrarian Studies**
   - 1.1 Agrarian Societies
   - 1.2 Agrarian Studies

2. **Key Issues in Agrarian Sociology**
   - 2.1 The Agrarian Question
   - 2.2 The Moral Economy
   - 2.3 Agrarian Commodity Systems

3. **Themes in Agrarian Sociology of India**
   - 3.1 Labor and Agrarian Class Structure
   - 3.2 Markets, Land Reforms and Green Revolution
   - 3.3 Agrarian Movements
   - 3.4 Caste, Gender and Agrarian Realities

4. **Agrarian Futures**
   - 4.1 Agrarian Crisis
   - 4.2 The Global Agrarian Order

***Course contents and Itinerary*:**

1. Agrarian Societies and Agrarian Studies (Weeks: 1-2)

1.1 Agrarian Societies

1.1.1. Dumont, Rene. 'Agriculture as Man's Transformation of the Rural Environment', in Teodor Shanin (ed.) *Peasants and Peasant Societies*, Hamondsworth: Penguin. 1971. Pp. 141-149

1.1.2. Ludden, David. (1999), 'Agriculture' from, *An Agrarian History of South Asia*, Cambridge: Cambridge University Press. 1999, Pp . 6-35

1.2 Agrarian Studies

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.2.1. Beteille, Andre. 'The Study of Agrarian Systems: An Anthropological Approach', from *Marxism and Class Analysis*, New Delhi: Oxford. 2007. Pp. 84-93

1.2.2. Thorner, Daniel and Alice Thorner. 'The Agrarian Problem in India Today', from, *Land and Labour in India*, Bombay: Asia Publishing House. 1962. Pp. 3-13

2. Key Issues in Agrarian Sociology (Weeks: 3-6)

2.1 The Agrarian Question

2.1.1. Haroon Akram-Lodhi, A. and Cristobal Kay. 'Surveying the Agrarian Question: Part 1, Unearthing Foundations, Exploring Diversity; Part 2, Current Debates and Beyond'. *The Journal of Peasant Studies*, Vol. 37, No. 1 &2, January/April 2010, 177–199 & 255–280

2.2 The Moral Economy

2.2.1. Scott, James C. 'The Economic and Sociology of Subsistence Ethic', From, *The Moral Economy of the Peasant: Rebellion and Subsistence in South East Asia*, New Haven: Yale University Press. 1976. Pp 13-34

2.2.2. Popkin, Samuel L. 'The Rational Peasant', from, *The Rational Peasant: The Political Economy of Rural Society in Vietnam*, Berkley: University of California Press. 1979. Pp. 1-31

2.3 Agrarian Commodity Systems

2.3.1. Friedland, William. 1984. “Commodity Systems Analysis: An Approach to the Sociology of Agriculture”. *Research in Rural Sociology and Development* 1: 221–235

3. Themes in Agrarian Sociology of India (Weeks 7-12)

3.1 Labour and Agrarian Class Structure

3.1.1. Patel, S. J. 'Agricultural Laborers in Modern India and Pakistan' from Gyan Prakash (ed.) *Worlds of Rural Labourer in Colonial India*, Dehi: Oxford University Press. 1992. Pp. 47-74

3.1.2. Thorner, Alice. 'Semi-Feudalism or Capitalism? Contemporary Debate on Classes and Modes of Production in India', Parts: 1-3, *Economic and Political Weekly*, Vol. 17, No. 49 (Dec. 4, 1982), pp. 1961-1968; No. 50 (Dec. 11, 1982), pp. 1993-1999; No. 51 (Dec. 18, 1982), pp. 2061-2064

3.1.3. Mencher, Joan P. 'Problems in Analyzing Rural Class Structure', *Economic and Political Weekly*, Vol. 9, No. 35 (Aug. 31, 1974), pp. 1495+1497+1499-1503

3.2 Markets, Land Reforms and Green Revolution

3.2.1. Amin, Shahid. 'Unequal Antagonists: Peasants and Capitalists in Eastern UP in 1930s', *Economic and Political Weekly*, Vol. 16, No. 42/43 (Oct. 17-24, 1981), pp. PE 19-25, 28, 29

3.2.2. Bandopadhyay, D. 'Reflections on Land Reform in India since Independence' from T. V. Satyamurthy (Ed.) *Industry and Agriculture in India Since Independence*, Delhi: Oxford University Press. pp. 301-327

3.2.3. Baker, Christopher J. 'Frogs and Farmers: The Green Revolution in India, and its Murky Past' from, Tim P. Bayliss-Smith and Sudhir Wanmali (Ed.) *Understanding Green Revolutions: Agrarian Change and Development*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Planning in South Asia, Cambridge: Cambridge University Press. 1984. pp. 37-51.

3.2.4. Dhanagare, D. N. 'Green Revolution and Social Inequalities in Rural India' from, *Economic and Political Weekly*, Vol. 22, No. 19/21, Annual Number (May, 1987), pp. AN: 137-139, 141-144.

3.3 Agrarian Movements

3.3.1. Gough, Kathleen. 'Indian Peasant Uprisings' *Economic and Political Weekly*, Vol. 9, No. 32/34, Special Number (Aug., 1974), 1391-1393+1395-1397+1399+1401-1403+1405-1406

3.3.2. Brass, Tom. 'The New Farmer's Movements in India', from, Tom Brass (ed.), *The New farmer's Movemnts in India*, Essex: Frank Cass. (1995). Pp.1-20

3.4 Caste, Gender and Agrarian Realities

3.4.1. Jackson, Cecile. 'Gender Analysis of Land: Beyond Land Rights for Women?', *Journal of Agrarian Change*, Volume 3 (4) (October, 2003) Pp. 453-478.

3.4.2. Omvedt, Gail. 'The Downtrodden among the Downtrodden: An Interview with a Dalit Agricultural Laborer' *Signs*, Vol. 4, No. 4, The Labor of Women: Work and Family (Summer, 1979), pp. 763-774

4. Agrarian Futures (Weeks: 12-14)

4.1. Agrarian Crisis (16)

4.1.1 Feder, Ernest. 'The New World Bank Programme for the Self-Liquidation of the Third World Peasantry', Journal *of Peasant Studies*, Volume 3, Issue 3, 1976. pp. 343-352

4.1.2 Vasavi. A. R. 'Agrarian Distress in Bidar: Market, State and Suicides', *Economic and Political Weekly*, Volume 34, Number 32. (1999). pp. 2263-2268

4.2. The Global Agrarian Order (32)

4.2.1 Buttel, Frederick H. Some Reflections on Late Twentieth Century Agrarian Political Economy. Cadernos de Ciência & Tecnologia, Brasília, v.18, n.2, p.11-36, maio/ago. 2001

Note:

A. The suggested readings may be used for student presentations.

B. Students may be encouraged to review and make presentations of significant body of literary work depicting agrarian realities that has emerged from world literature as well as *Bhasha* literatures of India.

Suggested Readings

- Dalton, George. *'Modern Transformation of European Peasantrie*s' in R. P. Mishra and Nguyen Dung (Ed.) *Third World Peasantry: A continuing Saga of Deprivation, Volume II*, New Delhi: Sterling. 1986, Pp.25-46
- Patnaik, Utsa. (ed.) *The Agrarian Question in Marx and His Successor*s *Volume I*, New Delhi: Left Word, 2007.
- Breman, Jan. (1974), Patronage and Exploitation: Changing Agrarian Relations in South Gujarat, India, Berkley: University of California Press. pp. 36-80.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

- Gough, Kathleen. ' Rural Change in Southeast India, 1950s to 1980s. Delhi: Oxford University Press. 1989.
- Harriss, John. Capitalism and Peasant Farming: Agrarian Structure and Ideology in North Tamil Nadu, Delhi: Oxford University Press, 1982.
- Byres, T. J. 'The New Technology, Class Formation, and Class Action in the Indian Countryside', Journal of Peasant studies, Volume 8, Issue 4, 1981, pp. 405-454.
- Hobsbawm, E. J. 'Peasants and Politics', *The Journal of Peasant Studies*, Vol. 1, No. 1, October 1973, 3–20
- Zamosc, Leon. *The Agrarian Question and Peasant Movement in Columbia: Struggles of National Peasant Association, 1967-81*, Cambridge: Cambridge University Press, 1986.
- Agarwal, Beena. A Field of One's Own: Gender and Land Rights In south Asia, Cambridge: Cambridge University Press, 1996.
- Bernstein, Henry. Class Dynamics of Agrarian Change. Halifax: Fernwood Publishing, 2010.

DSE - 2 : Environmental Sociology **Credits 06**

DSE2T : Environmental Sociology

Course outline:

1. **Envisioning Environmental Sociology**
   - 1.1. What is Environmental Sociology?
   - 1.2. Realist-Constructionist Debate.

2. Approaches
   - 2.1 Treadmill of Production
   - 2.2 Ecological Modernization
   - 2.3 Risk
   - 2.4 Ecofeminism and Feminist Environmentalism
   - 2.5 Political Ecology

3. **Environmental Movements in India**
   - 3.1 Forest based movement – Chipko
   - 3.2 Water based movement – Narmada
   - 3.3 Land based movements – Anti-mining and Seed

Course contents and Itinerary

1. Envisioning Environmental Sociology [Weeks 1-3]

1.1.1. Bell, MM. (2008). *An Invitation to Environmental Sociology*. Thousand Oaks, CA: Sage 3rd ed. Ch 1.(pp. 1-5).

1.1.2. Hannigan, J. A. (1995). Environmental Sociology. Routledge, London and New York, 2nd ed. Ch1 and 2. (pp. 10-15,16 - 35).

1.2.1. Leahy, T. (2007). Sociology and the Environment. Public Sociology: An Introduction to Australian Society. Eds. Germov, John and Marilyn, Poole. NSW: Allen & Unwin, Ch 21 (pp. 431-442).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.2.2. Evanoff, R. J. (2005). Reconciling realism and constructivism in environmental ethics. *Environmental Values*, 61-81.

2. Approaches [Weeks 4-10]

2.1.1. Gould, K. A., Pellow, D. N., & Schnaiberg, A. (2004). Interrogating the Treadmill of Production: Everything You Wanted to Know about the Treadmill but Were Afraid to Ask. Organization & Environment, 17(3), 296-316.

2.1.2. Wright, E. O. (2004). Interrogating the Treadmill of Production: Some Questions I Still Want to Know about and Am Not Afraid to Ask. Organization & Environment, 17(3), 317-322.

2.2.1. Mol, A. P. (2002). Ecological modernization and the global economy. Global Environmental Politics, 2(2), 92-115.

2.2.2. Buttel, F. H. (2000). Ecological modernization as social theory. Geoforum,31(1), 57-65.

2.2.3. O'Connor, J. (1994). Is sustainable capitalism possible. Is capitalism sustainable? *Political Economy and the Politics of Ecology*. The Guilford Press. Ch. (pp.152-175).

2.3.1. Beck, U. (2006). Living in the world risk society: A Hobhouse Memorial Public Lecture given on Wednesday 15 February 2006 at the London School of Economics. *Economy and Society*, 35(3), 329- 345.

2.4.1. Shiva, V. (1988). Women in Nature. In *Staying Alive: Women, Ecology and Development.* Zed Books. Ch 3. (pp.38-54).

2.4.2. Agarwal, Bina, 2007. The Gender and Environment Debate: Lessons from India. In Mahesh Rangarajan. (ed.) 2007. *Environmental Issues in I n d i a : A Reader.* New Delhi: Pearson, Longman, Ch 19. (pp. 316-324, 342-352).

2.5.1. Robbins, P. (2011). *Political Ecology: A Critical Introduction* (Vol. 16). Wiley and Sons ltd. East Sussex, U.K. Ch 1 (pp.10-25).

3. Environmental Movements in India [Weeks 11-14]

3.1.1. Guha, R. Chipko : Social history of an environmental movement. In Ghanshyam Shah ed.(2002). *Social Movements and the State* (Vol. 4). Sage Publications Pvt. Ltd., Ch. 16 (pp.423-454).

3.2.1. Khagram, S., Riker, J. V., & Sikkink, K. (2002).Restructuring the global politics of development: The Case of India's Narmada Valley Dams. *Restructuring World Politics: Transnational Social Movements, Networks, and Norms* (Vol. 14). U of Minnesota Press. (pp.206-30).

3.3.1. Padel, F., & Das, S. (2008). Orissa's highland clearances: The reality gap in R & R. *Social Change*, 38(4), 576-608.

3.3.2. Scoones, I. (2008). Mobilizing against GM crops in India, South Africa and Brazil. *Journal of Agrarian Change*, 8(2-3), 315-344.

[Projects, feature films and documentary screenings and field visits will be will be undertaken by students through the course]

Students will not be examined on the suggested readings but may use them for projects, and presentations that will be woven into the course.

- Guha, R., & Alier, J. M. (1998). The environmentalism of the poor. In *Varieties of environmentalism: Essays North and South*. New Delhi: Oxford University Press.
- Osofsky, H. M. (2003). Defining Sustainable Development after Earth Summit 2002. *Loy. LA Int'l & Comp. L. Rev.*, *26*, 111.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

- Baviskar, A. (1999). In the Belly of the River: Tribal Conflicts over Development in the Narmada Valley. Oxford University Press.

Or

DSE- 2 : Sociology of Work **Credits 06**

DSE2T : Sociology of Work

Course outline:

1. Interlinking Work and Industry
2. Forms of Industrial Culture and Organisation
2.1 Industrialism
2.2 Post-industrial Society
2.3 Information Society
3. Dimensions of Work
3.1 Alienation
3.2 Gender
3.3 Unpaid Work and Forced Labour
4. Work in the Informal Sector
5. Risk, Hazard and Disaster

Course contents and Itinerary

1. Interlinking Work and Industry (Weeks 1-3)

1.1 Grint, Keith. 2005, „Classical Approaches to Work: Marx, Durkheim and Weber" in *The Sociology of Work: An Introduction*. Polity Press. Cambridge. pp. 90-112.

1.2 Uberoi, J.P.S. 1970, „Work, Study and Industrial worker in England" in *Man, Science and Society*. IIAS: Simla. pp 34-45.

2. Forms of Industrial Culture and Organisation (Weeks 4-6)

2.1 Industrialism

2.1.1 Ramaswamy E. A. and Uma Ramaswamy. 1981, *Industry and Labour*, New Delhi: Oxford University Press, Chapter 3, pp.33-65.

2.2 Post-industrial Society

2.2.1 Bell, Daniel. 1976, *The Coming of Post-Industrial Society*, London: Heineman, Introduction, pp.12-45

2.2.2 Etzioni, A. and P.A. Jargowsky. 1990, "The false choice between high technology and basic industry" in K. Erikson and P. Vallas (eds.) *The Nature of Work: Sociological Perspectives*, New Haven and London: Yale University Press, Pp. 304-317

2.3 Information Society

2.3.1 Kumar, Krishan. 1999, *From Post-industrial to Post-modern society*, Oxford: Blackwell Publishers Ltd., Chapter 2 and 6, pp 6-35 and 154-163.

3. Dimensions of Work (Weeks 7-10)

3.1 Alienation

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3.1.1 Erikson, Kai. 1990. „On Work and Alienation‟ in Erikson, K. and S.P. Vallas (eds) *The Nature of Work: Sociological Perspectives*. New Haven and London: American Sociological Association, Presidential Series and Yale University Press, Pp. 19-33

3.1.2 Taylor, Steve. 1998, Emotional Labour and the new Workplace‟ in Thompson and Walhurst (eds.) *Workplace of the Future.* London: Macmillan, pp. 84-100.

3.2 Gender

3.2.1 Devine, Fiona. 1992, „Gender Segregation in the Engineering and Science Professions: A case of continuity and change‟ in *Work, Employment and Society', 6 (4)* Pp.557-75.

3.2.2 Freeman, Carla. 2009, „Femininity and Flexible Labour: Fashioning Class through Gender on the global assembly line‟ in Massimiliano Mollona, Geert De Neve and Jonathan Parry (eds.) *Industrial Work and Life: An Anthropological Reader*, London:Berg, Pp.257-268

3.3 Unpaid Work and Forced Labour

3.3.1 Edgell, Stephen. 2006, „Unpaid Work-Domestic and Voluntary work‟ in *The Sociology of Work: Continuity and Change in Unpaid Work*. New Delhi: Sage, Pp.153-181

3.3.2 Coser, 1990, „Forced Labour in Concentration Camps‟ in Erikson, K. and S.P.Vallas (eds.) *The Nature of Work: Sociological Perspectives*, New Haven and London: American Sociological Association, Presidential Series and Yale University Press, Pp. 162-69

4. Work in the Informal sector (Weeks 11-12)

4.1 Breman, Jan. 2003, "The Informal Sector" in Veena Das, (ed.) *The Oxford India Companion to Sociology and Social Anthropology*, New Delhi: OUP, Pp. 1287-1312

4.2 Talib, Mohammad. 2010, *Writing Labour- Stone Quarry workers in Delhi*. New Delhi: OUP, Chapter 1, Pp. 23-54

5. Risk, Hazard and Disaster (Weeks 13-14)

5.1 Laughlin, Kim. 1995, Rehabilitating Science, Imagining "Bhopal" in George E. Marcus (ed.) *Techno scientific Imaginaries: Conversations, Profiles and Memoirs*, Chicago: University of Chicago Press, Pp. 277-302

5.2 Zonabend, Francoise. 2009, „The Nuclear Everyday‟ in Massimiliano Mollona, Geert De Neve and Jonathan Parry (ed.) *Industrial Work and Life: An Anthropological Reader*, London: Berg, Pp 167-185

Or

DSE - 2 : Sociology of Health and Medicine **Credits 06**

DSE2T : Sociology of Health and Medicine

Course outline:

1. Introduction to the Sociology of Health and Medicine

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.1 Origins and Development
1.2 Conceptualising Disease, Sickness and Illness
1.3 Social and Cultural Dimensions of Illness and Medicine

2. Theoretical Orientations in Health and Illness
2.1 Political Economy
2.2 Systems Approach
2.3 Discourse and Power
2.4 Feminist Approach

3. Negotiating Health and Illness
3.1 Medical Practices
3.2 Health Policy in India

Course contents and Itinerary

1. Introduction to the Sociology of Health and Medicine (Week 1-4)

1.1 Turner, Bryan, S. (1995) *Medical Power and Social Knowledge.* London, Sage, Chapters 1 and 2 and 3. Pages (1-54).

1.2 Boorse, Christopher (1999) On the distinction between Disease and Illness. In (eds.) James Lindermann Nelson and Hilde Lindermann Nelson, *Meaning and Medicine: A Reader in the Philosophy of Healthcare*, New York: Routledge. (Pages 16-27)

1.3 Kleinman, Arthur (1988) The Illness Narratives: Suffering, Healing and the Human Condition. New York : Basic Books Inc. Publishers. Chapter 1. (Pages 3-30).

1.4 Fruend, Peter E.S., McGuire, Meredith B. and Podthurst, Linda S. (2003) *Health, Illness and the Social Body,* New Jersey: Prentice Hall. Chapter 9 (Pages 195-223)

2. Theoretical Orientations in Health and Illness (Week 5-10)

2.1 Morgan, Lynn. Morgan (1987) Dependency Theory and the Political Economy of Health: An Anthropological Critique. Medical Anthropology Quarterly, New Series, Vol.1, No.2 (June, 1987) pp. 131-154.

2.2 Talcott Parsons (1951) The Social System, London: Routledge & Kegan Paul Ltd. Chapter 10, (Pages 428-479).

2.3 Foucault, Michel (1994) The Birth of the Clinic: An Archaeology of Medical Perception, New York: Vintage Books. Chapter1 and Conclusion. (Pages 3-20 and 194-199).

2.4 Turner, Bryan, S. (1995) Medical Power and Social Knowledge, London: Sage. Chapter 5. (Pages.86-108).

2.5 Patel, Tulsi (2012) Global Standards in Childbirth Practices. In (eds.) V. Sujatha and Leena Abraham Medical Pluralism in Contemporary India. New Delhi: Orient BlackSwan. (Pages 232-254).

3. Negotiating Health and Illness (Week 11-14)

3.1 Evans- Pritchard, E.E. (2010) The Notion of Witchcraft Explains Unfortunate Events. In (eds.) Byron J.Good, Micheal M. J. Fischer, Sarah S. Willen and Mary-Jo Del Vecchio Good A Reader in Medical Anthropology: Theoretical Trajectories, Emergent Realities, Oxford: Wiley-Blackwell, Chapter2 (Pages 18-25).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3.2 Baer, Hans A., Singer, Merrill and Susser, Ida (1994) Medical Anthropology and the World System, Westport: Praeger. Chapters 10 and 11 (Pages 307-348)
3.3 Gould, Harold A. (I965) Modern Medicine and Folk Cognition in Rural India in *Human Organization*, No. 24. pp. 201- 208.
3.4 Leslie, Charles (1976) Asian Medical Systems: A Comparative Study, London: University of California Press, Introduction. (Pages 1-12) .
3.5 Inhorn, Marcia (2000). Defining Women's health: Lessons from a Dozen Ethnographies, *Medical Anthropology Quarterly*, Vol. 20(3): 345-378.
3.6 Nichter, Mark and Mimi Nichter (1996) Popular Perceptions of Medicine: A South Indian Case Study. In *Anthropology and International Health*. Amsterdam : OPA. Chapter7 (Pages 203-237)
3.7 Das, Veena, R.K. Das and Lester Coutinho (2000) Disease Control and Immunization: A Sociological Enquiry. In *Economic and Political Weekly*, Feb. 19-26. Pages 625-632.
3.8 Qadeer, Imrana (2011) Public Health In India, Delhi: Danish Publishers, Part III, (Pages 221-252).

Suggested Reading:

- Good, Byron (1994) *Medicine, Rationality and Experience: An Anthropological Perspective.* Cambridge: Cambridge University Press. Chapter 6. (Pages 135- 165).
- Annandale, Ellen (1988) *The Sociology of Health and Medicine.* Cambridge: Polity Press.
- Banerji, Debabar (1984) The Political Economy of Western Medicine in Third World Countries. In (ed.) John McKinlay *Issues in the Political Economy of Healthcare*. New York*:* Tavistock.

DSE-3 : Indian Sociological Traditions **Credits 06**

DSE3T : Indian Sociological Traditions

Course outline:

1. G S Ghurye
1.1 Caste and Race
1.2 City and Civilization

2. Radhakamal Mukerjee
2.1 Personality, Society, Values
2.2 Social Ecology

3. D P Mukerji
3.1 Tradition and Modernity
3.2 Middle Class

4. Verrier Elwin
4.1. Tribes in India

5. M.N. Srinivas
5.1. Social Change

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

6. Irawati Karve
6.1. Gender and Kinship

7. Leela Dube
7.1 Caste and Gender

Course contents and Itinerary

1. G.S.Ghurye (Weeks 1-2)

1.1.1. Upadhya, Carol 2010, „The Idea of an Indian Society: G.S. Ghurye and the Making of Indian Sociology‟ in Patricia Uberoi, Satish Despande and Nandini Sundar (ed) *Anthropology in the East: Founders of Indian Sociology and Anthropology* New Delhi: Permanent Black

1.1.2. Ghurye, G.S. 1969, *Caste and Race in India,* Delhi: Popular Prakashan Pp 114-140,404-460 (82 pages)

1.2.1. Ghurye, G.S. 1962, *Cities and Civilization*, Delhi: Popular Prakashan

2. Radhakamal Mukerjee (Weeks 3-4)

2.1.1. Mukerjee, Radhakamal 1950, *The Social Structure of Values,* London: George Allen and Unwin Chp 2,3, 5, 6 & 9

2.2.1. Mukerjee, Radhakamal 1932, (reproduced in1994) „An Ecological Approach to Sociology‟ in Ramchandra Guha (ed) *Social Ecology* Delhi: OUP

2.2.2 Mukerjee, Radhakamal 1932, The concepts of balance and organization in Social Ecology *Sociology and Social Research* 16 (July-August 1932) 503-516

2.2.3. Venugopal, C.N. 1988, *Ideology and Society in India: Sociological Essays,* New Delhi: Criterion Publications Chp 7

3. D.P. Mukerji (Weeks 5-6)

3.1.1. Madan, T.N. 2010, „Search for Synthesis: The Sociology of D.P Mukerji‟ in Patricia Uberoi, Satish Despande and Nandini Sundar (ed) *Anthropology in the East: Founders of Indian Sociology and Anthropology,* New Delhi: Permanent Black

3.1.2. Mukerji D.P. (1958 second edition 2002), *Diversities: Essays in Economics, Sociology and Other Social Problems,* Delhi: Manak Publications Pg 177-225, 261-276

3.2.1. Chakraborty, D 2010, D P Mukerji and the Middle Class in India, *Sociological Bulletin* 59(2), May-August 235-255

4. Verrier Elwin (Week 7-8)

4.1.1. Guha, Ramchandra 2010, „Between Anthropology and Literature: The Ethnographies of Verrier Elwin‟ in Patricia Uberoi, Satish Despande and Nandini Sundar (eds) *Anthropology in the East: Founders of Indian Sociology and Anthropology,* New Delhi: Permanent Black

4.1.2. Elwin, Verrier 1955, *The Religion of an Indian Tribe,* Bombay: OUP Chp 11, 15, 16, 17

4.1.3. Munshi, Indra 2004, „Verrier Elwin and Tribal Development‟ in T.B. Subba and Sujit Som (eds) *Between Ethnography and Fiction: Verrier Elwin and the Tribal Question in India*, New Delhi: Orient Longman

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

5. M.N. Srinivas (Week 9-10)

5.1.1. Srinivas, M.N. 1996, Indian Anthropologists and the study of Indian Society EPW 31(11) 656-657

5.1.2. Srinivas, M.N. 1971, *Social Change in Modern India* University of California Press Berkeley Chp 4-5

5.1.3. Srinivas, M. N.1992, *On Living in a Revolution and Other Essays,* Delhi: OUP Chp 1,2,3,5&7

6. Irawati Karve (Week 11-12)

6.1.1. Sundar, Nandini 2010 „In the Cause of Anthropology: The Life and Work of Irawati Karve" in Patricia Uberoi, Satish Despande and Nandini Sundar (ed) *Anthropology in the East: Founders of Indian Sociology and Anthropology* Permanent Black New Delhi

6.1.2. Karve, Irawati 1965, *Kinship Organization in India,* Bombay and New York: Asia Publishing House

7. Leela Dube (Week 13-14)

7.1.1. Dube, Leela 1967, Caste, Class and Power: *Eastern Anthropologist* Lucknow 20(2) 215-225

7.1.2. Dube, Leela 2001, *Anthropological Explorations in Gender: Intersecting Fields,* New Delhi: Sage Chp 3,5 & 6

Suggested Readings:

The following readings may be referred for debates and history of Indian Sociology:

- Dhanagare, D.N (1999), *Themes and Perspectives in Indian Sociology,* Delhi: Rawat Publications Chp 7
- Madan T N 2011, *Sociological Traditions: Methods and Perspectives in the Sociology of India,* New Delhi: Sage
- Uberoi, Patricia Despande Satish and Sundar Nandini (ed) 2010, *Anthropology in the East: Founders of Indian Sociology and Anthropology,* New Delhi: Permanent Black

The following readings may be referred for student presentations:

- Mukerjee, Radhakamal 1951, *The Dynamics of Morals,* London: Macmillan & Co
- Mukerji D.P. (1942 republished 2002), *Modern Indian Culture: A Sociological Study,* New Delhi: Rupa & Co.
- Elwin, Verrier 1952, *Bondo Highlander,* Bombay: OUP
- Karve, Irawati (1969 reprinted 1991), *Yuganta: The end of an epoch,* Hyderbad: Disha Books
- Karve, Irawati 1961, *Hindu Society — an interpretation,* Pune: Deshmukh Prakashan

Or

DSE-3 : Visual Culture **Credits 06**

DSE3T : Visual Culture

Course outline:

1. Introduction

1.1 Introducing Visual Cultures and the Process of 'Seeing'

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.2 The Spectacles of Modernity

2. Visual Environments and Representations
2.1 Power, Knowledge and gaze of the State
2.2 Counter Politics and the Art of resistance
2.3 Visual Practices and Identity formation
2.4 Visual Cultures of Everyday Life

Course contents and Itinerary

1. Introduction (wk 1-2)
1.1 Introducing Visual Culture and the process of 'seeing'
1.1.1 Mitchell, W.J.T. 'Showing Seeing: A Critique of Visual Culture' In *Journal of Visual Culture* August 2002 vol. 1 no. 2 165-180
1.1.2 Berger, John. Ways of Seeing. London: British Broadcasting, 1972. (p. 7-33)

1.2 *The Spectacles of Modernity* (Wk 3-4)
1.2.1 Debord, Guy. *Society of the Spectacle*. Detroit: Black & Red, 1983. (p. 7-17)
1.2.2 Shohat, Ella & Robert Stam 'Narrativizing Visual Culture', In Nicholas Mirzoeff (ed) The Visual Culture Reader. 2nd ed. London: Routledge, 2002. (p. 37-41)
1.2.3 Fenske, Gail & Deryck Holdsworth, 'Corporate Identity and the New York Office Building: 1895-1915' In David Ward and Olivier Zunz (ed) *The Landscape of Modernity: New York City, 1900-1940*. Baltimore: Johns Hopkins UP, 1997.
1.2.4. Roma Chatterji 'Global Events and Local Narratives: 9/11 and the Chitrakaars' In *Speaking with Pictures: Folk Art and Narrative Tradition in India* (p 62-103) (Total number of pages w/o pictures - 20)

2. Visual environments and Representations

2.1 Power, Knowledge and gaze of the State (Wk 5-7)
2.1.1 Foucault, Michel. 'Panopticism' In *Discipline and Punish: The Birth of the Prison*. New York: Pantheon, 1977. (p. 195-203)
2.1.2 Mirzoeff, Nicholas. 'The Right to Look, or, How to Think With and Against Visuality' In *The Right to Look: A Counterhistory of Visuality*. Durham, NC: Duke UP, 2011.
2.1.3 Cohn, Bernard, 1987 (1983), "Representing Authority in Colonial India", in An Anthropologist Among the Historians and Other Essays, Delhi: OUP, pp. 632-650
2.1.4 Tagg, John. 'Evidence, Truth and Order: Photographic Records and the Growth of the State' In *Essays on Photographies and Histories* . Amherst: University of Massachusetts, 1988

2.2 Counter-politics and the Art of Resistance (Wk 8-10)
2.2.1 Ranciere, Jacques. 'Problems and Transformations of Critical Art' In *Aesthetics and Its Discontents*. Cambridge, UK: Polity, 2009.
2.2.2 Bakhtin, Mikhail. 'The Grotesque Image of the Body and Its Sources' In Mariam Fraser & Monica Greco (ed) *The Body: A Reader*. London: Routledge, 2005.
2.2.3 Mally, Lynn. *Revolutionary Acts: Amateur Theater and the Soviet State, 1917-1938*. Ithaca: Cornell UP, 2000. (p. 147-169)

2.3 Visual Practices and Identity Formation (wk 11-12)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.3.1 Bourdieu, Pierre. 'Identity and Representation: Elements for a Critical Reflection on the Idea of Region' In John B. Thompson (ed) *Language and Symbolic Power*. Cambridge: Polity, 1991. pp. 220- 228

2.3.2 Srivastava, Sanjay. 'Urban spaces, Disney-Divinity and Moral Middle classes in Delhi' In *Economic and Political Weekly* Vol. XLIV, Nos. 26 & 27 (June 27, 2009), pp. 338-345

2.3.3 MacDougall, David. 'Photo Hierarchicus: Signs and Mirrors in Indian Photography' in Indian Photography" *Visual Anthropology*, 1992, 5 (2): 103-29.

2.4 Visual Culture of the everyday life (Wk 13-14)

2.4.1 Certeau, Michel De. *The Practice of Everyday Life*. (Trans) Steven Rendall, Berkeley: University of California, 1984 (p. xi-xxiv)

2.4.2 Pinney, Christopher. 'What do Pictures Want Now: Rural Consumers of Images, 1980-2000' In *Photos of the Gods: The Printed Image and Political Struggle in India*. London: Reaktion, 2004. Pp. 181-200

2.4.3 Thomas de la Peña, Carolyn. 'Ready-to-Wear Globalism: Mediating Materials and Prada's GPS' In *Winterthur Portfolio.* Vol. 38, No. 2/3 (Summer/Autumn 2003), pp. 109-129

Suggested Readings:

- Weinbaum, Alys Eve. *The Modern Girl around the World: Consumption, Modernity, and Globalization*. Durham: Duke UP, 2008. Print.
- Pinney, Christopher. *Camera Indica: The Social Life of Indian Photographs*. Chicago: University of Chicago, 1997.
- Babb, Lawrence A., and Susan Snow Wadley. *Media and the Transformation of Religion in South Asia*. Philadelphia: University of Pennsylvania, 1995.
- Sciorra, Joseph. 'Religious Processions as Ethnic and Territorial Markers in a Multi-ethnic Brooklyn Neighborhood' In Robert A. Orsi (ed) *Gods of the City*. Indiana University Press: 1999
- Rappoport, Erika D. 'A New Era of Shopping: The Promotion of Women's Pleasure', Leo Charney and Vanessa R. Schwartz (ed) *Cinema and the Invention of Modern Life*. Berkeley & Los Angeles: University of California Press, 1995
- Mazumdar, Ranjani. *Bombay Cinema: An Archive of the City*. Minneapolis: University of Minnesota, 2007
- Appadurai, Arjun, and Carol A. Breckenridge. 'Museums are Good to Think: Heritage on View in India.' *Representing the Nation: A Reader: Histories. Heritage, and Museums.* (Eds.) David Boswell and Jessica Evans. New York: Routledge, 1999.

DSE-4 : Reading Ethnographies **Credits 06**

DSE8T : Reading Ethnographies

Course outline:

1. Ethnographic Mode of Enquiry
2. Constructing the Ethnographic Object
3. Ethnographic Practices and Styles

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Course contents and Itinerary

1. [**Weeks 1-14]**

1.1. Malinowski, Bronislaw. 1922. *Argonauts of the Western Pacific: An Account of Native Enterprise and Adventure in the Archipelagoes of Melanesian New Guinea*. Studies in Economics and Political Science, no. 65. London: Routledge and Kegan Paul.

1.2. Srinivas, M. N. 1976. *The Remembered Village*. Delhi: OUP.

Or

2. [Weeks 1-14]

2.1. Evans-Pritchard, E. E. 1937. *Witchcraft, Oracles and Magic among the Azande*. London: Oxford University Press.

2.2. Taussig, Michael. 2010 (1980). *The Devil and Commodity Fetishism in South America*. Chapel Hill: University of Carolina Press.

Or

3. [Weeks 1-14]

3.1. Lewis, Oscar. 1961. *The Children of Sánchez: Autobiography of a Mexican family*. New York: Random House.

3.2. Cohen, Lawrence 1998. *No Aging in India: Alzheimer's, The Bad Family, and Other Modern Things*. London: University of California Press.

Or

4. [Weeks 1-14]

4.1. Mead, Margaret. 1928. *Coming of Age in Samoa: A Psychological Study of Primitive Youth for Western Civilization*. New York: Harper Collins.

4.2. Willis, Paul.1977. *Learning to Labour: How Working Class Kids Get Working Class Jobs*. Columbia: Columbia University Press.

Suggested Readings:

- Clifford, James and George Marcus . 1986. *Writing Culture: The Poetics and Politics of Ethnography*. London: University of California Press.
- Kumar, Nita. 1992. *Friends, Brothers and Informants: Fieldwork memoirs of Banaras*. Berkeley: University of California Press.
- Levi-Strauss, Claude. 1973. *Tristes Tropiques*. London: Penguin.
- Rabinow, Paul. 1977 [2007]. *Reflections on Fieldwork in Morocco*.
- Berkeley: University of California Press.
- Rosaldo, Renato. 1989. *Culture and Truth: The Remaking of Social Analyses*. Boston: Beacon Press.

Screenings of ethnographic films will complement the teaching. Video documentation around the ethnographies could also be used concurrently while reading texts.

Or

DSE-4 : Project : Fieldwork And Dissertation **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Skill Enhancement Course (SEC)

SEC-1: Reading, Writing and Reasoning for Sociology **Credits 02**

SEC1T: Reading, Writing and Reasoning for Sociology

Course Outline:

1. Introduction: The virtues of repetition

2. Techniques for reading academic texts

   2.1 Grasping the whole: How to get an overview
   2.2 Divide and conquer: Taking texts apart
   2.3 Getting outside help: Recruiting extra resources

3. How to begin writing academic prose

   3.1 Building a structure: What do you want to say?
   3.2 Working with blocks: Sections, paras, sentences
   3.3 Borrowing material: Paraphrasing, quoting, citing

4. Final sessions: Peer reviewing

Course contents and Itinerary

1. Introduction: The virtues of repetition [Week 1]

Academic reading and writing is really all about re-reading and rewriting – about repeatedly reworking a text until some provisional goal is achieved.

1.1 Assignment, Day 1: Read a short (1-2 page) academic text of moderate difficulty and summarize it in one paragraph (3-4 sentences). (This is without prior guidance by the instructor).

1.2 Assignment, Day 2: Re-read the same text and re-write the summary after a brief discussion of content (does the summary contain most of the most important points made in the text?)

1.3 Assignment, Day 3: Re-read the same text and re-write the summary again after a brief discussion of form (is the summary well structured, clear and effective?)

2. Techniques for reading academic texts [Weeks 2–7]

2.1 Grasping the whole: How to get an overview

2.1.2 Titles as the shortest summary of a text
2.1.3 Good and bad titles
2.1.4 Section headings (where present)
2.1.5 Introductions and Conclusions
2.1.6 Identifying important passages and sentences

2.2 Divide and conquer: Taking texts apart

2.2.1 Beginning, middle and conclusion – stages of argument

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.2.2 The architecture of arguments: main, subsidiary, minor
2.2.3 Everything is not equally important: Distribution of emphasis

2.3 Getting outside help: Recruiting extra resources
2.3.1 Isolating words & terms: Dictionaries, Encyclopedias
2.3.2 Contextualising texts with quick background research
2.3.3 Productive ways of asking for help from teachers/tutors

3. Techniques for writing academic prose [Weeks 8–13]

3.1 Building a structure: What do you want to say?
3.1.1 Beginning, middle and conclusion – stages of argument
3.1.2 The architecture of arguments: main, subsidiary, minor
3.1.3 Everything is not equally important: Distribution of emphasis

3.2 Working with blocks: Sections, Paragraphs, Sentences
3.2.1 How many sections? Job descriptions for each section
3.2.2 Paragraphs as key building blocks of academic prose
3.2.3 Sentences and punctuation; length, balance, continuity

3.3 Borrowing material: Paraphrasing, Quoting, Citing
3.3.1 The difference between paraphrasing and plagiarism
3.3.2 Quotations: When? Why? How?
3.3.3 Citation styles
3.3.4 Productive ways of asking for help from teachers/tutors

4. Final sessions: peer reviewing [Week 14]

The ability to judge and evaluate is a crucial skill, particularly when applied to oneself. Students will practice evaluating each other's work throughout the semester, but the last week can be formalized and stepped up into a more elaborate exercise.

4.1 Assignment, Day 1: The whole class does an individualized, two-part composite reading and writing exercise designed by the instructor based on semester long experience of student abilities and interests.

4.2 Assignment, Day 2: The reading part of the individual assignment is randomly distributed for students to evaluate and comment on their colleagues' work. The instructor moderates discussion of strengths and weaknesses, highlighting techniques for recognizing quality (or its lack).

4.3 Assignment, Day 3: The writing part of the assignment is similarly distributed and evaluated through interactive, moderated discussion.

Note:
Through this course, students should learn how to recognize good or bad writing and should be equipped with the elementary techniques for 'repairing' bad or damaged prose. The course will be preceded by a workshop for teachers. Short extracts for class exercises will be culled from classic and contemporary social science texts of varying levels of difficulty and of different genres and styles. The actual set of texts will be decided at the preparatory workshop.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Suggested Readings :

1. Keynes, John Maynard (1936) *The general theory of employment, interest and money*, Palgrave
2. Macmillan, United Kingdom
3. Parsons, Talcott (1951): *The social system*, Glencoe III, Free Press
4. Douglas, Mary (1986) *How institutions think*, Syracuse University Press, Syracuse, New York.
5. Romila Thapar (2004) *Somanatha: The many voices of history*, Penguin Books, India
6. Sunil Khilnani (1997) *The idea of India,* Penguin Books.
7. Louis Dumont (1980) *Homo Hierarchicus,* University of Chicago Press.
8. Well-known guides to academic writing (such as Howard Becker's *Writing for Social Scientists*) will also be used where appropriate.

Or

SEC-1 : Ethnographic Filmmaking **Credits 02**

SEC1T : Ethnographic Filmmaking

Course Contents:

1. Introduction to Anthropological Filmmaking

   1.1. Anthropology and Filmmaking: The Text and the Image
   1.2. Different Modes of Filmmaking

2. Understanding the use of Camera in Anthropology

3. The Filmmaker and the Filmed: Relationship and understanding 'ethics'

4. Editing and Construction of Meaning
   4.1 Understanding multiple shots and camera movement
   4.2. Tools for Film Editing

5. Filming Oral testimonies, Interviews and Interactions

6. Final Film Projects

Course contents and Itinerary

1. I n t r o d u c t i o n to Anthropological Filmmaking: [Week 1-2]

1.1.1. Rouch, Jean, 'Conversation between Jean Rouch and Professor Enrico Fulchignoni,' In trans. Steven Feld, *Cine-Ethnography*. University of Minnesota Press, 2003. pp. 147-187

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.1.2. Hastrup, Kirsten. 'Anthropological Visions: Some Notes on Visual and Textual Authority' In *Film as Ethnography*. Peter Ian Crawford, and David Turton, eds. Manchester and New York: Manchester University Press, 1993. pp. 8–25.

1.1.3. Suggested Screening of Film Scenes/Sequences, *Trance and Dance in Bali* by Margaret Mead and Gregory Bateson, 22 mins.

1.2.1. Nichols, Bill. 'What types of Documentary are there?' In Introduction to Documentary. Bloomington: Indiana University Press, 2001. pp. 99-137.

1.2.2. Suggested Screening of Film Scenes/Sequences: *Etre et Avoit* by Nicholas Philibert's, 105 mins, 2002; *New Boys* by David MacDougall, 100 mins, 2003; *Dilli-Mumbai*-Dilli by Saba Dewan, 63 mins, 2006; Bowling *for Columbine* by Roger Moore, 120 mins, 2002.

1.2.3. Suggested topics for technical discussion - Understanding the Camera – still, moving, digital, analog; Shot Vs Scene; Image Vs Sound; Camera angles; How to store your data?; How to take care of equipment?

1.2.4. Practical Work for Week 1/2 - Familiarise yourself with your camera. Use your still camera to click photos of the same objects from different angles.

2. Understanding the use of Camera in Anthropology: [Week 3]

2.0.1 El Guindi, Fadwa. 'For God's Sake Margaret' In *Visual Anthropology: Essential Method and Theory*, Walnut Creek, CA: AltaMira, 2004. Pp. 61-82

2.0.2. Suggested Screening of Film Scenes/Sequences: *Diyas*, Judith MacDougall, 56 mins, 1997/2000.

2.0.3 Suggested topics for technical discussion – Small and big cameras, tripod and hand held cameras, Understanding light; F i l m m a k e r ' s Dilemma – where to place the camera?; Filmmaking – Working Single or in a Team?

2.0.4. Practical Work for Week 3 – Camera mounting on tripod; handheld camera practices.

3. Filmmaker and the Filmed: Relationship and understanding 'ethics'. [Weeks 4-5]

3.0.1 Spiegel, Pauline, 'The Case of the Well-Mannered Guest' in *The. Independent Film and Video Monthly* April 1984. Pp. 15-17

3.0.2. MacDougall, 'Whose Story is it?' In *Visual Anthropology Review*, Volume 7, Issue 2, Pp. 2–10, September 1991

3.0.3. Suggested topics for discussion:
Dimensions of relationship between the filmmaker and the filmed - Gender, Class, Ethnicity.

3.0.4. By this point, students should start thinking about topics and groups for their final film.

3.0.5. Practical Work for Week 4-5: Assignment on Observational Mode; Choose your partners and make filmmaking teams; Make one shot of something of your interest. Not more than 2 mins. Fixed frame, without movement. No speech/dialogues. Tripod is optional. Camera type is optional, as long as the resolution allows viewing on a classroom projector.

3.0.6. Viewing of assignments and discussions.

4. Editing and Construction of Meaning [Weeks 6-8]

4.1.1 Suggested topics for technical discussion:
Multiple shots, understanding point of view; narrative building, filming a process, types of editing; Understanding space and material objects – vis-à-vis the

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

character; Types of camera movement; Motivations behind Camera movement; Movement within the shot.

4.1.2. By this time, students should have decided upon their final film projects. They should start approaching respondents and rekeying locations.

4.1.3. Suggested Screening of Film Scenes/Sequences: *Battleship Potemkin* by Sergei Eisenstein, 69 mins. 1925; *Strangers on a Train* by Alfred Hitchcock, 101 min, 1951.

4.2.1 Suggested topics for technical discussion: Understanding editing software (Suggested software: Avid/Final Cut Pro/Windows Movie Maker); Transferring and sequencing of data; Data Backup before editing; Viewing footage; Transcription and Paper Edits.

4.2.4. Practical Work for Week 6-9:
Assignment on Process film; 3 mins; Film an activity; Include camera movement; Break it down in stages - beginning, middle and end; Understand the cause and effect; Focus only on (i) the person (ii) the activity; editing the process film.

4.2.3. Viewing of assignments and discussions.

5. Filming Oral Testimonies, Interviews and Interactions [Weeks 9-10]

5.0.1. Suggested Screening of Film Scenes/Sequences: *Chronicle of a Summer* by Edgar Morin, Jean Rouch, 85 min, 1961.

5.0.2. Suggested topics for technical discussion: Sound and audio equipment.

5.0.3. Practical Work for Week 9-10: Film an oral testimony, with maximum 2 people; Length, no more than 5 minutes; Focus on Interaction; Location is optional

5.0.4. Viewing of assignments and discussions.

6. Final Film Projects [Weeks 11-14]

6.0.1. Film length limited to 5 - 8 mins.

6.0.2. Viewing of projects and discussion.

Suggested Readings:

- Heider, Karl G. *Ethnographic Film,* Austin: University of Texas Press, 2006
- MacDougall, David. 'Ethnographic Film: Failure and Promise', *Annual Review of Anthropology* Vol. 7, pp. 405-425

SEC -1 : Framing Questionnaire and Conducting Interview **Credits 02**

SEC1T : Framing Questionnaire and Conducting Interview

Course Contents:

1. Questionnaire and Interview Method: application; preparations before using these methods
2. Types of Questionnaire, framing a questionnaire
3. Types of Interviews, preparing interview schedule
4. Data Recording, Processing and interpretation
5. Limitations of Questionnaire and Interview Methods

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

SEC- 2: Handling Data: Coding and Tabulation **Credits 02**

SEC2T: Handling Data: Coding and Tabulation

Course Contents:

1. Importance of Data Processing
2. Data Coding: Procedure
3. Content Analysis: Coding and Classification
4. Using Tabulation sheet
5. Construction of Table: Bivariate, Multivariate; Graphical Representation of data

Suggested Reading :

- Bryman, A. 2002. *Social Research Methods*. Oxford University Press: New York.
- Goode, G and P.K. Hatt. 1952. *Methods in Social Research*. McGraw-Hill.
- Moser, A and Kalton, G. 1979. *Survey Methods in Social Investigation*.

Or

SEC- 2 : Counseling **Credits 02**

SEC2T : Counseling

Course Contents:

1. Aims, Goal and Scope of Counseling
2. Characteristics/Frameworks;
3. Types/Areas
4. Counsellor-Client Communication
5. Processes and Outcome

Suggested Reading :

- Gladding, S.T. 2004. Counselling Theories: Essential Concepts and Applications, Prentice Hall.
- Woolfe, R and Dryden, W. 1996. Handbook of Counseling Psychology, New Delhi, Sage Publications.
- Asch, M. 2000. Principles of Guidance & Counselling. ND: Sarup & Sons.
- Jones, A.J. 1970. Principles of Guidance & Counselling (6th ed.) McGraw Hill, New York.
- Aneshensel, Carol S. and Phelan, Jo C. 2006. Handbook of the Sociology of Mental Health, Springer Publishing Company.
- Hershenson, D.B and Power, P.W. 1987. Mental Health Counselling: Theory & Practice, Allyn & Bacon Publications.
- Bernard J. Gallagher (4th Ed.) 2001. The Sociology of Mental Illness, Prentice-Hall Publication.
- Patterson, Lewis & Welfel. 2000. The Counselling Process, 5th Edition, Brooks/Cole Thomson Learning Publication.
- Gelso, Charles & Fretz. 1995. Counselling Psychology, Prism Books Pvt. Ltd.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

- Palmo, A.J; William, J.W; Borsos, D.P (Ed.) 2006. Foundations of Mental Health Counselling (3rd Ed.), Charles C Thomas Pub Ltd.
- Geldard, K & Geldard, D. 2005. Practical Counselling Skills: An Integrative Approach, Palgrave.
- Freidson, E. 1970. Profession of Medicine: A Study of the Sociology of Applied Knowledge, Harper & Row, New York.
- Foucault, Michel. 1967. Madness & Civilization: A History of Insanity in the Age of Reason, London.

Or

SEC-2 : Statistical Reasoning for Sociology **Credits 02**

SEC2T : Statistical Reasoning for Sociology

Course Contents:

1. Use of statistics in Social Research: Descriptive and Inferential Statistics

2. Basic Concepts: Statistics, population, parameter, statistics, Sample, variable
3. Sampling – types and applications

4. Frequency Distribution and Graphical Techniques

5. Coding and Tabulation

6. Central tendency -- Mean, Median, Mode

7. Dispersion --- Range, variance, Standard Deviation

Suggested Readings:

- Elifson, Kirk W., Richard P. Runyon, and Audrey Haber. Fundamentals of social statistics. McGraw- Hill Humanities, Social Sciences & World Languages, 1990.
- Goon, A.M., M.K. Gupta and B. Dasgupta-) Basic Statistics, Kolkata World Press Pvt. Ltd, 1978
- Blalock. Social Statistics
- Irvine, John, Ian Miles, and Jeff Evans, (Eds). Demystifying social statistics. London:Pluto Press, 1979.
- Kothari, C RResearch Methodology, New Delhi: New Age International, , 2004.
- Das N.G.: Statistics

Generic Elective (GE)
[Interdisciplinary for other department]

GE -1 : Indian Society: Images and Realities **Credits 06**

GE1T : Indian Society: Images and Realities

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Course outline:

1. Ideas of India: Civilization, Colony, Nation and Society

2. Institutions and Processes

    2.1 Village, Town and Region
    2.2 Caste, Religion and Ethnicity
    2.3 Family and Gender
    2.4 Political Economy

3. Critiques

Course contents and Itinerary

1. **Ideas of India: Civilization, Colony, Nation and Society (3 Weeks)**

1.1 Embree, Ainslie Thomas,. *Imagining India*. Delhi: Oxford University Press, 1989. Chapter 1- Brahmanical Ideology and Regional Identities. Pp. 9 – 27

1.2 Cohn, Bernard. *India: Social Anthropology of a Civilization*, Delhi: OUP. Chapters 1, 3, 5 & 8 (1-7, 24-31, 51-59, 79-97)

2. Institutions and Processes (9 Weeks)

2.1 Village, Town and Region

2.1.1 Breman, Jan. 'The Village in Focus' from the Village Asia Revisited, Delhi: OUP 1997. Pp. 15-64

2.1.2 Cohn, Bernard, *An Anthropologist Among Historians and Other Essays*, Delhi: OUP, 1987, Chapters. 4 and 6. Pp.78-85 & 100 – 135

2.2 Caste, Religion and Ethnicity

2.2.1 Mines, Diane P. *Caste in India*. Ann Arbor, Mich.: Association for Asian Studies, 2009. Pp. 1-35

2.2.2 Fuller, C. J. *The Camphor Flame: Popular Hinduism and Society in India*. Delhi: Viking, 1992. Chapter 1. Pp. 3 – 28.

2.2.3 Ahmad, Imtiaz et.al (eds). *Pluralism and Equality: Values in Indian Society and Politics*, Sage : New Delhi, 2000. Chapter: 'Basic Conflict of 'we' and 'they'' Between religious traditions, between Hindus, Muslims and Christians'. Pp.

2.3 Family and Gender

2.3.1 Dube, Leela. 'On the Construction of Gender: Hindu Girls in Patrilineal India', *Economic and Political Weekly*, Vol. 23, No. 18 (Apr. 30, 1988), pp. WS11-WS19

2.3.2 Gray, John N. & David J. Mearns. *Society from the Inside Out: Anthropological Perspectives on the South Asian Household.* New Delhi: Sage, 1989. Chapter 3. (Sylvia Vatuk) Household Form and Formation: Variability and Social Change among South Indian Muslims. Pp. 107-137

2.4 Political Economy

2.4.1 Chatterjee, Partha. *State and Politics in India*. Delhi: Oxford University Press, 1997. Introduction: A Political History of Independent India. Pp. 1-39

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3. Critiques (2 Weeks)

3.1 Omvedt, Gail. *Understanding Caste*. New Delhi: Orient Black Swan, 2011. Chapters. 5, 9, 11 and Conclusion. Pp. 30-38, 67 – 73, 83 – 90, 97 – 105

3.2 Sangari, Kumkum and Sudesh Vaid. *Recasting Women: Essays in Indian Colonial History*. New Brunswick: Rutgers University Press. Introduction, Pp. 1 – 25

Or

GE-1 : Family and Intimacy **Credits 06**

GE1T : Family and Intimacy

Course Outline:

1. What is Family?
2. Family and Intimacy: Themes and Accounts
3. Family and Intimacy: Critiques and Transformations

Course contents and Itinerary

1. What is Family? (4 Weeks)

1.1 Mitterauer, Michael, and Reinhard Sieder. *The European Family*. Chicago: University of Chicago Press, 1982. Chapter 1. Family as an Historical Social Form. Pp. 1-21

1.2 Worsley, Peter. *Introducing Sociology*. Harmondsworth: Penguin Books, 1984. Chapter 4. The Family. Pp. 165-209

1.3 Levi-Strauss, Claude. 'The Family' in Harry L Shapiro (ed.) *Man, Culture and Society*. New York: Oxford University Press, Pp. 261 - 285

1.4 Okin, Susan Moller. *Justice, Gender, and the Family*. New York: Basic Books, 1989. Chapter 2. The Family: Beyond Justice? Pp. 25 – 40.

1.5 Weston, Kath. *Families We Choose*. New York: Columbia University Press, 1991. Chapter 2. Exiles from Kinship. Pp. 21 – 42.

2. Family and Intimacy: Themes and Accounts (6 Weeks)

2.1 Lannoy, Richard. *The Speaking Tree*. London: Oxford University Press, 1974. Part Two, Chapters. 1, 2 & 4 The Child, Family Relationships & Change in the Family System. Pp. 83 – 112 & 124 - 131

2.2 Madan, T. N. Family and Kinship: A study of the Pandits of Rural Kashmir. Delhi: Oxford University Press, 1989. Chapters, 5 & 6. Pp. 64 – 108

2.3 Fruzzetti, Lina M. *The Gift of a Virgin: Women, Marriage, and Ritual in a Bengali Society*. Delhi: OUP. 1993. Introduction and Chapter 1. Sampradan: The Gift of Women and Status of Men. Pp. 1 – 28

2.4 Trawick, Margaret. *Notes on Love in a Tamil Family*. Delhi: Oxford University Press, 1996. Chapters. 3 & 5 The Ideology of Love & Siblings and Spouses. Pp. 89 – 116 & 187 – 204.

2.5 Raheja, Gloria Goodwin, and Ann Grodzins Gold. *Listen To The Heron's Words: Reimagining Gender and Kinship in North India*. Delhi: Oxford University Press, 1996. Chapter 2. Sexuality, Fertility, and Erotic Imagination in Rajasthani Women's Songs. Pp. 30 – 72

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3. Family and Intimacy: Critiques Transformations (4 Weeks)

3.1 arrett, ich le, and ary c ntosh. *The Anti-Social Family*. London: Verso, 1991. Chapter 2. The Anti-Social Family. Pp. 43 – 80

3.2 Cartledge, Sue, and Joanna Ryan. *Sex & Love: New Thoughts on Old Contradictions*. London: Women's Press, 1983. Chapter 7 ‘ s a Feminist Heterosexuality Possible?’ Pp. 105 – 123

3.3 Coontz, Stephanie. *Marriage, A History*. New York: Viking, 2005. Pp. 15 – 49

3.4 Therborn, ran. *Between Sex and Power: Family in the World, 1900- 2000*. London: Routledge, 2004. Introduction, Chapter 2 and Conclusion. Pp. 1- 12, 73 –106 & 295 – 315

GE-2 : Rethinking Development **Credits 06**

GE2T : Rethinking Development

Course outline:

1. Unpacking Development
2. Theorizing Development
3. Developmental Regimes in India
4. Issues in Developmental Praxis

Course contents and Itinerary

1. Unpacking Development (4 Weeks)

1.1 Bernstein, Henry. *Underdevelopment and Development*. Harmondsworth: Penguin, 1973. Introduction: Development and the Social Sciences. Pp. 13 – 28.

1.2 Wolfgang, Sachs (ed.) The Development Dictionary: A Guide to Knowledge and Power. London: Zed Books. 1992. pp. 1-21.

1.3 Rist, Gilbert. *The History of Development*. London: Zed, 2008. Pp. 8 – 46

1.4 Ferguson, J. 2005. ‘Anthropology and its Evil Twin; ‘Development’ in the Constitution of a Discipline’, in M. Edelman and A. Haugerud (eds.) *The Anthropology of Development and Globalization*. Blackwell Publishing. Pp 140-151.

2. Theorizing Development (5 Weeks)

2.1 Harrison, David. *The Sociology Of Modernization And Development*. London: Routledge, 1991. Chapters 1 &2. Pp. 1 – 54

2.2 Frank, Andre Gunder. 1966. ‘The Development of Underdevelopment’, *Monthly Review*. 18 (4) September 17-31

2.3 Redclift, Michael. 1984. *Development and the Environmental Crisis. Red or Green alternatives?* New York: Methuen & Co. Chapter 1 and 7, pp 5-19, 122-130

2.4 Visvanathan, Nalini, Lynn Duggan, Laura Nisonoff & Nan Wiegersma (eds). 1997. The Women, Gender and Development Reader. Delhi: Zubaan, pp 33-54

2.5 Sanyal. Kalyan. 2007. *Rethinking Capitalist Development: Primitive Accumulation, Governmentality and Post-Colonial Capitalism*. New Delhi: Routledge, pp 168-189

2.6 Sen, A. 1999. *Development as Freedom*. New Delhi : Oxford University Press, pp. 3-11

3. Developmental Regimes in India (3 Weeks)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3.1 Bardhan, Pranab. *The Political Economy of Development In India*. Delhi: Oxford, 1992. Pp. 1-60

3.2 Chatterjee, Partha. Democracy and Economic Transformation in India, *Economic and Political Weekly*, Vol. 43, No. 16 (Apr. 19 - 25, 2008), pp. 53-62

4. Issues in Developmental Praxis (2 Weeks)

4.1 Scudder. T. 1996. 'Induced Impoverishment, Resistance and River Basin Development' in Christopher McDowell (ed.) *Understanding Impoverishment: The Consequences of Development Induced Displacement*. Oxford: Berghahn books. pp. 49-78.

4.2 Sharma, Aradhana. *Logics of Empowerment: Development, Gender and Governance in Neoliberal India*. Minneapolis: University of Minnesota Press, 2008. Chapters. Introduction, Chapter 4 and Conclusion

Or

GE-2: Gender and Violence **Credits 06**

GE2T: Gender and Violence

Course Outline:

1. What is Gendered Violence?
2. Structural and Situated Violence

2.1 Caste, Gender and Violence

2.2 Domestic and Familial Violence

2.3 Gender and the Conflict Situation

2.4 Violence, Harassment and the Workplace

3. Sexual Violence
4. Addressing Gendered Violence: Politics and Public Policy

Course contents and Itinerary

1. What is Gendered Violence? (2 Weeks)

1.1.1 Kimmel, Michael S. *The Gendered Society*. New York: Oxford University Press, 2011. Chapter 13. Gender of Violence, Pp. 381-407

1.1.2 Wies, Jennifer R. *Anthropology at the Front Lines of Gender-Based Violence*. Nashville, Tenn.: Vanderbilt Univ. Press, 2011. Chapter 1. Ethnographic Notes from the Frontlines of Gender Based Violence, Pp. 1-18

2. Structural and Situated Violence (7 Weeks)

2.1 Caste, Gender and Violence

2.1.1 Kannabiran, Vasanth and Kalpana Kannabiran, Caste and Gender: Understanding Dynamics of Power and Violence, *Economic and Political Weekly*, Vol. 26, No. 37 (Sep. 14, 1991), pp. 2130-2133.

2.1.2 Irudayam, Aloysius, Jayshree P Mangubhai, and Joel G Lee. *Dalit Women Speak Out*. Chapters. 1, 3, 4, 13 and 14.

2.2 Domestic and Familial Violence

2.2.1 Karlekar, Malavika. Domestic Violence, *Economic and Political Weekly*, Vol. 33, No. 27 (Jul. 4-10, 1998), pp. 1741-1751

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

2.2.2 Agnes, Flavia, *'My Story, Our Story: Building Broken Lives'* Mumbai: Majlis. 1984.

2.2.3 Chowdhry, Prem. Enforcing Cultural Codes: Gender and Violence in Northern India, Economic and Political Weekly, Vol. 32, No. 19 (May 10-16, 1997), pp. 1019-1028

2.3 Gender and the Conflict Situation

2.3.1 Wood, E. J. 'Variation in Sexual Violence during War'. *Politics & Society* 34.3 (2006): 307-342.

2.3.2 Butalia, Urvashi. *The Other Side of Silence*. Durham, NC: Duke University Press, 2000. Chapter 4, Pp. 104 - 171

2.4 Violence, Harassment and the Workplace

2.4.1 MacKinnon, Catharine A. *Only Words*. Cambridge, Mass.: Harvard University Press, 1993. Chapter II Racial and Sexual Harassment. Pp. 43 – 68.

2.4.2 Tejani, Sheba. Sexual Harassment at the Workplace: Emerging Problems and Debates, *Economic and Political Weekly*, Vol. 39, No. 41 (Oct. 9-15, 2004), pp. 4491-4494

3. Sexual Violence (3 Weeks)

3.1.1 Box, Steven. *Power, Crime, and Mystification*. London: Routledge, 1989. Chapter 4. Rape and Sexual Assaults on Women Pp. 120 - 165

3.1.2 Scully, Diana and Joseph Marolla. "Riding the Bull at Gilley's": Convicted Rapists Describe the Rewards of Rape, *Social Problems*, Vol. 32, No. 3 (Feb., 1985), pp. 251-263

3.1.3 Menon, Nivedita. Recovering Subversion: Feminist Politics beyond the Law. Ranikhet: Permanent Black. 2004. Chapter 3. Sexual Violence: Escaping the Body. Pp. 106 - 156

4. Addressing Gendered Violence: Politics and Public Policy (2 Weeks)

4.1.1 Omvedt, Gail, Violence Against Women: New Movements and New Theories in India. Delhi: Kali for Women, 1990. Pp. 1-40

4.1.2 Das, Veena & Kim Turcot DiFruscia. Listening to Voices: An Interview with Veena Das, Altérités, vol. 7, no 1, 2010 : 136-145.

4.1.3 Naquvi, Farah. This Thing called Justice: Engaging Laws on Violence against Women In India, in Bishakha Dutta (ed.), Nine Degrees of Justice: New Perspectives on Violence Against Women in India. Delhi: Zuban, 2010.

Additional Resources:

- Wall, Liz. '*Gender equality and violence against women what's the connection*?' The Australian Center for the study of Sexual Assault Research Summary. 2014.
- Welchman, Lynn, and Sara Hossain. *"Honour"*. London: Zed Books, 2005. Chapter 2. 'Crimes of Honour': Value and Meaning Pp. 42-64
- Loy, Pamela Hewitt, and Lea P. Stewart. 'The Extent and Effects of the Sexual Harassment of Working Women'. *Sociological Focus* 17.1 (1984): 31-43.
- Pickup, Francine, *Ending Violence against Women: A Challenge for Development and Humanitarian Work*, London: Oxfam, 2001. Chapter 5. Direct support to the survivors of violence & Chapter 8.
- Challenging the State.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

- United Nations Division for the Advancement of Women, 'Good Practices in Legislation on Violence against Women' 2008. Part III, Framework for Legislation on Violence against Women.
- Puri, Jyoti. 'Sodomy, Civil Liberties, and the Indian Penal Code' in Chatterji, Angana P, and Lubna Nazir
- Chaudhry. Contesting Nation. Delhi: Zuban. Pp. 100-132

GE-3 : Sociology of Social Movements **Credits 06**

GE3T : Sociology of Social Movements

Course outline:

1. Contextualizing Social Movements
2. Theories of Social Movements
3. Ideology, Participation and Mobilization: Case Studies.
4. Contemporary Social Movements

Course contents and Itinerary

1. Contextualizing Social Movements [Weeks 1-2]

1.1. David Snow, Sarah A. Soule and Hanspeter Kriesi, ed. 2008. *Blackwell Companion to Social Movements.* 'Mapping the Terrain'New York: Wiley-Blackwell. pp. 3-16.

1.2. Della Porta, Donatella and Mario Diani, 2006. *Social Movements: An Introduction.* Oxford: Blackwell Publishing. pp. 1-29.

2. Theories of Social Movements [Weeks 3-8]

2.1. Le Bon, Gustave. 2007. "The Minds of Crowds". In Jeff Goodwin and James, M. Jasper, eds, *Social Movements: Critical Concepts in Sociology, Vol I*. London: Routledge, pp.7-17

2.2. Crossley, Nick. 2009. *Making Sense of Social Movements.* Jaipur: Rawat Publication, pp. 17-55.

2.3. Nilsen, Gunvald Alf.2009. "The Author and the Actors of their own Drama: Notes towards a Marxist Theory of Social Movements", *Capital and Class*, 33:3, pp. 109-139.

2.4. McCarthy, John. D and Mayer, N. Zald. 1977. "Resource Mobilization and Social Movements: A Partial Theory", *American Journal of Sociology*, 82 (6), pp. 1212-1241.

2.5. Sidney Tarrow. 1996. "States and Opportunities: the Political Structuring of Social Movements". In Doug McAdam, John D. McCarthy and Mayer N. Zald, eds, *Comparative Perspectives on Social Movements,* MA: Cambridge University Press, pp. 41-61.

2.6. Pichardo Nelson A. 1997. "New Social Movements: A Critical Review", *Annual Review of Sociology,* 23, pp. 411-430

2.7. Snow, David. A, Burke Rochford, Jr and Steven K. Worden; Robert D. Benford,1986. "Frame Alignment Processes, Micromobilization, and Movement Participation", *American Sociological Review,* 51(4), pp. 464-481

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3. Ideology, Participation and Mobilization: Case Studies [Weeks 9-14]

3.1. Omvedt, Gail. 2005. "Farmer's Movements and the Debate on Poverty and Economic Reforms in India". In Raka Ray and Fainsod Katzenstein, eds, *Social Movements in India Poverty, Power and Politics.* London: Rowman and Littlefield Publishers, pp. 179-202.

3.2. Hardtman, Eva-Maria. 2009. "Dalit Activities in Lucknow: Buddhism and Party Politics in Local Practice". In Eva-Maria, Hardtman, *The Dalit Movement in India: Local Practices, Global Connections.* Delhi: Oxford University Press, pp. 124-158.

3.3. Dwivedi,Ranjit. 2010. Parks, People and Protest: The Mediating Role of Environmental Action Groups". In T. K. Oommen, ed., *Social Movements: Concerns of Equity and Security.* Delhi: Oxford University Press, pp. 297-316.

3.4. McCormick, Sabrina. 2007. Democratizing Science Movements: A New Framework for Mobilization and Contestation. *Social Studies of Science,* Vol. 37, No. 4, pp. 609-623.

3.5. Lalitha, K. and Susie Tharu. 1989. *We Were Making History: Life Stories of Women in Telangana People's Struggle.* Delhi: Kali for Women, pp. 19-32.

4. Contemporary Social Movements

No readings and examinations on this section. The section will be based on visual programmes and interactive sessions at the teacher's discretion, centered on the topics explored in section 1, 2 and 3.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

Or

GE-3 : Sociology of Education **Credits 06**

GE3T : Sociology of Education

.

Course outline:

1. Perspectives in the Sociology of Education

    1.1. Education as Socialisation
    1.2. Education as Social Reproduction
    1.3. Education and Resistance
    1.4. The New Sociology of Education
    1.5. Education and Gendered Identities

2. Sites of Reproduction and Negotiations of Social Identities
    2.1. Contexts of Discrimination
    2.2. Pedagogical Discourses
    2.3. Texts and Learning

3. Contemporary Issues in Higher Education

Course contents and Itinerary

1. **Perspectives in the Sociology of Education [Week 1-8]**

1.1. Education as Socialisation

1.1.1. Durkheim, Emile, 1977. 'On Education and Society', in Karabel, J. and Halsey A.H. (eds.) *Power and Ideology in Education.* New York: Oxford University Press. (pp. 92-104).
1.1.2. Parsons, Talcott, 1959/2008. 'The School Class as a Social System', in Ballantine, J.H. and Spade, J.Z.(eds.) *Schools and Society: A Sociological Approach to Education.* 3rd ed. California: Pine Forge Press. (pp. 80-85).

1.2. Education as Social Reproduction

1.2.1. Bowles, S. and Gintis, H. 1976/2011. *Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life.* Chicago: Haymarket Books. Ch.1 (pp. 3-17).
1.2.2. Bourdieu, Pierre. 1977. 'Cultural Reproduction and Social Reproduction', in Karabel, J. and Halsey, A.H. (eds.) *Power and Ideology in Education.* New York: Oxford University Press. (pp. 487- 510).
1.2.3. Macleod, Jay. 2009. 'Social Reproduction in Theoretical Perspective', in *in't No Makin It: Aspirations and Attainment in a Low Income Neighbourhood.* 3rd ed. USA: Westview Press. (pp. 11- 24).

1.3. Education and Resistance

1.3.1. Apple, Michael. 2013. 'The Other Side of the Hidden Curriculum: Culture as Lived-I' Knowledge, Power and Education: The Selected Works of Michael W. Apple. New York: Routledge. Ch.7 (pp. 132-151).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.3.2. Freire, Paulo. (1970/ 1993) *Pedagogy of the Oppressed.* (Tr. Myra Bergman Ramos). London: Penguin Books. Ch. 2. (pp. 52-67).

1.4. The New Sociology of Education

1.4.1. Woods, Peter. 1983. *Sociology and the School: An Interactionist Perspective* London: Routledge and Kegan Paul. Ch.1 and 2 (pp. 1- 41).

1.4.2. Hammersley, Martyn. (ed.) 1999. *Researching School Experience: Ethnographic Studies of Teaching and Learning.* London: Falmer Press. Introduction (pp.1-12).

1.5. Education and Gendered Identities

1.5.1. Youdell, Deborah. 2010. 'Recognizing the Subjects of Education: Engagements with Judith Butler' in Apple et al. (eds.) *The Routledge International Handbook of the Sociology of Education*. Routledge. London and New York. (pp. 132-141).

1.5.2. Davies, Bronwyn. 2004. 'The Discursive Production of the Male/Female Dualism in School Settings' in Ball, S. J. (ed.) *The Routledge Falmer Reader in Sociology of Education.* Routledge Falmer London. (pp. 128- 139).

2. Sites of Reproduction and Negotiations of Social Identities[Weeks 9-12]

2.1. Contexts of Discrimination

2.1.1. Macleod, Jay. 1987. 'Leveled Aspirations: Social Reprocuction Takes its Toll', in *'Ain't No Makin It': Aspirations and Attainment in a Low Income Neighborhood*. USA: Westview Press. (pp. 112-136).

2.1.2. Nambissan, Geetha. 2000. 'Dealing with Deprivation' in *Seminar*, Sept. 2000.

2.2. Pedagogical Discourses

2.2.1. Froerer, Peggy. 2007. Disciplining the saffron way: Moral education and the Hindu rashtra. *Modern Asian Studies*, 41, 5, 1033-1071.

2.2.2. Thapan, Meenakshi. 2006. 'Docile' bodies, 'good' citizens or 'agential' subjects? Pedagogy and Citizenship in Contemporary Society. In *Economic and Political Weekly*, Sept 30, 4195 - 4203.

2.2.3. Benei,Veronique. 2005. 'Serving the Nation: Gender and Family Values in Military Schools.' In Jeffery, P. and Chopra, R. (eds.) *Educational Regimes in Contemporary India*. Sage Publications. London - Thousand Oaks – New Delhi. (pp.141-159).

2.2.4. Nambissan, Geetha, B. 2004. 'Integrating Gender Concerns', in *Seminar* April 2004,

2.3 Texts and Learning

2.3.1. Kumar, Krishna. 2004. *What is Worth Teaching?* Orient Longman.Ch.2, 7 and 8.

3. Contemporary Issues in Higher Education: [Weeks 13-14]

3.1. Deshpande, Satish. 2011. 'Revisiting the Basics', in *Seminar*, August 2011

3.2. Lukose, Ritty, . 2009. 'Politics, Privatization and Citizenship', in *Liberalization's Children: Gender, Youth, and Consumer Citizenship in Globalizing India*. USA: Duke University. Ch. 4 pp. 132-162.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3.3. Jeffrey, Craig. 2011. 'Great Expectations: Youth in Contemporary India', in Clark Deces, Isabelle (ed.) A Companion to the Anthropology of India. UK: Blackwell. pp. 62-79.

Suggested Readings:

- Willis, Paul. 1977. *Learning to Labor: How Working Class Kids Get Working Class Jobs*. New York: Columbia University Press.
- Thapan, Meenakshi. 1991. *Life at School: An Ethnographic study*. Delhi: Oxford University Press.
- Ball, Stephen J. 1981. *Beachside Comprehensive: A Case Study of Comprehensive Schooling*. Cambridge: Cambridge University Press.
- Everhart, R. B. 1983. *Reading, Writing and Resistance*. Boston: Routledge and Kegan Paul.
- McLaren, P. 1986. *Schooling as a Ritual Performance*. Boston and London. Routledge and Kegan Paul.
- Jeffrey, Roger et.al. 2006. *'Parhai Ka Mahaul* ? An Educational Environment in Bijnor, Uttar Pradesh', in Neve, G. De and Donner, H. (eds.) The Meaning of the Local : Politics of Place in Urban India. Abingdon, Oxon: UCL Press.
- Jeffrey,Craig. 2010. *Timepass: Youth, Class and the Politics of Waiting in India.* Stanford, California: Stanford University Press
- Bettie, Julie. 2003. *Women Without Class: Girls, Race, and Identity*. California: University of California Press

GE-4 : Sociology of Media **Credits 06**

GE4T : Sociology of Media

Course outline:

1. Introduction

2. Theoretical Approaches
   - 2.1 Neo-Marxist
   - 2.2 Feminist
   - 2.3 Semiotic
   - 2.4 Interactionist

3. Old and New Media
   - 3.1 Production, Control, challenges by New Media
   - 3.2 Media Representation
   - 3.3 Audience Reception

Course contents and Itinerary

1. Introduction: ***The 'idea' of communication and Social embeddedness of Media***

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

1.1 McLuhan, Marshall. 1964, "Roads and Paper Routes" In *Understanding Media: Extensions of Man.* New York: McGraw- Hill Book Co.

1.2 Silverstone, Roger. "The Sociology of Mediation and Communication" in Craig Calhoun, Chris Rojek & Bryan S Turner (ed) *Sage Handbook of* Sociology London: Sage Publications, 2005 (p. 188-203)

2. Theoretical approaches: *From Mass media to interactive media*

2.1 Neo-Marxist

2.1.1 Adorno, T. & Horkheimer, M., 1944. "The Culture Industry: Enlightenment as Mass Deception" In T. Adorno and M. Horkheimer. *Dialectics of Enlightenment.* Translated by John Cumming. New York: Herder and Herder, 1972.

2.1.2. Benjamin, W. 1968, „The work of art in the age of mechanical reproduction" In H. Zohn (Trans.), *Illuminations: Essays and reflections* (pp. 217-252). New York: Schocken.

2.2 Feminist

2.2.1 Mulvey, Laura. „Visual Pleasure and Narrative Cinema." Film Theory and Criticism : Introductory Readings. Eds. Leo Braudy and Marshall Cohen. New York: Oxford UP, 1999: 833-44.

2.2.2 McRobbie, Angela, 'Post-Feminism and Popular Culture: Bridget Jones and the New Gender Regime" In *The Aftermath of Feminism: Gender, Culture and Social Change*, Sage Publication Ltd. 2009:11-22.

2.3 Semiotic

2.3.1 Barthes, Roland. „The Photographic Message" in *Image, Music and Text* Ed. and trans. Stephen Heath. New York: Hill, 1977. 15-31.

2.3.2 Hall, Stuart "Encoding/Decoding," Critical Visions In Film Theory. Ed. Timothy CorriganP. White, M. Mazaj. Boston: Bedford St. Martins 2011. 77-87. Print.

2.4 Interactionist

2.4.1 Thompson, John B. „The Rise of Mediated Interaction" in *The Media and Modernity: A Social Theory of the Media* Stanford, CA: Stanford UP, 1995.

4. Old and New Media

3.1 Media Production, Control and challenges by New Media

3.1.1 Herman, Edward S., and Noam Chomsky. "A Propaganda Model" In *Manufacturing Consent: The Political Economy of the Mass Media*. New York: Pantheon, 1988. Print.

3.1.2. Kaur, Raminder, and William Mazzarella. "Between sedition and seduction thinking Censorship in south Asia" In *Censorship in South Asia: Cultural Regulation from Sedition to Seduction*. Bloomington: Indiana UP, 2009.

3.1.3. Williams, Raymond. "Alternative Technology, Alternative Uses" In *Television: Technology and Cultural Form*. (139-157) New York: Schocken, 1975.

3.1.4. Eko, Lyombe, 2012. „New Media, Old Authoritative Regimes: Instrumentalization of the Internet and Networked Social Media in the "Arab Spring" of 2011 in North Africa" p. 129-160

3.2 Media Representations

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3.2.1 Hall, Stuart, "Foucault: Power, Knowledge and Discourse" In Margaret Wetherell, Stephanie Taylor, Simeon J Yates (ed) *Discourse Theory and Practice: A Reader* 2001 Wetherell, Taylor and Yates

3.2.2 Sorenson, John. 1991, "Mass Media and Discourse on Famine in the Horn of Africa" In *Discourse & Society*, Sage: London 1991; Vol 2(2); 223-242

3.3 Audience Reception

3.3.1 Livingstone, Soina. 2003, "The Changing Nature of Audiences: From the Mass Audience to the Interactive Media User" In Angharad N. Valdivia (ed) *A Companion to Media Studies*. Malden, MA: Blackwell Pub.

3.3.2 Bourdieu, Pierre. 1984, "Supply and Demand" In Richard Nice (Trans) *Distinction: A Social Critique of the Judgment of Taste*. Harvard Univ. Press: Cambridge

3.3.3 Naficy, Hamid. "Ideological and Spectatorial Formations" In *A Social History of Iranian Cinema*. Durham [N.C.: Duke UP, 2011. pp. 115-140

Some suggested readings for class Projects and Presentations

- Said, Edward W. 1997, *Covering Islam: How the Media and the Experts Determine How We See the Rest of the World.* New York: Vintage. Print. p 105-126
- Abraham, Janaki. "Wedding Videos in North Kerala: Technologies, Rituals, and Ideas about Love and Conjugality" *In Visual Anthropology Review* Volume 26, Issue 2, pages 116–127, Fall 2010
- Spitulnik, Debra. 2002, "Mobile Machines and Fluid Audiences: Rethinking Reception through Zambian Radio Culture" In Faye D. Ginsburg, Lila Abu-Lughod,
- Brian Larkin (ed). *Media Worlds: Anthropology on a New Terrain*, UCL Press.
- Mankekar, Purnima. 2002, Epic Contests: Television and Religious Identity in
- India" In Faye D. Ginsburg, Lila Abu-Lughod, Brian Larkin (ed). *Media Worlds: Anthropology on a New Terrain*, UCL Press.
- Doron, Assa and Robin Jeffrey. 2013, „For Women and Household" In *The Great Indian Phone Book: How the Cheap Cell Phone Changes Business, Politics and Daily Life*. C Hurst & Co (Publishers) Ltd: London
- Rajagopal, Arvind. *Politics after Television: Religious Nationalism and the Reshaping of the Indian* Public. Cambridge, UK: Cambridge UP, 2001

GE- 8: Population and Society **Credits 06**

GE8T: Population and Society

Course outline:

1. Introducing Population Studies

   1.1. Sociology and Demography
   1.2. Concepts and Approaches

2. Population, Social Structure and Processes

   2.1. Age and Sex Structure, Population Size and Growth
   2.2. Fertility, Reproduction and Mortality

3. Population, Gender and Migration

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3.1. Population and Gender
3.2. Politics of Migration

4. Population Dynamics and Development

4.1. Population as Constraints and Resources for Development
4.2. Population Programmes and Policies

Course contents and Itinerary

1. Introducing Population Studies [Weeks 1-3]

1.1.1 Durkheim, Emile. 1982 (1895). *The Rules of Sociological Method*. (trans. W. D. Halls). New York: The Free Press, pp. 136-137; 188, 203.

1.1.2 Cox, Peter Richmond. 1950. Demography. University of California Press, pp. 01-08.

1.1.3 Davis, Kingsley. 1951. 'Caste and Demography', Population of India and Pakistan, Princeton, NJ: Princeton University Press, pp. 52-60.

1.1.4 Guilmoto, Christophe Z. 2011. 'Demography for Anthropologists: Populations, Castes, and Classes'. In Isabelle Clark-Decès (ed.). A Companion to the Anthropology of India, Blackwell Publishing Ltd. pp. 25-41.

1.2.1 Malthus, Thomas Robert. 1986. An Essay on the Principle of Population. London: William Pickering, Chapters 1-2, pp. 01-11.

1.2.2 Dudley, Kirk. 1996. 'Demographic Transition Theory', *Population Studies*, 50(3): 361-387.

2. Population, Social Structure and Processes [Weeks 4-6]

2.1.1 Premi, Mahendra K. 2006. 'Population Composition (Age and Sex)', Population of India: In the New Millennium. New Delhi: National Book Trust, pp.103-127.

2.1.2 Visaria, Pravin and Visaria, Leela. 2006. 'India's Population: Its Growth and Key Characteristics'. In Veena Das (ed.). Handbook of Indian Sociology, New Delhi: Oxford University Press, pp. 61-77.

2.2.1 Heer, David M. and Grigsby, Jill S. 1992. 'Fertility', Society and Population. New Delhi: Prentice-Hall, pp. 46-61.

2.2.2 Haq, Ehsanul. 2007. 'Sociology of Infant Mortality in India', Think India Q*uarterly*, July-September, 10(3): 14-57.

3. Population, Gender and Migration [Weeks 7-10]

3.1.1 Jeffrey, Roger and Jeffrey, Patricia. 1997. Population, Gender and Politics: Demographic Change in Rural North India. Cambridge: Cambridge University Press, pp. 117-164.

3.1.2 Patel, Tulsi. 2007. 'Female Foeticide: Family Planning and State Society Intersection in India'. In T. Patel (ed.). Sex-selective Abortion in India: *Gender, Society and New Reproductive Technologies*. New Delhi: Sage Publications, pp. 316-356.

3.2.1 Kaur, Ravinder. 2004. 'Across Region Marriages: Poverty, Female Migration and the Sex Ratio', Economic & Political Weekly, XXXIX (25): 2595-2603.

3.2.2 Xaxa, Virginius. 2004. 'Women and Gender in the Study of Tribes in India', Indian Journal of Gender Studies, 11(3): 345-367.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

3.2.3 Chopra, Radhika. 2011. Militant and Migrant: The Politics and Social His*tory of Punjab.* Routledge Publications, pp. 88-134.

4. Population Dynamics and Development: [Weeks 11-13]

4.1 Furedi, Frank. 1997. Population and Development: A Critical Introduction. Oxford: Polity Press, Chapters 4&5, pp. 40-55.

4.2.1 Visaria, P. 1976. 'Recent Trends in Indian Population Policy', Economic and Political Weekly, August, 2: 31-34.

4.2.2 Government of India. 2000. National Population Policy. New Delhi (http://www.populationcommission.nic.in/facts1.htm).

[Projects, presentations, feature films and documentary screenings and field visits will be an integral part of the coursework]

Some suggested Readings for presentations and projects:

- Mukherjee, Radhakamal. 1934. 'On the Criterion of Optimum Population', *American Journal of Sociolog*y, 40(3): 344-348.
- Sen, Amartya, 2003. 'Population: Delusion and Reality', *Asian Affairs*
- Caldwell, John C. 2001. 'Demographers and the Study of Mortality: Scope, Perspectives and Theory', *Annals of the New York Academy of Sciences*, 954: 19-34.
- Castles, Stephen. 2003. 'The International Politics of Forced Migration', *Development*, 46(3): 11-20.
- Dyson, Tim and Moore, Michael. 1983. 'On Kinship Structure: Female Autonomy and Demographic Behaviour in India', *Population and Development Review*, 9(1): 35-60.
- Bose, Ashish. (ed.). 1974. *Population in India's Development (1947-2000)*. Delhi: Vikas Publishing House.

END

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:12:35; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Sociology_Hons.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B. A (General)
in
SOCIOLOGY

Under Choice Based Credit System (CBCS)
w.e.f 2018-201

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

VIDYASAGAR UNIVERSITY
BA (General) in Sociology
[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	**I**			**SEMESTER-I**			**CA**	**ESE**	**TOTAL**
		Core-1 (DSC-1A)		Introduction to Sociology	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-1 (Core)		English-I	6	5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
				SEMESTER-II					
	II	Core-3 (DSC-1B)		Sociology of India	6	5-1-0	15	60	75
		Core-4 (DSC-2B)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-2 (Core)		MIL - I	6	5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	**III**			**SEMESTER-III**			**CA**	**ESE**	**TOTAL**
		Core-5 (DSC-1C)		Sociological Theories	6	5-1-0	15	60	75
		Core-6 (DSC-2C)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-3 (Core)		English-II	6	5-1-0	15	60	75
		SEC-1		SEC- 1 : Techniques of Social Research **Or** SEC-1:Framing Questionnaire and Conducting Interview	2	1-1-0	10	40	50
				Semester - 3 : Total	**20**				**275**
				SEMESTER-IV					
	IV	Core-7 (DSC-1D)		Methods of Sociological Enquiry	6	5-1-0	15	60	75
		Core-8 (DSC-2D)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-4 (Core)		MIL - II	6	5-1-0	15	60	75
		SEC-2		SEC- 2 : Counseling **Or** SEC- 2 : Handling Data: Coding and Tabulation	2	1-1-0	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	**V**			**SEMESTER-V**			**CA**	**ESE**	**TOTAL**
		DSE-1A		Any one from discipline -1	6	5-1-0	15	60	75
		DSE-2A		Other Discipline(Discipline -2) / TBD	6		15	60	75
		GE-1		TBD	6		15	60	75
		SEC-3		SEC 3 : Gender Sensitization Or SEC 3 : Theory and Practice of Development	2	1-1-0	10	40	50
				Semester - 5 : Total	**20**				**275**
				SEMESTER-VI					
	VI	DSE-1B		Any one from discipline -1	6	5-1-0	15	60	75
		DSE-2B		Other Discipline (Discipline -2) / TBD	6		15	60	75
		GE-2		TBD	6		15	60	75
		SEC-4		SEC- 4: Society through the Visual Or SEC- 4: Project Report Writing	2	1-1-0	10	40	50
				Semester - 6 : Total	**20**				**275**
				Total in all semester:	**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

List of Core Courses and Electives

Core Course (CC)

DSC-1A (CC-1): Introduction to Sociology
DSC-1B (CC-2): Sociology of India
DSC-1C (CC-3): Sociological Theories
DSC-1D (CC-4): Methods of Sociological Enquiry

Discipline Specific Electives (DSE)

DSE- 1 : Religion and Society
Or
DSE-1 : Social Stratification
DSE- 2 : Marriage, Family and Kinship
Or
DSE – 2: Gender and Sexuality

Skill Enhancement Course (SEC)

SEC- 1 : Techniques of Social Research
Or
SEC- 1 : Framing Questionnaire and Conducting Interview
SEC- 2 : Counseling
Or
SEC- 2 : Handling Data: Coding and Tabulation
SEC 3 : Gender Sensitization
Or
SEC 3 : Theory and Practice of Development
SEC- 4: Society through the Visual
Or
SEC- 4: Project Report Writing

Generic Elective(GE)
[Interdisciplinary for other department]

GE- 1 : Invitation to Sociology I
Or
GE-1: Methods of Sociological Enquiry
Or
GE- 1 : Western Sociological Thought I
GE-2 : Introduction to Sociology
Or
GE-2: Sociology of India
Or
GE-2 : Sociological Theories

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

Core Courses (CC)

DSC-1A (CC- 1) : Introduction to Sociology **Credits 06**

DSC1AT: Introduction to Sociology

Course Outline:

1. Nature and Scope of Sociology

1.1 History of Sociology
1.2 Relationship of Sociology with other Social Sciences:
1.2.1 Anthropology
1.2.2 Psychology
1.2.3 History

2. Sociological Concepts

2.1 Status and Role
2.2 Groups
2.3 Culture
2.4 Socialization
2.5. Structure and Function
2.6. Social Control and Change

Course contents and Itinerary

1. Nature and Scope of Sociology

1.1 History of Sociology
1.1.1 Giddens, A., 2006 (5th ed.), *Sociology*, London: Oxford University Press, Chapter 1, pp. 2-29.
1.1.2 Relationship of Sociology with other Social Sciences: Anthropology, Psychology and History.
1.1.3 Beattie, J., 1951, *Other Cultures*, New York: The Free Press, Chapter 2, pp. 16-34.

2. Sociological Concepts

2.1 Status and Role
2.1.1 Bierstedt, R., 1974, *The Social Order*, New York: McGraw Hill, Chapter 9, pp. 250-279.
2.1.2 Linton, R., 1936, *The Study of Man,* New York: Appleton Century Crofts, Chapter 8, pp. 113-131.
2.2 Groups
2.2.1 Bierstedt, R., 1974, *The Social Order*, New York: McGraw Hill, Chapter 10, pp. 280-309.
2.3 Culture
2.3.1 Bierstedt, R., 1974, *The Social Order*, New York: McGraw Hill, Chapter 5 & 6, pp. 125- 187 .
2.4 Socialization
2.4.1 Horton, P.B. and C.L. Hunt, 1985, *Sociology,* New York: McGraw Hill, Chapter 4, pp. 79-103.
2.5 Structure and Function
2.5.1 Radcliffe-Brown, A.R., 1976, *Structure and Function in Primitive Society,* London: Cohen and West, Chapter 9 & 10, pp. 178-204.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2.6. Social Control and Change

2.6.1 Horton, P.B. and C.L. Hunt, 1985, *Sociology,* New York: McGraw Hill, Chapter 7 & 20, pp. 154-181, 509-540.

DSC-1B (CC- 2) : Sociology of India **Credits 06**

DSC1BT: Sociology of India

Course Outline:

1. India as a Plural Society
2. Social Institutions and Practices

2.1 Caste
2.2 Tribe
2.3 Class
2.4 Village
2.5 Family and Kinship

3. Identities and Change

3.1 Dalits' Movement
3.2 Women's Movement

4. Challenges to State and Society

4.1 Communalism
4.2 Secularism

Course contents and Itinerary

1. India as a Plural Society

1.1 Mason, Philip 1967. "Unity and Diversity : An Introductory Review" in Philip Mason(ed.) India and Ceylon: Unity and Diversity. London: Oxford University Press, Introduction.

1.2 Stern, Robert W. 2003. *Changing India.* Cambridge: CUP. Introduction. Change, societies of India and Indian Society. pp. 1 – 31.

2. Social Institutions and Practices

2.1 Caste

2.1.1 Srinivas, M.N., 1969, "The Caste System in India", in A. Beteille (ed.) *Social Inequality: Selected Readings.* Harmondsworth: Penguin Books, pp.265-272.

2.1.2 Srinivas, M.N., 1956, "A Note on Sanskritization and Westernization", *The Far Eastern Quarterly*, Volume 15, No. 4, pp 481-496.

2.1.3 Alavi, Hamaza and John Harriss (eds.) 1989. *Sociology of 'Developing Societies': South Asia.* London: Macmillan. John Harriss, The Formation of Indian society: Ideology and Power". pp. 126 –133.

2.2 Tribe

2.2.1 Haimendorf, C.V.F., 1967, „The Position of Tribal Population in India", in Philip Mason (ed.), *India and Ceylon : Unity and Diversity*, New York: Oxford University Press, Chapter 9.

2.3 Class

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2.3.1 Thorner, Daniel, 1992."Agrarian Structure" in Dipankar Gupta (ed.), *Social Stratification in India*, New Delhi: Oxford University Press, pp. 261-270.

2.3.2 Deshpande, Satish, 2003, *Contemporary India : A Sociological View*. New Delhi; Viking, pp. 125-150.

2.4 Village

2.4.1 Srinivas, M.N., 1987, *The Dominant Caste and Other Essays,* Delhi: Oxford University Press, pp.20-59.

2.5 Family and Kinship

2.5.1 Shah, A. M., 1998, *The Family in India: Critical Essays*. New Delhi: Orient Longman, pp.52-63.

2.5.2 Karve, Iravati. 1994, The Kinship map of India", in Patricia Uberoi(ed.) *Family, kinship and marriage in India.* Delhi: Oxford University Press, pp.50-73.

3. Identities and Change

3.1 Shah, Ghanshyam. 2001, *Dalit identity and politics.* Delhi: Sage Publications, Chapter 1 and 7.

3.2 Kumar, Radha. 1999, „From Chipko to sati: The Contemporary women"s movement", in Nivedita Menon (ed.) *Gender and Politics in India*. Delhi: Oxford University Press, pp. 342-369.

4. Challenges to State and Society

4.1 Madan, T.N., 1997, *Modern Myths and Locked Minds*. Delhi: Oxford University Press, Chapter 8.

4.2 Dumont, L. 1997, *Religion, Politics and History in India.* Paris: Mouton, Chapter 5.

DSC-1C(CC -3) : Sociological Theories **Credits 06**

DSC1CT: Sociological Theories

Course Outline:

1. Karl Marx

1.1 Materialist Conception of History

1.2 Class and Class Struggle

2. Emile Durkheim

2.1 Social Fact

2.2 Forms of Solidarity

3. Max Weber

3.1 Ideal Types and Social Action

3.2 Types of Authority

Course contents and Itinerary

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

1. **Karl Marx**
1.1 **Materialist Conception of History**
1.2 **Class and Class Struggle**
1.1.1 Marx, K. and Friedrich Engels. 2002. *The Communist Manifesto.* Harmondsworth :Penguin.
1.1.2 Aron, R. 1967. *Main Currents in Sociological Thought.* London: Weidenfield and Nicholson, Vol. 1. pp. 107-180.

1.1.3 Calhoun, J. Craig, 2007. *Classical Sociological Theory.* 2nd Edition Blackwell, pp. 73-130.
1.1.4 Jayapalan, N. 2001. *Sociological Theories.* Atlantic Publisher, pp.35-69.

2. Emile Durkheim
2.1 Social Fact
2.1.1 Durkheim, E. 1958. *The Rules of Sociological Method.* Glencoe: Free Press, Chapters 1 and 3.
2.1.2 Jones R.A. 1986, *Emile Durkheim: An Introduction to Four Major Works.* London: Sage. Chapters 3 and 4.

2.2 Forms of Solidarity
2.2.1 Aron, R. 1967. *Main Currents in Sociological Thought* London: Weidenfield and Nicholson, Vol. 2, pp. 11-97.
2.2.2 Calhoun, J. Craig, 2007. *Classical Sociological Theory* 2nd Edition. Blackwell, pp.131-180.
2.2.3 Jayapalan, N. 2001. *Sociological Theories.* Atlantic Publisher, pp.146-178.
3 Max Weber
3.1 **Ideal Types and Social Action**
3.2 **Types of Authority**
3.1.1 Gerth, H.H. and C. Wright Mills (eds.) 1948. *From Max Weber*: *Essays in Sociology*. London: Routledge and Kegan Paul, Introduction.
3.1.2 Aron, R. 1967. *Main Currents in Sociological Thought.* London: Weidenfield and Nicholson, Vol. 2, pp.177-252.
3.1.3 Calhoun, J. Craig, 2007. *Classical Sociological Theory.* 2nd Edition. Blackwell, pp.205-274.
3.1.4 Jayapalan, N. 2001. *Sociological Theories.* Atlantic Publisher, pp.97-115.

DSC-1D (CC- 4) : Methods of Sociological Enquiry **Credits 06**

DSC1DT: Methods of Sociological Enquiry

Course Outline:

1. The Logic of Social Research
1.1 What is Sociological Research?
1.2 Objectivity in the Social Sciences
1.3 Reflexivity

2. Methodological Perspectives

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2.1 The Comparative Method
2.2 The Ethnographic Method

3. Modes of Enquiry
3.1 Theory and Research
3.2 Analyzing Data: Quantitative and Qualitative

Course contents and Itinerary

1. The Logic of Social Research
1.1 What is Sociological Research?
1.1.1 Mills, C. W. 1959, *The Sociological Imagination,* London: Oxford University Press, Chapter 1, pp. 3-24.
1.1.2 Gluckman, M. 1978, 'Introduction', in A. L. Epstein (ed.), *The Craft of Social Anthropology,* Delhi: Hindustan Publishing Corporation, pp. xv-xxiv.

1.2. Objectivity in the Social Sciences
1.2.1. Durkheim, E. 1958, *The Rules of Sociological Method,* New York: The Free Press, Chapter 1& 2, pp. 1-46.
1.2.2. Weber, Max. 1949, *The Methodology of the Social Sciences,* New York: The Free Press, Foreword, pp. iii- x.

1.3. Reflexivity
1.3.1 Gouldner, Alvin. 1970, *The Coming Crisis of Western Sociology,* New York: Basic Books, Chapter 13, pp. 481-511.

2. Methodological Perspectives
2.1. The Comparative Method
2.1.1. Radcliffe-Brown, A. R. 1958, *Methods in Social Anthropology,* Delhi: Asia Publishing Corporation, Chapter 5, pp. 91-108.
2.1.2. Béteille, A. 2002, *Sociology: Essays on Approach and Method,* New Delhi: Oxford University Press, Chapter 4, pp. 72-94.

2.2. The Ethnographic Method
2.2.1 Geertz, Clifford. 1973. *Interpretation of Cultures,* New York: Basic Books. Chapter 1, pp. 3-30.

3. Modes of Enquiry
3.1. Theory and Research
3.1.1 Merton, R. K. 1972, *Social Theory and Social Structure,* Delhi: Arvind Publishing House, Chapters 4 & 5, pp. 139-171.
3.1.2 Bryman, Alan. 2004, *Quantity and Quality in Social Research,* New York: Routledge, Chapter 2 & 3, pp. 11-70.

3.2 Constructing the Object of Research
3.2.1 Srinivas, M.N. et. al. 2002(reprint), *The Fieldworker and the Field: Problems and Challenges in Sociological Investigation*, New Delhi: OUP, Introduction, pp. 1-14.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

Discipline Specific Elective (DSE)

DSE- 1 : Religion and Society **Credits 06**

DSE1T : Religion and Society

Course Outline:

1. Understanding Religion

1.1. Sociology of Religion: Meaning and Scope
1.2. Sacred and Profane
1.3 Religion and Rationalization
1.4 Rites of Passage

2. Religion in India

2.1. Hinduism
2.2. Islam
2.3. Christianity
2.4. Sikhism
2.5. Buddhism

3. Secularism & Communalism

Course contents and Itinerary

1. Understanding Religion:

1.1 **Sociology of Religion: Meaning and Scope**

1.1.1 Béteille, A. 2002. *Sociology: Essays on Approach and Method*. OUP: New Delhi, pp134-150.
1.1.2 Berger. 1967. *The Sacred Canopy*. Garden City: New York, pp175-186.
1.1.3 Asad. T. 1993. *Genealogies of Religion: Discipline and Reasons of Power in Christianity and Islam*, John Hopkins Press: Baltimore, pp 27-54.

1.2 Sacred and Profane

1.2.1 Durkheim, E. 2001. *The Elementary Forms of the Religious Life.* Carol Cosman (trans). Oxford: Oxford University Press, pp 25-46; 87-100; 153-182.

1.3 Religion and Rationalization

1.3.1 Weber Max. 1905. *The Protestant Ethic and the Spirit of Capitalism*, New York: Free Press, pp 39– 50.

1.4 Rites of Passage

1.4.1 Gennep A. V, 1960. *Rites of Passage*. London: Routledge and Kegan and Paul, pp 1 - 14; 65-70; 74-77; 85-90; 101-107; 116-128; 130-135&141-165.

2. Religion in India:

2.1.1 Sontheimer, Gunther-Dietz, and Hermann Kulke. *Hinduism Reconsidered*. New Delhi: Manohar, 2001. Hinduism: The Five Components and their Interaction. pp. 305 – 322.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2.1.2 Fuller, C. J. 2004, *The Camphor Flame: Popular Hinduism and Society in India*, New Jersey: Princeton University Press, Introduction.
2.1.3 Srinivas, M.N. 1952. *Religion and Society among the Coorgs of South India,* Clarendon: Oxford, pp 100-122.
2.2 Momin. A.R., 2004. 'The Indo-Islamic Tradition' in Robinson, R.(ed.) *Sociology of Religion in India*. New Delhi: Sage. pp 84-99.
2.3. Robinson, R. 2003. 'Christianity in the Context of Indian Society and Culture' in Das Veena (ed.), *Oxford Indian Companion to Sociology and Social Anthropology*, OUP: New Delhi, pp. 884- 907.
2.4. Uberoi, J.P.S. 1991. 'The Five Symbols of Sikhism' in Madan, T.N. (ed.) *Religion in India*. New Delhi : OUP, pp 320 -333.
2.5. Omvedt, G. 2003. *Buddhism in India: Challenging Brahmanism and Caste*, New Delhi : Sage, pp 23-53.

3. Secularism and Communalism

3.1. Chadwick, Owen. *The Secularization of the European Mind in the Nineteenth Century*. Cambridge: Cambridge University Press, 1975, pp 1-20.
3.2 Madan, T.N. 1991. 'Secularism in its Place' in T. N. Madan, T.N. (ed.) *Religion in India.* New Delhi : OUP, pp 394 -413.
3.3. Saberwal, S. 1991. 'Elements of Communalism' in T. N. Madan, (ed.) *Religion in India*. OUP: New Delhi, pp 339 -350.

Or

DSE-1 : Social Stratification **Credits 06**

DSE1T : Social Stratification

Course Outline:

1. **Social Stratification: Concepts and Approaches**
2. **Forms of Social Stratification**

2.1 Race and Ethnicity
2.2 Caste and Class
2.3 Gendering Inequality
2.4 Poverty and Social Exclusion

3. Social Mobility

Course contents and Itinerary

1. Social Stratification: Concepts and Approaches

1.1. Béteille, A. 1983. 'Introduction in Andre Béteille (ed.): *Equality and Inequality: Theory and Practice*; Delhi: Oxford University Press. pp.1- 27.
1.2. Gupta, D. 1991. 'Hierarchy and Difference' in Dipankar Gupta (ed.*): Social Stratification* Delhi: Oxford University Press , pp 1-21.

2. Forms of Stratification

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2.1.1. William, Jutius Wilson 1978, *The Declining Significance of Race: Blacks and Changing American Institution.* University of Chicago Press, pp. 1 – 23 & 183-188.
2.1.2. Joe,R. Feagin 'The Continuing Significance of Race' *American Sociological Review,* 56, (Feb-91) pp 101-116.
2.1.3. McClintock, Anne, and George Robertson. 'Soft-soaping Empire: Commodity Racism and Imperial Advertising' In Nicholas Mirzoeff (ed) *The Visual Culture Reader:* Second Edition. 2002. Routledge Taylor & Francis Group, 304-316
2.1.4. Barth, F. (ed), *Ethnic Groups and Boundaries,* Little Brown and Co. Boston, 1969, pp-10-16.
2.1.5. Immanuel, Maurice Wallerstein, *The Construction of Peoplehood, Racism, Nationalism, Ethnicity*,1991, London Press, pp-71-85.
2.2.1. Béteille, A. *Caste, Class and Power* Chapter: 1, Oxford University Press, 1971.
2.2.2. Sharma, Ursula. 1999. *Caste*. Open University Press, pp.1-94.
2.2.3. Debe, Leela. 1996 "Caste and Women" in M.N. Srinivas (ed.) *Caste: Its Twentieth Century Avatar,* New Delhi: Penguin.
2.3.1 Maria Charles and David B. Grusky. *Occupational Ghettos: The Worldwide Separation of Women and Men,* Stanford University Press, 2004 pp389-402.
2.3.2 Papanek, Hanna. 1990. "To Each Less Than She Needs, From Each More Than She Can Do: Allocations, Entitlements and Value" in Irene Tinker (ed.), *Persisting Inequality: Women World Development*, Oxford: Clarendon Press, pp. 121-164.
2.4.1 Timothy Smeeding, 'Poorer by Comparison; Poverty, Work and Public Policy in Comparative Perspective', *Pathways Magazine,* Stanford Center for the Study of Poverty and Inequality, Winter 2008, pp1-25.
2.4.2 Newman, K. S and Victor Tan Chen.2007. *The Missing Class: Portraits of the Near Poor in America*, Boston: Beacon Press Book, pp 1-10.

3. Social Mobility

3.1 Breigher,R.L.(ed)1990. *Social Mobility and Social Structure.* New York; Cambridge University Press, Ch. 5, pp.103-30.
3.2 Grusky, D.V. 1994. *Social Stratification Perspective.* Boulder: Westview Press, Part I V, pp 245-264.
3.3. Macleod, Jay. 1987. 'Leveled Aspirations: Social Reproduction Takes its Toll', in *Ain't No Makin It: Aspirations and Attainment in a Low Income Neighbourhood.* USA: Westview Press, pp. 112-136.
3.4. Bettie, Julie. 2003. Women without Class: Girls, Race, and Identity. California: University of California Press, pp 57-94.

DSE- 2 : Marriage, Family and Kinship **Credits 06**

DSE2T : Marriage, Family and Kinship

Course Outline:

1. Introduction: Kinship, Critique and the Reformulation

1.1. Biological and Social Kinship

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

1.2. Cultural Kinship
2. Descent, Alliance
2.1. Descent, Filiation, Complementary Filiation
2.2. Marriage, Alliance, Prestations
3. Family and Household
3.1. Structure and Change
3.2. Reimagining Families
4. Contemporary Issues in Marriage, Family and Kinship
4.1. Choice and Regulation in Marriage
4.2. Power and Discrimination in the Family
4.3. New Reproductive Technologies
4.4. Marriage Migration

Course contents and Itinerary

1. Introduction: Kinship, Critique and the Reformulation
1.1. Biological and Social Kinship
1.1.1 Parkin, R. and L. Stone, 2004, 'General Introduction', in R. Parkin and L. Stone (eds.), *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, pp. 1-23.

1.2. Cultural Kinship
1.2.1 Schneider, D. M., 2004 (1972), 'What is Kinship All About?', in R. Parkin and L. Stone (eds.), *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, pp. 257-274.
1.2.2 Carsten, J., 2004, 'Introduction' in *After Kinship*, Cambridge: Cambridge University Press, pp.1-30.

2. Descent and Alliance:
2.1. Descent, Filiation, Complementary Filiation
2.1.1 Radcliffe-Brown, A. R. and D. Forde (eds.), 1950, *African Systems of Kinship and Marriage*, London: Oxford University Press, Introduction, pp.1-39.
2.1.2 Fortes, M., 1970, 'The Structure of Unilineal Descent Groups', in M. Fortes, *Time and Social Structure and Other Essays,* University of London: The Athlone Press, pp. 67-95.

2.2. Marriage, Alliance, Prestations
2.2.1 Leach, E.R., 1961,'Polyandry, Inheritance and the Definition of Marriage with Particular Reference to Sinhalese Customary Law', in E. R. Leach (ed.), *Rethinking Anthropology,* London: The Athlone Press, pp. 105- 113.
2.2.2 Dumont, L., 1968, 'Marriage Alliance', in D. Shills (ed.), *International Encyclopedia of the Social Sciences,* U.S.A.: Macmillan and Free Press, pp. 19-23.
2.2.3 Sharma, U., 1993, 'Dowry in North India: Its Consequences for Women', in Patricia Uberoi (ed.), *Family, Kinship and Marriage in India.* Delhi: Oxford University Press, pp. 341-356.

3. Family and Household:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

3.1. Shah, A.M., 1998, 'Changes in the Indian Family: An Examination of Some Assumptions', in A.M. Shah, *The Family in India: Critical Essays,* New Delhi: Orient Longman, pp.52-63.

3.2. Simpson, B., 2004, 'Gays, Paternity and Polyandry: Making Sense of New Family Forms in Contemporary Srilanka', in R. Chopra, C. Osella and F. Osella (eds.), *South Asian Masculinities: Context of Change, Sites of Continuity*, Delhi: Kali for Women, pp. 160-174.

4. Contemporary Issues in Marriage, Family and Kinship:

1.1. Choice and Regulation in Marriage Chowdhry, P., 1998, 'Enforcing Cultural Codes: Gender and Violence in Northern India', in M. E. John and J. Nair (eds.), *A Question of Silence: The Sexual Economies of Modern India*, New Delhi: Kali for Women, pp. 332-67.

1.2. Power and Discrimination in the Family John, M. E. et.al., 2008, 'Structural Contexts of Adverse Sex Ratios' in M. E. John et.al., *Planning Families, Planning Gender: The Adverse Child Sex Ratio in Selected Districts of Madhya Pradesh, Rajasthan, Himachal Pradesh, Haryana and Punjab,* New Delhi: Action Aid, pp. 68-78.

1.3. New Reproductive Technologies Carsten, J., 2004, 'Assisted Reproduction' in *After Kinship*, Cambridge: Cambridge University Press, pp. 163-183.

1.4. Marriage Migration Charsley, K., 2005, 'Unhappy Husbands: Masculinity and Migration in Transnational Pakistani Marriages', *Journal of the Royal Anthropological Institute,* (N.S.) 11, pp. 85-105.

Or

DSE – 2: Gender and Sexuality **Credits 06**

DSE2T: Gender and Sexuality

Course Outline:

1. Gendering Sociology
2. Gender as a Social Construct
2.1. Gender, Sex, Sexuality
2.2. Production of gender and sexuality
3. Gender: Differences and Inequalities
3.1. Class, Caste
3.2. Family, Work
4. Politics of Gender
4.1. Resistance and Movements

Course contents and Itinerary

1. Gendering Sociology:

1. 1 S. Jackson and S. Scott (eds.) 2002 *Gender: A Sociological Reader*, London: Routledge, pp. 1-26.

1.2 Liz Stanley. 2002. "Should Sex Really be Gender or Gender Really be Sex" in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*,London: Routledge, pp. 31-41.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2. Gender as a Social Construct

2.1 Gender, Sex, Sexuality

2.1.1 Oakley, Ann, 1972. *Sex, Gender and Society*. London: Temple Smith, pp 99-127, 158-172.

2.1.2 Ortner, Sherry. 1974. "Is male to female as nature is to culture?" M.Z. Rosaldo and L. Lamphere (eds.) *Women, Culture and Society*. Stanford: Stanford University Press, pp. 67- 87.

2.1.3 Newton, Esther. 2000. "Of Yams, Grinders and Gays: The Anthropology of Homosexuality" in *Margaret Mead Made Me Gay: Personal Essays, Public Ideas*. London: Duke University Press, pp 229- 237.

2.2 Production of Gender and Sexuality

2.2.1 Alter, Joseph. 1992. *The Wrestler's Body: Identity and Ideology in North India*. California: University of California Press, pp 163-194.

2.2.2 Nanda, Serena. 1999. *Neither Man nor Woman*. Belmont CA: Wadsworth, pp 1-23 & 128-149.

3. Differences and Inequalities

3.1 Class, Caste

3.1.1 Walby, Sylvia. 2002. "Gender, Class and Stratification: Towards a new approach" in S. Jackson and S. Scott (eds.) *Gender: A Sociological reader*. London: Routledge, pp 93-96.

3.1.2 Bernard, Jessie. 2002. "The Husband's marriage and the wife's marriage" in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge, pp 207- 210.

3.1.3 Dube, Leela 1996 "Caste and Women" in M.N.Srinivas (ed.) *Caste: Its Twentieth Century Avatar*, New Delhi: Penguin, pp 1-27.

3.1.4 Rege, S. 1998. "Dalit Women Talk Differently: A Critique of 'Difference' and Towards a Dalit Feminist Standpoint Position." *Economic and Political Weekly, Vol. 33, No. 44,(*Oct.31-Nov. 6, 1998), pp 39-48.

3.2 Family, Work

3.2.1 Papanek, Hanna. 1979. Family Status production: the work and nonwork of women *Signs* Volume 4 No. 4, pp 775-81.

3.2.2. Pineda, Javier, 2001. "Partners in Women Headed Households: Emerging Masculinities?" in Cecile Jackson (ed.) *Men at Work: Labour, Masculinities, Development*. London: Frank Cass, pp. 72-92.

3.2.3 Agarwal, Bina. 1988. Who Sows, who reaps? Women and land rights in India *Journal of Peasant Studies 15(4),* pp 531-81.

4. Politics of Gender

4.1. Resistance and Movements

4.1.1 Candace West and Don H. Zimmerman. 2002. "Doing Gender" in S.Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge, pp 42-47.

4.1.2 Davis, Angela Y. 1981. *Women, Race and Class*. London:Women's Press. pp 30-42.

4.1.3 Kandiyoti, Deniz. 1991 "Bargaining with Patriarchy" in Judith Lorber and Susan A. Farrell (eds.) *The Social Construction of Gender*, New Delhi: Sage Publications, pp.104-118.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

4.1.4 Kumar, Radha. 1999. "From Chipko to Sati: The Contemporary Indian Women's Movement" In Nivedita Menon (ed.) *Gender and Politics in India*. New Delhi: Oxford University Press, pp342-369.

Skill Enhancement Course (SEC)

SEC- 1 : Techniques of Social Research **Credits 02**

SEC1T : Techniques of Social Research

Course Outline:

1. Research Design
1.1 Concepts & Hypotheses
1.2 Measurement, Reliability & Validity
1.3 Quantitative & Qualitative: Surveys & Ethnographies
1.4 Sampling Frameworks

2. Data Collection
2.1 Primary Sources
2.2 Secondary Sources

3. Data Analysis
3.1 Content Analysis
3.2 Narrative Analysis
3.3 Statistical Analysis: frequency distribution, cross tabulation, measures of central tendency, measures of dispersion, correlation

4. Framing a Research Question

Course contents and Itinerary

- The course will be based on exercises to be done in groups.

1. **Research Design**

1.1.1. Bryman, A. 2008, *Social Research Methods*, Oxford: Oxford University Press, Chapter 2, 3, 4 & 5, pp. 29-136
1.1.2. Amir B. Marvasti, 2004, *Qualitative Research in Sociology*, London: Sage, Chapter 2, 3, 4, 5, 6 & 7, pp. 14-144

Suggested Assignments:

a) Design a survey on factors effecting marriage choices of young people.
b) Visit a shopping mall and observe the interaction between employees and customers/visitors. Identify themes based on your observation and prepare a questionnaire based on this experience.
c) Visit the college canteen/ administrative office/a bus stop/ area outside the metro station and observe all that happens for an hour or more and write a descriptive note on it. Discussions on these notes to follow.
d) Visit a police station/ hospital/court and spend a few hours observing the scene. Write a short essay on issues of access to the field, rapport building and your role as an ethnographer.

2. Data Collection

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2.1.1 Lofland J. and Lofland L. 1984, *Analysing Social Settings: A Guide to Qualitative Observation and Experiment,* California: Wadsworth

2.1.2 Morgan, David L. 1996, "Focus Groups", *Annual Review of Sociology 22,* pp. 29-52

Suggested Assignments:

a) Conduct a structured Interview with close ended options and a relatively unstructured interview on the same topic (of your choice) with similar sets of people. Observe and note the differences.
b) Look at NSS/NFHS/Census Data and write notes on the themes of how you can interpret the data.
c) Look at a set of published letters of Gandhi, Nehru, C.F. Andrews, Tagore etc. and identify key social issues that are discussed in the contents of the letters.
d) Collect 3 oral testimonies/ life histories of people who have witnessed and experienced any traumatic event in their lives.

3. Data Analysis

(Students will be introduced to the use of Statistical Software Packages)

Suggested Assignments/Exercise:

a) Choose a theme of your interest- for e.g., crime, technology environmental concerns or any other and look through the Sunday editorials of any national daily of the last 3 months to locate related articles.
b) Do a content analysis of advertisements of any one consumer product/service, which have appeared over one year in a leading national daily.
c) Analyse the oral testimonies you have collected in Exercise 2(d). Discuss the issues and challenges in using testimony as evidence.
d) Students will be provided with data sets to run them in a software program.

4. Framing a Research Question

Choose a research question, identify statement(s), hypothesis and concepts. Operationalize concepts and match the methods and tools for data collection.

Or

SEC-1 : Framing Questionnaire and Conducting Interview **Credits 02**

SEC 1T : Framing Questionnaire and Conducting Interview

Course Outline :

1. Questionnaire and Interview Method: application; preparations before using these methods
2. Types of Questionnaire, framing a questionnaire
3. Types of Interviews, preparing interview schedule
4. Data Recording, Processing and interpretation
5. Limitations of Questionnaire and Interview Methods

Course contents and Itinerary

- Bryman, A. 2002. *Social Research Methods*. Oxford University Press: New York.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

- Goode, G and P.K. Hatt. 1952. *Methods in Social Research*. McGraw-Hill.
- Moser, A and Kalton, G. 1979. *Survey Methods in Social Investigation*.

SEC-2 : Counseling **Credits 02**

SEC2T : Counseling

Course Outline :

1. Aims, Goal and Scope of Counseling
2. Characteristics/Frameworks;
3. Types/Areas
4. Counsellor-Client Communication
5. Processes and Outcome

Course contents and Itinerary

- Gladding, S.T. 2004. Counseling Theories: Essential Concepts and Applications, Prentice Hall.
- Woolfe, R and Dryden, W. 1996. Handbook of Counseling Psychology, New Delhi, Sage Publications.
- Asch, M. 2000. Principles of Guidance & Counseling. ND: Sarup & Sons.
- Jones, A.J. 1970. Principles of Guidance & Counselling (6th ed.) McGraw Hill, New York.
- Aneshensel, Carol S. and Phelan, Jo C. 2006. Handbook of the Sociology of Mental Health, Springer Publishing Company.
- Hershenson, D.B and Power, P.W. 1987. Mental Health Counselling: Theory & Practice, Allyn & Bacon Publications.8
- Bernard J. Gallagher (4th Ed.) 2001. The Sociology of Mental Illness, Prentice-Hall Publication.
- Patterson, Lewis & Welfel. 2000. The Counselling Process, 5th Edition, Brooks/Cole Thomson Learning Publication.
- Gelso, Charles & Fretz. 1995. Counselling Psychology, Prism Books Pvt. Ltd.
- Palmo, A.J; William, J.W; Borsos, D.P (Ed.) 2006. Foundations of Mental Health Counselling (3rd Ed.), Charles C Thomas Pub Ltd.
- Geldard, K & Geldard, D. 2005. Practical Counselling Skills: An Integrative Approach, Palgrave.
- Freidson, E. 1970. Profession of Medicine: A Study of the Sociology of Applied Knowledge, Harper & Row, New York.
- Foucault, Michel. 1967. Madness & Civilization: A History of Insanity in the Age of Reason, London

Or

SEC- 2: Handling Data: Coding and Tabulation **Credits 02**

SEC2T: Handling Data: Coding and Tabulation

Course Outline:

1. Importance of Data Processing

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2. Data Coding: Procedure
3. Content Analysis: Coding and Classification
4. Using Tabulation sheet
5. Construction of Table: Bivariate, Multivariate; Graphical Representation of data

Course contents and Itinerary

- Bryman, A. 2002. *Social Research Methods*. Oxford University Press: New York.7
- Goode, G and P.K. Hatt. 1952. *Methods in Social Research*. McGraw-Hill.
- Moser, A and Kalton, G. 1979. *Survey Methods in Social Investigation.*

SEC- 3 : Gender Sensitization **Credits 02**

SEC3T : Gender Sensitization

Course Outline:

1. Sex, Gender and Sexuality

1.1 Introduction to debates on the social construction of sex and gender
1.2 Cultural construction of masculinity and femininity
1.3 Understanding sexual preference as a right

2. Gender, Family, Community and the State

3. Gender Rights and the Law

3.1 Right to property
3.2 Personal laws
3.3 Violence against women
3.3.1 Sexual harassment
3.3.2 Rape
3.3.3 Domestic violence

4. Understanding Intersections of Gender, Caste, Class, Region, Religion and Disability

Course contents and Itinerary

The course will be based on exercises to be done in groups.

1. **Sex and gender**

1.1 Geetha, V. 2002. *Gender*. Calcutta: Stree
1.2. Menon, Nivedita. 2012. *Seeing like a Feminist*. New Delhi: Zubaan/Penguin Books
1.3. Bhasin, Kamala. *Patriarchy*. New Delhi: Kali for Women
1.4. Murty, Laxmi and Rajshri Dasgupta. *2012. 'Our Pictures, Our Words - A Visual Journey Through The Women's Movement'*. New Delhi: Zubaan
1.5. Films: *Being Male Being Koti* Dir: Mahuya Bandyopadhyay *Many People Many Desires* Dir: T. Jayashree; *Boys Don't Cry* Dir: Kimberley Peirce

Suggested Assignments:

a) Discussion around any two of the above-mentioned films. Students will be asked to write a short essay on the pressures they feel of the experience in performing masculinity or femininity.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

b) Presentations and discussions based around the essays.
c) Role Play: Gender and its performance in everyday life. Students to form smaller groups and present skits to address this issue creatively. This will be followed by discussions.

2. Gender, Family, Community and the State

2.1. Shah, Chayanika et al. 2005. Marriage, Family and Community: A Feminist Dialogue. *Economic and Political Weekly February 19: 709 -722*
2.2. Films: *Izzatnagri ki Asabhya Betiyan* Dir: Nakul Singh Sawhney

Suggested Assignments/Exercise:

a) Debate or discussion on „Is the family the site of love and care‟ or, Is the family democratic?‟
b) Look at NSS/NFHS/Census Data and write notes on the themes of how you can interpret the data
c) Writing exercise: Does a gendered division of labour in the household deny women equal opportunities?
d) Visit to a women‟s shelter/Nari Niketan followed by short essays on the experience and discussions based on the same.
e) Visit to a family court followed by discussions.
f) Role play: On how to address issues of gender discrimination within the family.

3. Gender Rights and the Law

3.1. For all the laws relating to women please refer to the following resource: http://ncw.nic.in/frmLLawsRelatedtoWomen.aspx
3.2. Films: *Gulabi Gang* Dir: Nishtha Jain; *North Country* Dir: Niki Caro; *The Accused* Dir: Jonathan Kaplan

Suggested Assignments/Exercise:

a) Debate on women‟s equal right to natal property.
b) Discussion on what consent means. Students to be presented with different scenarios to enable them to problematise the notion of consent.
c) Writing exercise: Take up any one law relating to women and critically examine one or two judgments pertaining to that law. This will be followed by class presentations.
d) Reading of the Delhi University Ordinance against Sexual Harassment and discussions around it.
e) Student projects (in smaller groups) on developing IEC material (Information, Education, Communication) on the Delhi University Ordinance against Sexual Harassment for students.
f) Discussion on section 377 of the Indian Penal Code.
g) Discussions on these laws with practicing lawyers.

4. Understanding Intersections of Gender, Caste, Class, Region, Religion and Disability.

4.1. Tharu, S. and Niranjana, T. 1999. “Problems for contemporary theory of gender” in Nivedita Menon, *Gender and Politics in India.* New Delhi: Oxford University Press.
4.2. Ghai, Anita. (2003). *(Dis) Embodied Form : Issues of Disabled Women.* New Delhi. Har-Anand Publications. (Selected chapters)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

Suggested Assignments/Exercise:

a) Debate on the Women‟s Reservation in Parliament Bill.
b) Writing exercise: Identify any one culturally specific gender stereotypes in the context of your own life and show how you negotiate it.
c) Visits and discussion in some women‟s organisations/groups in Delhi, where students will explore how organisations understand and negotiate these intersections in the larger context of women‟s struggles, and struggles in the women‟s movement.
d) Students can discuss posters of the women‟s movement from the book Murthy and Dasgupta (2012) and be asked to design posters for a particular campaign.

O r

SEC- 3 : Theory and Practice of Development **Credits 02**

SEC3T : Theory and Practice of Development

Course Outline:

1. What is development?
2. Recent trends in Development
2.1 Neo-liberalism: Growth as Development
2.1a. Re-emergence of Neo-classical perspective
2.1b. SAP and its Critique
2.2 Post development Theory
2.2a. Knowledge as Power
2.2b. Participatory Development
2.2c. GAD
2.3 Sustainable Development Theory: UN Earth Charter 1992
2.3a. Hegemonic approach: PPP
2.3b. Environmental discourse
3. Human Development Theory: Growth vs. Development

Course contents and Itinerary

1. What is development?

1.1 McMichael, Philip. *Development And Social Change*. Thousand Oaks, Calif.:Pine Forge Press, 2000. pp. 1-40

2. Recent Trends in Development

2.1 Neo-Liberalism: Growth as Development

2.1 Re-emergence of Neo-classical perspective
2.1b. SAP and its Critique
2.1.1 Emmerij, Louis. 2005. Turning Points in Development Thinking and Practice. Conference Paper

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2.1.2 Meilink, Henk. 2003. Structural Adjustment Programmes on the African Continent: The theoretical foundations of IMF/World Bank reform policies. ASC Working paper No. 53. pp 1-29

2.1.3 Sparr, Pamela. (ed.)1994. *Mortgaging Women's Lives: Feminist Critiques of Structural Adjustment.* London: Zed Books. pp 1-30

Exercises & Case Studies

Exercise: A bedtime Story for Grown Ups

Case Study: Jayaweera, Swarna. 1994. Structural Adjustment Policies, Industrial development and Women in Sri Lanka in Pamela Sparr (ed) *Mortgaging Women's Lives: Feminist Critiques of Structural Adjustment.* London: Zed Books. pp 96-111

2.2 Post-Development Theory:

2.2a. Knowledge as Power

2.2b Participatory Development

2.2c GAD

2.2.1 Sachs, Wolfgang. 2007(12th impression). *The Development Dictionary: A guide to Knowledge as Power*. London: Zed Books, Chap 1, 2 & pp 1-25, 264-274

2.1.2 Escobar, A. 2011. (paperback ed.) *Encountering development: The making and unmaking of the Third World* Princeton: Princeton Press, Chap 2 & 6, pp 21- 54, 212-226

2.2.1 Dipholo, Kenneth B. 2002. Trends in participatory development, *Journal of Social Development in Africa* Vol 17. No.1, pp 59-79

2.3.1 Razavi Shahrashoub and Miller Carol 1995. From WID to GAD: Conceptual Shifts in the Women and development Discourse Occasional Paper 1 United Nations Research Institute for Social Development: UNDP

Exercises & Case Studies

Exercise1. Pass the Picture (from Stepping Stones, Action Aid Manual)

Exercise2. Make a Gender Audit Report of any organization

Case Study: Participatory Urban Planning in Porto Alegre, Brazil

2.3 Sustainable Development Theory: UN Earth Charter 1992

2.3a Hegemonic approach: PPP

2.3b Environmental discourse

Buse, Kent. and Harmer, Andrew. 2004. Power to the Partners? : The Politics of Public-Private Health Partnerships *Development*, 2004, 47(2), pp 49–56

Exercise: Assess the JNNURM Plans of Delhi, Mumbai and Kolkata, Ref: http://www.pria.org/Reforming_JNNURM.htm

3 Human Development Theory: Growth vs Development

Friere, Paulo. 1972. Pedagogy of the Oppressed. New York: Herder & Herder

Sen, Amartya. 1989. ''Development as Capabilities Expansion.'' Journal of Development Planning 19: 41 – 58.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

Sen, Amartya. and Sudhir Anand. 1994. ‘‘Sustainable Human Development: Concepts and Priorities.’’ Background Paper for the Human Development Report 1994. New York: Human Development Report Office.
Fukuda-Parr, Sakiko. 2003. The human development paradigm: Operationalizing Sen’s ideas on Capabilities, *Feminist Economics* 9(2 – 3), 2003, 301 – 317

Exercises:
Exercise1.Assess the quality of a nearby MCD school
Exercise2.Assess the quality of health care services in an urban PHC Case Study: Tint, Piia and Reinhold, Karin. 2008. Safety & health through Redesign of Garment Worker’s Workplaces in Amita Sahaya (ed) *Selected Readings IV International Congress Women Work and health* New Delhi: WWHI

Websites of Organizations for exercises and Case studies:
- Family Planning Organization, UNDP, ILO, PRAXIS, PRIA-Participatory Research In Asia
- www.iclei.org, www.infochangeindia.org

SEC- 4 : Society through the Visual **Credits 02**

SEC4T : Society through the Visual

Course Outline:
1. Introduction to the Sociological Study of the Visual
2. Sociology and the Practice of Photography
3. Video and Film in Sociology
4. Sociology, Multimedia and Hypermedia

Course contents and Itinerary

1. Introduction to the Sociological Study of the Visual

1.1 Mead, Margaret, 1995. ‘Visual Anthropology in a Discipline of Words’ in *Principles of Visual Anthropology* (ed) Paul Hockings, Second Edition, Mouton de Gruyter, pp 3-10

1.2 Pink, Sarah. 2013. *Doing Visual Ethnography*, Sage Publications Limited, Chaps 1 and 2

2. Sociology and the Practice of Photography

2.1 Collier, John and Malcom Collier. 1986. *Visual Anthropology: Photography as a Research Method*, University of New Mexico Press, Chaps 1, 2 and 3

2.2 Becker, Howard S. ‘Visual Sociology, Documentary Photography, and Photojournalism: It’s (Almost) All a Matter of Context’ in *Image-Based Research: A sourcebook for Qualitative Researchers*, Jon Prosser ed., Falmer Press, pp. 74-85

2.3 Prosser, Jon & Dona Scwartz, 1998. ‘Photographs within the Sociological Research Process’ in *Image-Based Research: A sourcebook for Qualitative Researchers*, Jon Prosser ed., Falmer Press, pp. 101-115

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

3. Video and Film in Sociology

3.1 Asch, Timothy and Patsy Asch, 1995. 'Film in Ethnographic Research' in *Principles of Visual Anthropology* (ed) Paul Hockings, Second Edition, Mouton de Gruyter, pp. 335-362

3.2 MacDougall, David. 2011. 'Anthropological Filmmaking: An Empirical Art.' in *Sage Handbook of Visual Research Methods*, Eric Margolis & Luc Pauwels, eds, pp. 99-113

3.3 Schaeffer, Joseph H, 1995. 'Videotape: New Techniques of Observation and Analysis in Anthropology' in *Principles of Visual Anthropology* (ed) Paul Hockings, Second Edition, Mouton de Gruyter, pp. 255-284

4. Sociology, Multimedia and Hypermedia

4.1 Harper, Douglas.2012. *Visual Sociology*, Routledge, Chaps 7,8 and 9

4.2 Pink, Sarah. 2004. 'Conversing Anthropologically: Hypermedia as Anthropological Text' in *Working Images: Visual Research and Representation in Ethnography,* Sarah Pink et al. eds, Routledge, pp. 164-181

4.3 Lewis, Rob W. 'Media Convergence and Social Research: The Hathaway Project' in *Image-Based Research: A sourcebook for Qualitative Researchers*, Jon Prosser ed., Falmer Press, pp. 143-156

Note: The prescribed readings are application and practice oriented, providing guidelines for conducting Visual Research. The students will be expected to carry out short field research exercises based on these guidelines.

Or

SEC- 4: Project Report Writing **Credits 02**

1. Report Writing: Scope and Reason; Format of Research Report
2. Stages in Planning and Writing Process
3. Structure and Components of Research
4. Interpretation of Tables, Graphical Representation of Data, Use of Photographs, Case History
5. Ethical Issues; Referencing the Works of Others

Suggested Reading :

- Baker, Therese, L. Doing Social Research (2nd edition). New York: McGraw-Hill, Inc., 1994.
- Booth, P.F. Report Writing, Huntingdon: Elm Publications, 1991.
- Britt, Steuart Henderson. The Writing of Readable Research Reports. Journal of Marketing Research 8, no. (1971): 262-266.
- Bryman, Alan. Social Research Methods (3rd edition). Oxford University Press, 2008.15

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

Generic Elective (GE)
[Interdisciplinary for other department]

GE- 1 : Invitation to Sociology I **Credits 06**

GE1T : Invitation to Sociology I

Course Outline:

1) **Sociology as a Discipline:** Scope and Subject Matter of Sociology; Scientific Claim of Sociology; Sociological Imagination; Relation of Sociology with other Social Sciences
2) **Some Basic Concepts:** Social Institution; Association; Groups and its Forms; Status and Role; Norms & Values; Social Structure; Social Processes: Concept and Types.
3) **Culture, Society and Socialization**: Definition and Component of Culture; Role of Culture in Social Life, Socialization: Meaning, Types and Agencies
4) **Social Change and Social Mobility**: Social Change: Meaning, Types and Agencies; Social Mobility: Meaning and Types
5) **Social Stratification**: Concept of Social Stratification; Characteristics and Forms: Caste, Class and Gender

Suggested Readings:

- Anthony Giddens. 2013. *Sociology* (Seventh Edition).
- Haralambos and Holborn. 2000. *Sociology – Themes and Perspectives*. Collins.
- Jayaram, N. 1987. *Introductory Sociology.* Macmillan Press Limited.
- Macionis, John. 1996. *Sociology*. New Jersey: Prentice Hall.
- Fulcher, James and John Scott. 2007. *Sociology*. Third Ed. OUP.
- Alex, Inkeles. 1975. *Sociology*. London: Prentice Hall.
- Berger, Peter. 1966. *An Invitation to Sociology – A Humanist Perspective*. Harmondsworth: Penguin.
- Bottomore, T.B. 1962. *Sociology*. London: George Allen and Unwin.

Or

GE-1: Methods of Sociological Enquiry **Credits 06**

GE1T: Methods of Sociological Enquiry

Course Outline:

1. The Logic of Social Research

1.1 What is Sociological Research?
1.2 Objectivity in the Social Sciences
1.3 Reflexivity

2. Methodological Perspectives

2.1 The Comparative Method
2.2 The Ethnographic Method

3. Modes of Enquiry

3.1 Theory and Research

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

3.2 Analyzing Data: Quantitative and Qualitative

Course contents and Itinerary

1. The Logic of Social Research

1.1 What is Sociological Research?

1.1.1 Mills, C. W. 1959, *The Sociological Imagination,* London: Oxford University Press, Chapter 1, pp. 3-24.

1.1.2 Gluckman, M. 1978, 'Introduction', in A. L. Epstein (ed.), *The Craft of Social Anthropology,* Delhi: Hindustan Publishing Corporation, pp. xv-xxiv.

1.2. Objectivity in the Social Sciences

1.2.1. Durkheim, E. 1958, *The Rules of Sociological Method,* New York: The Free Press, Chapter 1& 2, pp. 1-46.

1.2.2. Weber, Max. 1949, *The Methodology of the Social Sciences,* New York: The Free Press, Foreword, pp. iii- x.

1.3. Reflexivity

1.3.1 Gouldner, Alvin. 1970, *The Coming Crisis of Western Sociology,* New York: Basic Books, Chapter 13, pp. 481-511.

2. Methodological Perspectives

2.1. The Comparative Method

2.1.1. Radcliffe-Brown, A. R. 1958, *Methods in Social Anthropology,* Delhi: Asia Publishing Corporation, Chapter 5, pp. 91-108.

2.1.2. Béteille, A. 2002, *Sociology: Essays on Approach and Method,* New Delhi: Oxford University Press, Chapter 4, pp. 72-94.

2.2. The Ethnographic Method

2.2.1 Geertz, Clifford. 1973. *Interpretation of Cultures,* New York: Basic Books. Chapter 1, pp. 3-30.

3. Modes of Enquiry

3.1. Theory and Research

3.1.1 Merton, R. K. 1972, *Social Theory and Social Structure,* Delhi: Arvind Publishing House, Chapters 4 & 5, pp. 139-171.

3.1.2 Bryman, Alan. 2004, *Quantity and Quality in Social Research,* New York: Routledge, Chapter 2 & 3, pp. 11-70.

3.2 Constructing the Object of Research

3.2.1 Srinivas, M.N. et. al. 2002(reprint), *The Fieldworker and the Field: Problems and Challenges in Sociological Investigation*, New Delhi: OUP, Introduction, pp. 1-14.

Or

GE- 1 : Western Sociological Thought I **Credits 06**

GE 1T : Western Sociological Thought I

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

Course Outline:

1. **Age of Revolution:** The Three Revolutions- French, American and Industrial; Transition from Enlightenment to Revolution, Rise of Sociology as a Discipline
2. **Auguste Comte:** Theory of Evolution and Progress; Hierarchy of Sciences; The Subject Matter and Tasks of Sociology, Social Statics and Dynamics
3. **Herbert Spencer -** Militant and Industrial Societies, Evolution, Individualism versus Organicism, Non-Intervention and Survival of the Fittest
4. **Karl Marx -** Religion, Historical and Dialectical Materialism, Class Struggle, Revolution,

Suggested Readings:

- Aron, Raymond. 1986. *Main Currents in Sociological Thought*, Vol. I & II, Penguin Books, Harmondsworth, Middlesex, 1986 (Chapter on Karl Marx).
- Coser, Lewis A. *Masters of Sociological Thought: Ideas in Social and Historical Context*, Second Edition, New York, Harcourt Brace Jovanovitch, 1977
- Ransome, Paul. 2010. *Social Theory*. Rawat Publication.
- Ritzer, George. 1996. Classical Sociological Theory, McGraw-Hill
- Timasheff, N. S. *Sociological Theory*. Random House. 1967.

GE-2 : Introduction to Sociology **Credits 06**

GE2T : Introduction to Sociology

Course Outline:

1. Nature and Scope of Sociology

1.1 History of Sociology
1.2 Relationship of Sociology with other Social Sciences:
1.2.1 Anthropology
1.2.2 Psychology
1.2.3 History

2. Sociological Concepts

2.1 Status and Role
2.2 Groups
2.3 Culture
2.4 Socialization
2.5. Structure and Function
2.6. Social Control and Change

Course contents and Itinerary

1. Nature and Scope of Sociology

1.1 History of Sociology

1.1.1 Giddens, A., 2006 (5th ed.), *Sociology*, London: Oxford University Press, Chapter 1, pp. 2-29.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

1.1.2 Relationship of Sociology with other Social Sciences: Anthropology, Psychology and History.
1.1.3 Beattie, J., 1951, *Other Cultures*, New York: The Free Press, Chapter 2, pp. 16-34.

2. Sociological Concepts

2.1 Status and Role
2.1.1 Bierstedt, R., 1974, *The Social Order*, New York: McGraw Hill, Chapter 9, pp. 250-279.
2.1.2 Linton, R., 1936, *The Study of Man,* New York: Appleton Century Crofts, Chapter 8, pp. 113-131.
2.2 Groups
2.2.1 Bierstedt, R., 1974, *The Social Order*, New York: McGraw Hill, Chapter 10, pp. 280-309.
2.3 Culture
2.3.1 Bierstedt, R., 1974, *The Social Order*, New York: McGraw Hill, Chapter 5 & 6, pp. 125- 187 .
2.4 Socialization
2.4.1 Horton, P.B. and C.L. Hunt, 1985, *Sociology,* New York: McGraw Hill, Chapter 4, pp. 79-103.
2.5 Structure and Function
2.5.1 Radcliffe-Brown, A.R., 1976, *Structure and Function in Primitive Society,* London: Cohen and West, Chapter 9 & 10, pp. 178-204.
2.6. Social Control and Change
2.6.1 Horton, P.B. and C.L. Hunt, 1985, *Sociology,* New York: McGraw Hill, Chapter 7 & 20, pp. 154-181, 509-540.

Or

GE-2: Sociology of India **Credits 06**

GE2T : Sociology of India

Course Outline:

1. India as a Plural Society
2. Social Institutions and Practices
   - 2.1 Caste
   - 2.2 Tribe
   - 2.3 Class
   - 2.4 Village
   - 2.5 Family and Kinship
3. Identities and Change
   - 3.1 Dalits' Movement
   - 3.2 Women's Movement
4. Challenges to State and Society
   - 4.1Communalism
   - 4.2 Secularism

Course contents and Itinerary

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

1. India as a Plural Society

1.1 Mason, Philip 1967. "Unity and Diversity : An Introductory Review" in Philip Mason(ed.) India and Ceylon: Unity and Diversity. London: Oxford University Press, Introduction.

1.2 Stern, Robert W. 2003. *Changing India.* Cambridge: CUP. Introduction. Change, societies of India and Indian Society. pp. 1 – 31.

2. Social Institutions and Practices

2.1 Caste

2.1.1 Srinivas, M.N., 1969, "The Caste System in India", in A. Beteille (ed.) *Social Inequality: Selected Readings.* Harmondsworth: Penguin Books, pp.265-272.

2.1.2 Srinivas, M.N., 1956, "A Note on Sanskritization and Westernization", *The Far Eastern Quarterly*, Volume 15, No. 4, pp 481-496.

2.1.3 Alavi, Hamaza and John Harriss (eds.) 1989. *Sociology of 'Developing Societies': South Asia.* London: Macmillan. John Harriss, The Formation of Indian society: Ideology and Power". pp. 126 –133.

Or

GE-2 : Sociological Theories **Credits 06**

GE2T : Sociological Theories

Course Outline:

1. Karl Marx

1.1 Materialist Conception of History

1.2 Class and Class Struggle

2. Emile Durkheim

2.1 Social Fact

2.2 Forms of Solidarity

3. Max Weber

3.1 Ideal Types and Social Action

3.2 Types of Authority

Course contents and Itinerary

1. **Karl Marx**

1.1 **Materialist Conception of History**

1.2 **Class and Class Struggle**

1.1.1 Marx, K. and Friedrich Engels. 2002. *The Communist Manifesto.* Harmondsworth :Penguin.

1.1.2 Aron, R. 1967. *Main Currents in Sociological Thought.* London: Weidenfield and Nicholson, Vol. 1. pp. 107-180.

1.1.3 Calhoun, J. Craig, 2007. *Classical Sociological Theory.* 2nd Edition Blackwell, pp. 73-130.

1.1.4 Jayapalan, N. 2001. *Sociological Theories*. Atlantic Publisher, pp.35-69.

2. **Emile Durkheim**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

2.1 **Social Fact**

2.1.1 Durkheim, E. 1958. *The Rules of Sociological Method*. Glencoe: Free Press, Chapters 1 and 3.

2.1.2 Jones R.A. 1986, *Emile Durkheim: An Introduction to Four Major Works.* London: Sage. Chapters 3 and 4.

2.2 **Forms of Solidarity**

2.2.1 Aron, R. 1967. *Main Currents in Sociological Thought* London: Weidenfield and Nicholson, Vol. 2, pp. 11-97.

2.2.2 Calhoun, J. Craig, 2007. *Classical Sociological Theory* 2nd Edition. Blackwell, pp.131-180.

2.2.3 Jayapalan, N. 2001. *Sociological Theories*. Atlantic Publisher, pp.146-178.

3 **Max Weber**

3.1 **Ideal Types and Social Action**

3.2 **Types of Authority**

3.1.1 Gerth, H.H. and C. Wright Mills (eds.) 1948. *From Max Weber*: *Essays in Sociology*. London: Routledge and Kegan Paul, Introduction.

3.1.2 Aron, R. 1967. *Main Currents in Sociological Thought.* London: Weidenfield and Nicholson, Vol. 2, pp.177-252.

3.1.3 Calhoun, J. Craig, 2007. *Classical Sociological Theory.* 2nd Edition. Blackwell, pp.205-274.

3.1.4 Jayapalan, N. 2001. *Sociological Theories*. Atlantic Publisher, pp.97-115.

2.2 Tribe

2.2.1 Haimendorf, C.V.F., 1967, „The Position of Tribal Population in India", in Philip Mason (ed.), *India and Ceylon : Unity and Diversity*, New York: Oxford University Press, Chapter 9.

2.3 Class

2.3.1 Thorner, Daniel, 1992."Agrarian Structure" in Dipankar Gupta (ed.), *Social Stratification in India*, New Delhi: Oxford University Press, pp. 261-270.

2.3.2 Deshpande, Satish, 2003, *Contemporary India : A Sociological View*. New Delhi; Viking, pp. 125-150.

2.4 Village

2.4.1 Srinivas, M.N., 1987, *The Dominant Caste and Other Essays,* Delhi: Oxford University Press, pp.20-59.

2.5 Family and Kinship

2.5.1 Shah, A. M., 1998, *The Family in India: Critical Essays*. New Delhi: Orient Longman, pp.52-63.

2.5.2 Karve, Iravati. 1994, The Kinship map of India", in Patricia Uberoi(ed.) *Family, kinship and marriage in India.* Delhi: Oxford University Press, pp.50-73.

3. Identities and Change

3.1 Shah, Ghanshyam. 2001, *Dalit identity and politics.* Delhi: Sage Publications, Chapter 1 and 7.

3.2 Kumar, Radha. 1999, „From Chipko to sati: The Contemporary women"s movement", in Nivedita Menon (ed.) *Gender and Politics in India*. Delhi: Oxford University Press, pp. 342-369.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

4. Challenges to State and Society

4.1 Madan, T.N., 1997, *Modern Myths and Locked Minds*. Delhi: Oxford University Press, Chapter 8.

4.2 Dumont, L. 1997, *Religion, Politics and History in India*. Paris: Mouton, Chapter 5.

END

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:13:23; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/sociology_Gen.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B. A (HONOURS)
in
Political Science

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

VIDYASAGAR UNIVERSITY

B A (Honours) in Political Science

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: Understanding Political Theory	6	5-1-0	15	60	75
		Core-2		CT2: Constitutional Government and Democracy in India	6	5-1-0	15	60	75
		GE-1		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-1		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: Political Theory – Concepts and Debates	6	5-1-0	15	60	75
		Core-4		CT4: Political Process in India	6	5-1-0	15	60	75
		GE-2		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-2		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		CT5: Introduction to Comparative Government and Politics	6	5-1-0	15	60	75
		Core-6		CT6: Perspectives on Public Administration	6	5-1-0	15	60	75
		Core-7		CT7: Perspectives on International Relations and World History	6	5-1-0	15	60	75
		GE-3		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-1		TBD	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		CT8: Political Processes and Institutions in Comparative Perspective	6	5-1-0	15	60	75
		Core-9		CT9: Public Policy and Administration in India	6	5-1-0	15	60	75
		Core-10		CT10:Global Politics	6	5-1-0	15	60	75
		GE-4		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-2		TBD	2	1-0-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		CT11: Classical Political Philosophy	6	5-1-0	15	60	75
		Core-12		CT12: Modern Indian political Thought -I	6	5-1-0	15	60	75
		DSE-1		TBD	6	5-1-0	15	60	75
		DSE-2		TBD	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: Modern Political Philosophy	6	5-1-0	15	60	75
		Core-14		CT14: Indian Political Thought - II	6	5-1-0	15	60	75
		DSE-3		TBD	6	5-1-0	15	60	75
		DSE-4		TBD	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

List of the Core courses and Electives

CORE COURSE (CC)

CC-1: Understanding Political Theory
CC-2: Constitutional Government and Democracy in India
CC-3: Political Theory-Concepts and Debates
CC-4: Political Process in India
CC-5: Introduction to Comparative Government and Politics
CC-6: Perspectives on Public Administration
CC-7: Perspectives on International Relations and World History
CC-8: Political Processes and Institutions in Comparative Perspective
CC-9: Public Policy and Administration in India
CC-10: Global Politics
CC-11: Classical Political Philosophy
CC-12: Indian Political Thought-I
CC-13: Modern Political Philosophy
CC-14: Indian Political Thought-II

Discipline Specific Elective (DSE)

DSE-1: India's Foreign Policy in a Globalizing World
Or
DSE-1: Development Process and Social Movements in Contemporary India
DSE-2: Understanding South Asia
Or
DSE-2: United Nations and Global Conflicts
DSE-3: Citizenship in a Globalizing World
Or
DSE-3 : Women, Power and Politics
DSE-4: Human Rights in a Comparative Perspective
Or
DSE-4: Project Work

Skill Enhancement Courses(SEC)

SEC-1: Democratic Awareness with Legal Literacy
Or
SEC-1: Public Opinion and Survey Research
SEC-2: Legislative Practices and Procedures
Or
SEC-2: Peace and Conflict Resolution

Generic Elective (GE)

[Interdisciplinary for other department]

GE-1: Nationalism in India
Or
GE-1: Feminism: Theory and Practice
GE-2: Contemporary Political Economy
Or
GE-2: Governance: Issues and Challenges
GE-3: Gandhi and the Contemporary World
Or
GE-3: Understanding Ambedkar
GE-4: Politics of Globalization
Or
GE-4: United Nations and Global Conflicts

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

CORE COURSE (CC)

CC-1: Understanding Political Theory **Credit 06**

C1T: Understanding Political Theory

I: Introducing Political Theory

1. What is Politics: Theorizing the 'Political'
2. Traditions of Political Theory: Liberal, Marxist, Anarchist and Conservative
3. Approaches to Political Theory: Normative, Historical and Empirical
4. Critical and Contemporary Perspectives in Political Theory: Feminist and Postmodern

II: Political Theory and Practice

The Grammar of Democracy

1. Democracy: The history of an idea
2. Procedural Democracy and its critique
3. Deliberative Democracy
4. Participation and Representation

Suggested Readings

- Bhargava, R. (2008) 'What is Political Theory', in Bhargava, R and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 2-16.

- Bellamy, R. (1993) 'Introduction: The Demise and Rise of Political Theory', in Bellamy, R. (ed.) *Theories and Concepts of Politics*. New York: Manchester University Press, pp. 1-14.

- Glaser, D. (1995) 'Normative Theory', in Marsh, D. and Stoker, G. (eds.) *Theory and Methods in Political Science.* London: Macmillan, pp. 21-40.

- Sanders, D. (1995) 'Behavioral Analysis', in Marsh, D. and Stoker, G. (eds.) *Theory and Methods in Political Science.* London: Macmillan, pp. 58-75.

- Chapman, J. (1995) 'The Feminist Perspective', in Marsh, D. and Stoker, G. (eds.) *Theory and Methods in Political Science.* London: Macmillan, pp. 94-114.

- Bharghava, R, 'Why Do We Need Political Theory', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 17-36.

- Bannett, J. (2004) 'Postmodern Approach to Political Theory', in Kukathas, Ch. and Gaus, G. F. (eds.) *Handbook of Political Theory.* New Delhi: Sage, pp. 46-54.

- Vincent, A. (2004) *The Nature of Political Theory*. New York: Oxford University Press, 2004, pp.19-80.

- Srinivasan, J. (2008) 'Democracy', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 106-128.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Owen, D. (2003) 'Democracy', in Bellamy, R. and Mason, A. (eds.) *Political Concepts.*Manchester and New York: Manchester University Press, pp. 105-117.

- Christiano, Th. (2008) 'Democracy', in Mckinnon, C. (ed.) *Issues in Political Theory*, New York:Oxford University Press, pp. 80-96.

- Arblaster, A. (1994) *Democracy*. (2nd Edition). Buckingham: Open University Press.

- Roy, A. 'Citizenship', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 130-146.

- Brighouse, H. (2008) 'Citizenship', in Mckinnon, C. (ed.) *Issues in Political Theory*, New York: Oxford University Press, pp. 241-258.

CC-2: Constitutional Government and Democracy in India Credit 06

C2T: Constitutional Government and Democracy in India

I. The Constituent Assembly and the Constitution

a. Philosophy of the Constitution, the Preamble, and Features of the Constitution
b. Fundamental Rights and Directive Principles

II. Organs of Government

a. The Legislature: Parliament (1.5 weeks or 6 lectures)
b. The Executive: President and Prime Minister
c. The Judiciary: Supreme Court

III. Federalism and Decentralization

a. Federalism: Division of Powers, Emergency Provisions, Fifth and Sixth Schedules
b. Panchayati Raj and Municipalities

Suggested Readings:

- G. Austin, (2010) 'The Constituent Assembly: Microcosm in Action', in *The Indian Constitution: Cornerstone of a Nation*, New Delhi: Oxford University Press, 15th print, pp.1-

- R. Bhargava, (2008) 'Introduction: Outline of a Political Theory of the Indian Constitution', in

- R. Bhargava (ed.) *Politics and Ethics of the Indian Constitution*, New Delhi: Oxford University Press, pp. 1-40.

- D. Basu, (2012) *Introduction to the Constitution of India*, New Delhi: Lexis Nexis.

- S. Chaube, (2009) *The Making and Working of the Indian Constitution*, Delhi: National Book Trust.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- G. Austin, (2000) 'The Social Revolution and the First Amendment', in *Working a Democratic Constitution,* New Delhi: Oxford University Press, pp. 69-98. Sibal, (2010) 'From Niti to Nyaya,' *Seminar,* Issue 615, pp 28-34.
- *The Constitution of India: Bare Act with Short Notes,* (2011) New Delhi: Universal, pp. 4-16.
- Shankar and V. Rodrigues, (2011) 'The Changing Conception of Representation: Issues, Concerns and Institutions', in *The Indian Parliament: A Democracy at Work,* New Delhi: Oxford University Press, pp. 105-173.
- V. Hewitt and S. Rai, (2010) 'Parliament', in P. Mehta and N. Jayal (eds.) *The Oxford Companion to Politics in India,* New Delhi: Oxford University Press, pp. 28-42.
- J. Manor, (2005) 'The Presidency', in D. Kapur and P. Mehta P. (eds.) *Public Institutions in India,* New Delhi: Oxford University Press, pp.105-127.
- J. Manor, (1994) 'The Prime Minister and the President', in B. Dua and J. Manor (eds.) *Nehru to the Nineties: The Changing Office of the Prime Minister in India,* Vancouver: University of British Columbia Press, pp. 20-47.
- H. Khare, (2003) 'Prime Minister and the Parliament: Redefining Accountability in the Age of Coalition Government', in A. Mehra and G. Kueck (eds.) *The Indian Parliament: A Comparative Perspective,* New Delhi: Konark, pp. 350-368.
- U. Baxi, (2010) 'The Judiciary as a Resource for Indian Democracy', *Seminar,* Issue 615, pp. 61-67.
- R. Ramachandran, (2006) 'The Supreme Court and the Basic Structure Doctrine' in B. Kirpal et.al (eds.) *Supreme but not Infallible: Essays in Honour of the Supreme Court of India*, New Delhi: Oxford University Press, pp. 107-133.
- L. Rudolph and S. Rudolph, (2008) 'Judicial Review Versus Parliamentary Sovereignty', in *Explaining Indian Institutions: A Fifty Year Perspective, 1956-2006: Volume 2: The Realm of Institutions: State Formation and Institutional Change.* New Delhi: Oxford University Press, pp. 183-210.
- M. Singh, and R. Saxena (eds.), (2011) 'Towards Greater Federalization,' in *Indian Politics: Constitutional Foundations and Institutional Functioning,* Delhi: PHI Learning Private Ltd., pp. 166-195.
- V. Marwah, (1995) 'Use and Abuse of Emergency Powers: The Indian Experience', in B. Arora and D. Verney (eds.) *Multiple Identities in a Single State: Indian Federalism in a Comparative Perspective,* Delhi: Konark, pp. 136-159.
- Sharma, (2010) 'The 1990s: Great Expectations'; 'The 2000s: Disillusionment Unfathomable', in *Unbroken History of Broken Promises: Indian State and Tribal People,* Delhi: Freedom Press and Sahyog Pustak Kuteer, pp. 64-91.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- *The Constitution of India: Bare Act with Short Notes*, (2011) New Delhi: Universal, pp 192- 213.

- R. Dhavan and R. Saxena, (2006) 'The Republic of India', in K. Roy, C. Saunders and J. Kincaid (eds.) *A Global Dialogue on Federalism*, Volume 3, Montreal: Queen's University Press, pp. 166-197.

- R. Manchanda, (2009) *The No Nonsense Guide to Minority Rights in South Asia*, Delhi: Sage Publications, pp. 105-109.

- P. deSouza, (2002) 'Decentralization and Local Government: The Second Wind of Democracy in India', in Z. Hasan, E. Sridharan and R. Sudarshan (eds.) *India's Living Constitution: Ideas, Practices and Controversies,* New Delhi: Permanent Black, pp. 370-404.

- M. John, (2007) 'Women in Power? Gender, Caste and Politics of Local Urban Governance', in *Economic and Political Weekly*, Vol. 42(39), pp. 3986-3993.

- Raghunandan, J. R (2012) Decentralization and local governments: The Indian Experience, Orient Black Swan, New Delhi

- Baviskar, B.S and George Mathew (eds) 2009 Inclusion and Exclusion in local governance: Field Studies from rural India, New Delhi, Sage

CC-3: Political Theory-Concepts and Debates **Credit 06**

C3T: Political Theory-Concepts and Debates

Section A: Core Concepts

I. Importance of Freedom

a. Negative Freedom: Liberty
b. Positive Freedom: Freedom as Emancipation and Development

Important Issue: Freedom of belief, expression and dissent

II. Significance of Equality

a. Formal Equality: Equality of opportunity
b. Political equality
c. Egalitarianism: Background inequalities and differential treatment

Important Issue: Affirmative action

III. Indispensability of Justice

a. Procedural Justice
b. Distributive Justice
c. Global Justice

Important Issue: Capital punishment

IV. The Universality of Rights

a. Natural Rights

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

b. Moral and Legal Rights
c. Three Generations of Rights
d. Rights and Obligations
Important Issue: Rights of the girl child

Section B: Major Debates

a. Why should we obey the state? Issues of political obligation and civil disobedience.
b. Are human rights universal? Issue of cultural relativism.
c. How do we accommodate diversity in plural society? Issues of multiculturalism and toleration.

Suggested Readings:

- Riley, Jonathan. (2008) 'Liberty' in Mckinnon, Catriona (ed.) *Issues in Political Theory*, New York: Oxford University Press, pp. 103-119.
- Knowles, Dudley. (2001) *Political Philosophy*. London: Routledge, pp. 69- 132.
- Swift, Adam. (2001) *Political Philosophy: A Beginners Guide for Student's and Politicians.* Cambridge: Polity Press, pp. 51-88.
- Carter, Ian. (2003) 'Liberty', in Bellamy, Richard and Mason, Andrew (eds.). *Political Concepts*. Manchester: Manchester University Press, pp. 4-15.
- Sethi, Aarti. (2008) 'Freedom of Speech and the Question of Censorship', in Bhargava, Rajeev and Acharya, Ashok. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 308-319.
- Swift, Adam. (2001) *Political Philosophy: A Beginners Guide for Student's and Politicians.* Cambridge: Polity Press, pp. 91-132.
- Casal, Paula & William, Andrew. (2008) 'Equality', in McKinnon, Catriona. (ed.) *Issues in Political Theory*. New York: Oxford University Press, pp. 149- 165.
- Acharya, Ashok. (2008) 'Affirmative Action', in Bhargava, Rajeev and Acharya, Ashok. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 298-307.
- Menon, Krishna. (2008) 'Justice', in Bhargava, Rajeev and Acharya, Ashok. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 74-86.
- Wolf, Jonathan. (2008) 'Social Justice', in McKinnon, Catriona. (ed.) *Issues in Political Theory.* New York: Oxford University Press, pp. 172-187.
- Swift, Adam. (2001) *Political Philosophy: A Beginners Guide for Student's and Politicians.* Cambridge: Polity Press, pp. 9-48.
- Knowles, Dudley. (2001) *Political Philosophy.* London: Routledge, pp. 177-238.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- McKinnon, Catriona. (ed.) (2008) *Issues in Political Theory*. New York: Oxford University Press, pp. 289-305.
- Bedau, Hugo Adam. (2003) 'Capital Punishment', in LaFollette, Hugh (ed.). *The Oxford Handbook of Practical Ethics.* New York: Oxford University Press, pp. 705-733.
- Seglow, Jonathan. (2003) 'Multiculturalism' in Bellamy, Richard and Mason, Andrew (eds.). *Political Concepts.* Manchester: Manchester University Press, pp. 156-168.
- Tulkdar, P.S. (2008) 'Rights' in Bhargava, Rajeev and Acharya, Ashok. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 88-104.
- McKinnon, Catriona. (2003) 'Rights', in Bellamy, Richard and Mason, Andrew. (eds.) *Political Concepts*. Manchester: Manchester University Press, pp. 16-27.
- Menlowe, M.A. (1993) 'Political Obligations', in Bellamy Richard.(ed.) *Theories and Concepts of Politics*. New York: Manchester University Press, pp. 174-194.
- Amoah, Jewel. (2007) 'The World on Her Shoulders: The Rights of the Girl-Child in the Context of Culture & Identity', in *Essex Human Rights Review,* 4(2), pp. 1-23.
- Working Group on the Girl Child (2007), *A Girl's Right to Live: Female Foeticide and Girl Infanticide*, available on http://www.crin.org/docs/Girl's infanticide CSW 2007.txt
- Hyums, Keith. (2008) 'Political Authority and Obligation', in Mckinnon, Catriona. (ed.) *Issues in Political Theory*, New York: Oxford University Press, pp. *9*-26
- Martin, Rex. (2003) 'Political Obligation', in Bellamy, Richard and Mason, Andrew. (eds.) *Political Concepts*, Manchester: Manchester University Press, pp. 41-51.
- Campbell, Tom. (2008) 'Human Rights' in Mckinnon, Catriona. (ed.) *Issues in Political Theory.* New York: Oxford University Press, pp. 194-210.
- Mookherjee, Monica, 'Multiculturalism', in Mckinnon, Catriona. (ed.) *Issues in Political Theory*. New York: Oxford University Press, pp. 218- 234.
- Seglow, Jonathan, 'Multiculturalism', in Bellamy, Richard and Mason, Andrew. (eds.) *Political Concepts*, Manchester: Manchester University Press, pp. 156-168.

CC-4: Political Process in India **Credit 06**

C4T: Political Process in India

i. I. Political Parties and the Party System

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

Trends in the Party System; From the Congress System to Multi-Party Coalitions

ii. **Determinants of Voting Behaviour**
Caste, Class, Gender and Religion

iii. **III. Regional Aspirations**
The Politics of Secession and Accommodation

iv. **IV. Religion and Politics**
Debates on Secularism; Minority and Majority Communalism

v. **V. Caste and Politics**
Caste in Politics and the Politicization of Caste

vi. **VI. Affirmative Action Policies**
Women, Caste and Class

vii. **VII. The Changing Nature of the Indian State**
Developmental, Welfare and Coercive Dimensions

Suggested Readings:

- R. Kothari, (2002) 'The Congress System', in Z. Hasan (ed.) *Parties and Party Politics in India*, New Delhi: Oxford University Press, pp 39-55.

- E. Sridharan, (2012) 'Introduction: Theorizing Democratic Consolidation, Parties and Coalitions', in *Coalition Politics and Democratic Consolidation in Asia*, New Delhi: Oxford University Press.

- Y. Yadav and S. Palshikar, (2006) 'Party System and Electoral Politics in the Indian States, 1952-2002: From Hegemony to Convergence', in P. deSouza and E. Sridharan (eds.) *India's Political Parties*, New Delhi: Sage Publications, pp. 73-115.

- Y. Yadav, (2000) 'Understanding the Second Democratic Upsurge', in F. Frankel, Z. Hasan, and R. Bhargava (eds.) *Transforming India: Social and Political Dynamics in Democracy*, New Delhi: Oxford University Press, pp. 120-145.

- C. Jaffrelot, (2008) 'Why Should We Vote? The Indian Middle Class and the Functioning of World's Largest Democracy', in *Religion, Caste and Politics in India*, Delhi: Primus, pp. 604- 619.

- R. Deshpande, (2004) 'How Gendered was Women's Participation in Elections 2004?', *Economic and Political Weekly*, Vol. 39, No. 51, pp. 5431-5436.

- S. Kumar, (2009) 'Religious Practices Among Indian Hindus,' *Japanese Journal of Political Science*, Vol. 10, No. 3, pp. 313-332.

- M. Chadda, (2010) 'Integration through Internal Reorganisation', in S. Baruah (ed.) *Ethnonationalism in India: A Reader***,** New Delhi: Oxford University Press, pp. 379-402.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- P. Brass, (1999) 'Crisis of National Unity: Punjab, the Northeast and Kashmir', in *The Politics of India Since Independence,* New Delhi: Cambridge University Press and Foundation Books, pp.192-227.

- T. Pantham, (2004) 'Understanding Indian Secularism: Learning from its Recent Critics', in R. Vora and S. Palshikar (eds.) *Indian Democracy: Meanings and Practices,* New Delhi: Sage, pp. 235-256.

- N. Menon and A. Nigam, (2007) 'Politics of Hindutva and the Minorities', in *Power and Contestation: India since 1989,* London: Fernwood Publishing, Halifax and Zed Books, pp.36- 60.

- N. Chandhoke, (2010) 'Secularism', in P. Mehta and N. Jayal (eds.) *The Oxford Companion to Politics in India,* New Delhi: Oxford University Press, pp. 333-346.

- R. Kothari, (1970) 'Introduction', in *Caste in Indian Politics,* Delhi: Orient Longman, pp.3-25.

- M. Weiner, (2001) 'The Struggle for Equality: Caste in Indian Politics', in Atul Kohli (ed.) *The Success of India's Democracy,* New Delhi: Cambridge University Press, pp. 193-225.

- G. Omvedt, (2002) 'Ambedkar and After: The Dalit Movement in India', in G. Shah (ed.) *Social Movements and the State,* New Delhi: Sage Publications, pp. 293-309.

- M. Galanter, (2002) 'The Long Half-Life of Reservations', in Z. Hasan, E. Sridharan and R. Sudarshan (eds.) *India's Living Constitution: Ideas, Practices, Controversies,* New Delhi: Permanent Black, pp. 306-318.

- C. Jaffrelot, (2005) 'The Politics of the OBCs', in *Seminar,* Issue 549, pp. 41-45.

- M. John, (2011) 'The Politics of Quotas and the Women's Reservation Bill in India', in M. Tsujimura and J. Steele (eds.) *Gender Equality in Asia,* Japan: Tohoku University Press, pp. 169-195.

- S. Palshikar, (2008) 'The Indian State: Constitution and Beyond', in R. Bhargava (ed.) *Politics and Ethics of the Indian Constitution,* New Delhi: Oxford University Press, pp. 143-163.

- R. Deshpande, (2005) 'State and Democracy in India: Strategies of Accommodation and Manipulation', Occasional Paper, Series III, No. 4, Special Assistance Programme, Department of Politics and Public Administration, University of Pune.

- M. Mohanty, (1989) 'Duality of the State Process in India: A Hypothesis', *Bhartiya Samajik Chintan,* Vol. XII (1-2)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- T. Byres, (1994) 'Introduction: Development Planning and the Interventionist State Versus Liberalization and the Neo-Liberal State: India, 1989-1996', in T. Byres (ed.) *The State,*
- *Development Planning and Liberalization in India*, New Delhi: Oxford University Press, 1994, pp.1-35.

- Verma, (2007) 'Police Agencies and Coercive Power', in S. Ganguly, L. Diamond and M. Plattner (eds.) *The State of India's Democracy*, Baltimore: John Hopkins University Press, pp. 130-139.

CC-5: Introduction to Comparative Government and Politics Credit 06

C5T: Introduction to Comparative Government and Politics

I. Understanding Comparative Politics

a. Nature and scope
b. Going beyond Eurocentrism

II. Historical context of modern government

a. Capitalism: meaning and development: globalization
b. Socialism: meaning, growth and development
c. Colonialism and decolonization: meaning, context, forms of colonialism; anti-colonialism struggles and process of decolonization

III. Themes for comparative analysis

A comparative study of constitutional developments and political economy in the following countries: Britain, Brazil, Nigeria and China.

Suggested Readings:

- J. Kopstein, and M. Lichbach, (eds), (2005) *Comparative Politics: Interests, Identities, and Institutions in a Changing Global Order*. Cambridge: Cambridge University Press, pp.1-5; 16- 36; 253-290.

- M. Mohanty, (1975) 'Comparative Political Theory and Third World Sensitivity', *in Teaching Politics*, Nos. 1 and 2, pp. 22-38 Additional Readings:

- Roy, (2001) 'Comparative Method and Strategies of Comparison', in *Punjab Journal of Politics.* Vol. xxv (2), pp. 1-15.

- J. Blondel, (1996) 'Then and Now: Comparative Politics', in *Political Studies*. Vol. 47 (1), pp. 152-160.

- N. Chandhoke, (1996) 'Limits of Comparative Political Analysis ', in *Economic and Political Weekly*, Vol. 31 (4), January 27, pp.PE 2-PE2-PE8

- R. Suresh, (2010) *Economy & Society -Evolution of Capitalism*, New Delhi, Sage Publications, pp. 151-188; 235-268.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- G. Ritzer, (2002) 'Globalization and Related Process I: Imperialism, Colonialism, Development, Westernization, Easternization', in *Globalization: A Basic Text*. London: Wiley- Blackwell, pp. 63-84.

- M. Dobb, (1950) 'Capitalism', in *Studies in the Development of Capitalism*. London: Routledge and Kegan Paul Ltd, pp. 1-32.

- E. Wood, (2002) 'The Agrarian origin of Capitalism', in *Origin of Capitalism: A Long View*. London: Verso, pp. 91-95; 166-181.

- Hoogvelt, (2002) 'History of Capitalism Expansion', in *Globalization and Third World Politics.* London: Palgrave, pp. 14-28.

- Brown, (2009) 'The Idea of Communism', in *Rise and Fall of Communism,* Harpercollins (ebook),pp. 1-25; 587-601.

- J. McCormick, (2007) 'Communist and Post-Communist States', in *Comparative Politics in Transition*, United Kingdom: Wadsworth, pp. 195-209

- R. Meek, (1957) 'The Definition of Socialism: A Comment', *The Economic Journal*. 67 (265), pp. 135-139.

- P. Duara, (2004) 'Introduction: The Decolonization of Asia and Africa in the Twentieth Century', in P. Duara, (ed), *Decolonization: Perspective From Now and Then.* London: Routledge, pp. 1-18.

- J. Chiryankandath, (2008) 'Colonialism and Post-Colonial Development', in P. Burnell, et. al, *Politics in the Developing World.* New Delhi: Oxford University Press, pp. 31-52.

Additional Reading:

- M. Mohanty, (1999) 'Colonialism and Discourse in India and China', Available at
- http://www.ignca.nic.in/ks_40033.html http, Accessed: 24.03.2011.

- L. Barrington et. al (2010) *Comparative Politics - Structures & Choices*, Boston, Wadsworth, pp. 212-13; 71-76; 84-89.

- M. Grant, (2009) 'United Kingdom Parliamentary System' in *The UK Parliament.* Edinburgh: Edinburgh University Press, pp. 24-43

- J. McCormick, (2007) *Comparative Politics in Transition*, UK: Wadsworth, pp. 260-270 (China)

- M. Kesselman, J. Krieger and William (2010), *Introduction to Comparative Politics: Political Challenges and Changing Agendas*, UK: Wadsworth. pp. 47-70 (Britain); 364- 388 (Nigeria); 625-648 (China); 415-440 (Brazil).

- P. Rutland, (2007) 'Britain', in J. Kopstein and M. Lichbach. (eds.) *Comparative Politics: Interest, Identities and Institutions in a Changing Global Order.* Cambridge: Cambridge University Press, pp. 39-79.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

CC-6: Perspectives on Public Administration **Credit 06**

C6T: Perspectives on Public Administration

I. Public administration as a discipline

- ✓ Meaning, Dimensions and Significance of the Discipline
- ✓ Public and Private Administration
- ✓ Evolution of Public Administration

II. Theoretical perspectives

Classical theories

- ✓ Scientific management (F.W.Taylor)
- ✓ Administrative Management (Gullick, Urwick and Fayol)
- ✓ Ideal-type bureaucracy (Max Weber)

Neo-classical theories

- ✓ Human relations theory (Elton Mayo)
- ✓ Rational decision-making (Herbert Simon)

Contemporary theories

- ✓ Ecological approach (Fred Riggs)
- ✓ Innovation and Entrepreneurship (Peter Drucker)

III. Public policy

- ✓ Concept, relevance and approaches
- ✓ Formulation, implementation and evaluation

IV. Major approaches in public administration

- ✓ New Public Administration
- ✓ New Public Management
- ✓ New Public Service Approach
- ✓ Good Governance
- ✓ Feminist Perspectives

Suggested Readings:

- Nicholas Henry, *Public Administration and Public Affairs*, Prentice Hall, 1999

- D. Rosenbloom, R. Kravchuk. and R. Clerkin, (2009) *Public Administration: Understanding Management, Politics and Law in Public Sector*, 7th edition, New Delhi: McGraw Hill, pp. 1- 40

- W. Wilson, (2004) 'The Study of Administration', in B. Chakrabarty and M. Bhattacharya (eds), *Administrative Change and Innovation: a Reader*, New Delhi: Oxford University Press, pp. 85-101

- M. Bhattacharya, (2008) *New Horizons of Public Administration*, 5th Revised Edition. New Delhi: Jawahar Publishers, pp. 37-44.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- G. Alhson, (1997) 'Public and Private Management', in Shafritz, J. and Hyde, A. (eds.) *Classics of Public Administration,* 4th Edition. Forth Worth: Hartcourt Brace, TX, pp. 510-529.

- N. Henry,*Public Administration and Public Affairs*, 12th edition. New Jersey: Pearson,2013

- M.Bhattacharya,*Restructuring Public Administration: A New Look,* New Delhi: Jawahar Publishers, 2012

- P.Dunleavy and C.Hood, "From Old Public Administration to New Public Management", Public Money and Management, Vol. XIV No-3, 1994

- M. Bhattacharya, *New Horizons of Public Administration*, New Delhi: Jawahar Publishers, 2011

- Basu, Rumki, Public Administration : Concepts and Theories Sterling Publishers, New Delhi 2014

- D. Gvishiani, *Organisation and Management*, Moscow: Progress Publishers, 1972

- F. Taylor, 'Scientific Management', in J. Shafritz, and A. Hyde, (eds.) *Classics of Public Administration,* 5th Edition. Belmont: Wadsworth, 2004

- P. Mouzelis, 'The Ideal Type of Bureaucracy' in B. Chakrabarty, And M. Bhattacharya, (eds), *Public Administration: A Reader*, New Delhi: Oxford University Press,2003

- D. Ravindra Prasad, Y. Pardhasaradhi, V. S. Prasad and P. Satyrnarayana, [eds.], Administrative Thinkers, Sterling Publishers, 2010

- E. J. Ferreira, A. W. Erasmus and D. Groenewald , Administrative Management, Juta Academics, 2010

- M. Weber,'Bureaucracy', in C. Mills, and H. Gerth, F*rom Max Weber: Essays in Sociology*. Oxford: Oxford University Press, 1946

- Warren. G.Bennis, *Beyond Bureaucracy*, Mc Graw Hill, 1973

- D. Gvishiani, *Organisation and Management*, Moscow: Progress Publishers, 1972

- B. Miner, 'Elton Mayo and Hawthrone', in *Organisational Behaviour 3: Historical Origins and the Future.* New York: M.E. Sharpe, 2006

- S. Maheshwari, *Administrative Thinkers*, New Delhi: Macmillan, 2009
- Fredrickson and Smith, 'Decision Theory', in *The Public Administration Theory Primer*. Cambridge: Westview Press, 2003

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- R. Arora, 'Riggs' Administrative Ecology' in B. Chakrabarty and M. Bhattacharya (eds), *Public Administration: A reader*, New Delhi, Oxford University Press, 2003
- Singh, *Public Administration: Roots and Wings*. New Delhi: Galgotia Publishing Company, 2002
- F. Riggs, *Administration in Developing Countries: The Theory of Prismatic Society*. Boston: Houghton Miffin,1964
- Peter Drucker, *Innovation and Entrepreneurship*, Harper Collins,1999
- Peter F. Drucker , *The Practice of Management*, Harper Collins, 2006
- T. Dye, (1984) *Understanding Public Policy,* 5th Edition. U.S.A: Prentice Hall, pp. 1-44 *The Oxford Handbook of Public Policy* ,OUP,2006
- Xun Wu, M.Ramesh, Michael Howlett and Scott Fritzen ,*The Public Policy Primer: Managing The Policy Process*, Rutledge, 2010
- Mary Jo Hatch and Ann .L. Cunliffe Organisation Theory : *Modern, Symbolic and Postmodern Perspectives*, Oxford University Press,2006
- Michael Howlett, *Designing Public Policies : Principles And Instruments*, Rutledge, 2011 *The Oxford Handbook Of Public Policy*, Oxford University Press, 2006
- Prabir Kumar De, *Public Policy and Systems*, Pearson Education, 2012
- R.V. Vaidyanatha Ayyar, *Public Policy Making In India*, Pearson,2009
- Surendra Munshi and Biju Paul Abraham [Eds.] *Good Governance, Democratic Societies And Globalisation*, Sage Publishers, 2004
- M. Bhattacharya, 'Chapter 2 and 4', in *Social Theory, Development Administration and Development Ethics*, New Delhi: Jawahar Publishers, 2006
- F. Riggs,*The Ecology of Public Administration, Part 3,* New Delhi: Asia Publishing House, 1961
- M. Bhattacharya, *Public Administration: Issues and Perspectives*, New Delhi: Jawahar Publishers, 2012
- H. Frederickson, 'Toward a New Public Administration', in J. Shafritz, & A. Hyde, (eds.) *Classics of Public Administration*, 5th Edition, Belmont: Wadsworth, 2004
- U. Medury, *Public administration in the Globalization Era*, New Delhi: Orient Black Swan, 2010

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Gray, and B. Jenkins, 'From Public Administration to Public Management' in E. Otenyo and N. Lind, (eds.) *Comparative Public Administration: The Essential Readings*: Oxford University Press, 1997

- Hood, 'A Public Management for All Seasons', in J. Shafritz, & A. Hyde, (eds.) *Classics of Public Administration*, 5th Edition, Belmont: Wadsworth, 2004

- R.B.Denhart & J.V.Denhart [Arizona State University] " The New Public Service: Serving Rathet Than Steering", in Public Administration Review ,Volume 60, No-6,November- December 2000

- Leftwich, 'Governance in the State and the Politics of Development', in *Development and Change*. Vol. 25,1994

- M. Bhattacharya, 'Contextualizing Governance and Development' in B. Chakrabarty and M. Bhattacharya, (eds.) *The Governance Discourse.* New Delhi: Oxford University Press,1998

- Chakrabarty, *Reinventing Public Administration: The India Experience.* New Delhi: Orient Longman, 2007

- U. Medury, *Public administration in the Globalisation Era*, New Delhi: Orient Black Swan, 2010

- Camila Stivers, *Gender Images In Public Administration*, California : Sage Publishers,2002

- Radha Kumar, *The History of Doing*, New Delhi: Kali For Women, 1998

- Sylvia Walby, *Theorising Patriarchy*, Oxford, Basil Blackwell.1997

- Amy. S. Wharton, *The Sociology Of Gender*, West Sussex : Blackwell-Wiley Publishers,2012

- Nivedita Menon [ed.], *Gender and Politics*, Delhi: Oxford University Press, 1999

- Simone De Beauvoir, *The Second Sex*, London: Picador, 1988

- Alison Jaggar, *Feminist Politics And Human Nature*, Brighton: Harvester Press,1983

- Maxine Molyneux and Shahra Razavi , *Gender, Justice, Development and Rights* ,Oxford: Oxford University Press, 2002

CC-7: Perspectives on International Relations and World History

Credit 06

C7T: Perspectives on International Relations and World History

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

A. Studying International Relations

i. How do you understand International Relations: Levels of Analysis
ii. History and IR: Emergence of the International State System
iii. Pre-Westphalia and Westphalia
iv. Post-Westphalia

B. Theoretical Perspectives

i Classical Realism & Neo-Realism
ii. Liberalism & Neoliberalism
iii. Marxist Approaches
iv. Feminist Perspectives
v. Eurocentricism and Perspectives from the Global South

C. An Overview of Twentieth Century IR History

i. World War I: Causes and Consequences
ii. Significance of the Bolshevik Revolution
iii. Rise of Fascism / Nazism
iv. World War II: Causes and Consequences
v. Cold War: Different Phases
vi. Emergence of the Third World
vii. Collapse of the USSR and the End of the Cold War
viii. Post Cold War Developments and Emergence of Other Power Centers of Power

Suggested Readings:

- M. Nicholson, (2002) *International Relations: A Concise Introduction,* New York: Palgrave, p. 1-4.
- R. Jackson and G. Sorensen, (2007) *Introduction to International Relations: Theories and Approches,* 3rd Edition, Oxford: Oxford University Press, pp. 2-7
- S. Joshua. Goldstein and J. Pevehouse, (2007) *International Relations,* New York: Pearson Longman, 2007, pp. 29-35
- C. Brown and K. Ainley, (2009) *Understanding International Relations,* Basingstoke: Palgrave, pp. 1-16.
- K. Mingst and J. Snyder, (2011) *Essential Readings in International Relations,* New York: W.W. Nortan and Company, pp. 1-15.
- M. Smith and R. Little, (eds) (2000) 'Introduction', in *Perspectives on World Politics,* New York: Routledge, 2000, 1991, pp. 1-17.
- J. Baylis and S. Smith (eds), (2008) *The Globalization of World Politics: An Introduction to International Relations,* New York: Oxford University Press, pp. 1-6.
- R. Mansbach and K. Taylor, (2008) *Introduction to Global Politics,* New York: Routledge, pp. 2-32.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Rumki Basu, (ed)(2012) International Politics: Concepts, Theories and Issues New Delhi, Sage.

- R. Mansbach and K. Taylor, (2012) *Introduction to Global Politics*, New York: Routledge, pp. 33-68.

- K. Mingst, (2011) *Essentials of International Relations*, New York: W.W. Nortan and Company, pp. 16-63.

- P. Viotti and M. Kauppi, (2007) *International Relations and World Politics: Security, Economy, Identity*, Pearson Education, pp. 40-85.

- J. Baylis, S. Smith and P. Owens, (2008) *The Globalization of World Politics: An Introduction to International Relations*, New York: Oxford University Press, pp. 36-89.

- R. Mansbach and K. Taylor, (2008) *Introduction to Global Politics*, New York: Routledge, pp. 70-135.

- J Goldstein and J. Pevehouse, (2007) *International Relations*, New York: Pearson Longman, pp. 50-69.

- E. Hobsbawm, (1995) *Age of Extremes: The Short Twentieth Century 1914-1991*, Vikings.

- S. Lawson, (2003) *International Relations*, Cambridge: Polity Press, pp. 21-60.

- J. Singer, (1961) 'The International System: Theoretical Essays', *World Politics*, Vol. 14(1), pp. 77-92.

- B. Buzan, (1995) 'The Level of Analysis Problem in International Relations Reconsidered,' in K. Booth and S. Smith, (eds), *International Relations Theory Today*, Pennsylvania: The Pennsylvania State University Press, pp. 198-216.

- K. Mingst, (2011) *Essentials of International Relations*, New York: W.W. Nortan and Company, pp. 93-178.

- J. Goldstein and J. Pevehouse, (2007) *International Relations*, New York: Pearson Longman, pp. 35-49.

- K. Waltz, (1959) *Man, The State and War*, Columbia: Columbia University Press.

- E. Carr, (1981) *The Twenty Years Crisis, 1919-1939: An Introduction to the Study of International Relations*, London: Macmillan, pp. 63-94.

- H. Morgenthau, (2007) 'Six Principles of Political Realism', in R. Art and R. Jervis, *International Politics*, 8th Edition, New York: Pearson Longman, pp. 7-14.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- T. Dunne and B. Scmidt, (2008) 'Realism', in J. Baylis and S. Smith (eds), *The Globalization of World Politics: An Introduction to International Relations*, New York: Oxford University Press, pp. 90-107.

- K. Waltz, (2007) 'The Anarchic Structure of World Politics', in R. Art and R. Jervis, *International Politics*, 8th Edition, New York: Pearson Longman, pp. 29-49.

- M. Nicholson, (2002) *International Relations: A Concise Introduction*, New York: Palgrave, pp. 6-7.

- H. Bull, (2000) 'The Balance of Power and International Order', in M. Smith and R. Little (eds), *Perspectives on World Politics*, New York: Routledge, pp. 115-124.

- T. Dunne, (2008) 'Liberalism', in J. Baylis and S. Smith (eds.), *The Globalization of World Politics: An Introduction to International Relations*, New York: Oxford University Press, pp. 108-123.

- R. Keohane and J. Nye, (2000) 'Transgovernmental Relations and the International
- Organization', in M. Smith and R. Little (eds.), *Perspectives on World Politics*, New York: Routledge, pp. 229-241.

- J. Goldstein and J. Pevehouse, (2007) *International Relations*, New York: Pearson Longman, pp. 127-137.

- R. Jackson and G. Sorensen, (2007) *Introduction to International Relations: Theories and Approaches*, 3rd Edition, Oxford: Oxford University Press, pp. 97-128.

- Wallerstein, (2000) 'The Rise and Future Demise of World Capitalist System: Concepts for Comparative Analysis', in Michael Smith and Richard Little (eds), *Perspectives on World Politics*, New York: Routledge, pp. 305-317.

- S. Hobden and R. Jones, (2008) 'Marxist Theories of International Relations' in J. Baylis and S. Smith (eds), *The Globalization of World Politics: An Introduction to International Relations*, New York: Oxford University Press, pp. 142-149; 155-158.

- J. Goldstein and J. Pevehouse, (2007) *International Relations*, New York: Pearson Longman, pp. 494-496; 500-503.

- J. Galtung, (2000) 'A Structural Theory of Imperialism', in M. Smith and R. Little, (eds), *Perspectives on World Politics*, New York: Routledge, pp. 292-304.

- Frank, (1966) 'The Development of Underdevelopment' *Monthly Review*, pp. 17-30.

- P. Viotti and M. Kauppi (2007), *International Relations and World Politics: Security, Economy, Identity*, Pearson Education, pp. 40-85.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Modern History Sourcebook: Summary of Wallerstein on World System Theory, Available at http://www.fordham.edu/halsall/mod/Wallerstein.asp, Accessed: 19.04.2013

- J. Tickner, (2007) 'A Critique of Morgenthau's Principles of Political Realism', in R. Art and R. Jervis, *International Politics*, 8th Edition, New York: Pearson Longman, pp. 15-28.

- F. Halliday, (1994) *Rethinking International Relations*, London: Macmillan, pp. 147-166.

- M. Nicholson, *International Relations: A Concise Introduction*, New York: Palgrave, 2002, pp. 120-122. J. Goldstein and J. Pevehouse, (2007) *International Relations*, New York: Pearson Longman, pp. 138-148.

- S. Smith and P. Owens, (2008) 'Alternative Approaches to International Theory' in J. Baylis and S. Smith (eds), *The Globalization of World Politics: An Introduction to International Relations*, New York: Oxford University Press, pp. 181-184.

- Acharya and B. Buzan, (2007) 'Why Is There No Non- Western IR Theory: Reflections on and From Asia', *International Relations Of The Asia- Pacific*, Vol 7(3), pp. 285-286.

- T. Kayaoglu, (2010) 'Westphalian Eurocentrism in I R Theory', in *International Studies Review*, Vol. 12(2), pp. 193-217.

- O. Weaver and A. Tickner, (2009) 'Introduction: Geocultural Epistemologies', in A. Tickner and O. Waever (eds), *International Relations: Scholarship Around The World*, London: Routledge, pp. 1-31.

- R. Kanth (ed), (2009) *The Challenge of Eurocentris: Global Perspectives,Policy & Prospects*, New York: Palgrave-McMillan.

- S. Amin, (2010) *Eurocentrism: Modernity, Religion & Democracy*, New York: Monthly Review Press.

- Hobsbawm, E. (1995) *Age of Extreme: The Short Twentieth Century, 1914—1991*. London: Abacus, pp. 22-35.

- Hobsbawm, E. (1995) *Age of Extreme: The Short Twentieth Century, 1914—1991*. London: Abacus, pp. 54-78.

- Hobsbawm, E. (1995) *Age of Extreme: The Short Twentieth Century, 1914—1991*. London: Abacus, pp. 108-141.

- Carr, E.H. (2004) *International Relations between the Two World Wars: 1919-1939*. New York: Palgrave, pp. 197-231 and 258-278.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Taylor, A.J.P. (1961) *The Origins of the Second World War*. Harmondsworth: Penguin, pp.29- 65. Carrtuthers, S.L. (2005) 'International History, 1900-1945' in Baylis, J. and Smith, S. (eds.) (2008) *The Globalization of World Politics. An Introduction to International Relations*. 4th edn. Oxford: Oxford University Press, pp. 76-84.

- Calvocoressi, P. (2001) *World Politics: 1945—2000*. Essex: Pearson, pp. 3-91.

- Scott, L. (2005) 'International History, 1945-1990' in Baylis, J. and Smith, S. (eds.) (2008) *The Globalization of World Politics. An Introduction to International Relations*. 4th edn. Oxford: Oxford University Press, pp. 93-101.

- Hobsbawm, E. (1995) *Age of Extreme: The Short Twentieth Century, 1914—1991*. London: Abacus, pp. 225-226.

- Hobsbawm, E. (1995) *Age of Extreme: The Short Twentieth Century, 1914—1991*. London: Abacus, pp. 207-222.

- Scott, L. (2005) 'International History, 1945-1990' in Baylis, J. and Smith, S. (eds.) (2008) *The Globalization of World Politics. An Introduction to International Relations*. 4th edn. Oxford: Oxford University Press, pp. 93-101.

- Brezeznski, Z. (2005) *Choice: Global Dominance or Global Leadership*. New York: Basic Books, pp. 85-127.34

- Gill, S. (2005) 'Contradictions of US Supremacy' in Panitch, L. and Leys, C. (eds.) *Socialist Register: The Empire Reloaded*. London: Merlin Press. 2004, London, Merlin Press and New York, Monthly Review Press. *Socialist Register*, pp.24-47.

- Therborn, G. (2006) 'Poles and Triangles: US Power and Triangles of Americas, Asia and Europe' in Hadiz, V.R. (ed.) *Empire and Neo Liberalism in Asia.* London: Routledge, pp.23-37.

CC-8: Political Processes and Institutions in Comparative Perspective

Credit 06

C8T: Political Processes and Institutions in Comparative Perspective

I. Approaches to Studying Comparative Politics

a. Political Culture
b. New Institutionalism

II. Electoral System

Definition and procedures: Types of election system (First Past the Post, Proportional Representation, Mixed Representation)

III. Party System

Historical contexts of emergence of the party system and types of parties

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

IV. Nation-state

What is nation–state? Historical evolution in Western Europe and postcolonial contexts
'Nation' and 'State': debates

V. Democratization

Process of democratization in postcolonial, post- authoritarian and post-communist countries

VI. Federalism

Historical context Federation and Confederation: debates around territorial division of power.

Suggested Readings:

- M. Pennington, (2009) 'Theory, Institutional and Comparative Politics', in J. Bara and Pennington. (eds.) *Comparative Politics: Explaining Democratic System.* Sage Publications, New Delhi, pp. 13-40.

- M. Howard, (2009) 'Culture in Comparative Political Analysis', in M. Lichback and A. Zuckerman, pp. 134- S. (eds.) *Comparative Political: Rationality, Culture, and Structure*. Cambridge: Cambridge University Press.

- B. Rosamond, (2005) 'Political Culture', in B. Axford, et al. *Politics*, London: Routledge, pp. 57-81.

- P. Hall, Taylor and C. Rosemary, (1996) 'Political Science and the Three New Institutionalism', *Political Studies*. XLIV, pp. 936-957.

- L. Rakner, and R. Vicky, (2011) 'Institutional Perspectives', in P. Burnell, et .al. (eds.) *Political in the Developing World.* Oxford: Oxford University Press, pp. 53-70.

- Heywood, (2002) 'Representation, Electoral and Voting', in *Politics*. New York: Palgrave, pp. 223-245.

- Evans, (2009) 'Elections Systems', in J. Bara and M. Pennington, (eds.) *Comparative politics.* New Delhi: Sage Publications, pp. 93-119.

- R. Moser, and S. Ethan, (2004) 'Mixed Electoral Systems and Electoral System Effects: Controlled Comparison and Cross-national Analysis', in *Electoral Studies.* 23, pp. 575-599.

- Cole, (2011) 'Comparative Political Parties: Systems and Organizations', in J. Ishiyama, and

- M. Breuning, (eds) *21st Century Political Science: A Reference Book.* Los Angeles: Sage Publications, pp. 150-158.

- Heywood, (2002) 'Parties and Party System', in *Politics*. New York : Palgrave, pp. 247-268.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Criddle, (2003) 'Parties and Party System', in R. Axtmann, (ed.) *Understanding Democratic Politics: An Introduction.* London: Sage Publications, pp. 134-142.

- W. O'Conner, (1994) 'A Nation is a Nation, is a Sate, is a Ethnic Group, is a …', in J. Hutchinson and A. Smith, (eds.) *Nationalism.* Oxford: Oxford University Press, pp. 36-46. K. Newton, and J. Deth, (2010) 'The Development of the Modern State ', in *Foundations of Comparative Politics: Democracies of the Modern World.* Cambridge: Cambridge University Press, pp. 13-33.

- Heywood, (2002), 'The State', in *Politics*. New York: Palgrave, pp. 85-102

- T. Landman, (2003) 'Transition to Democracy', in *Issues and Methods of Comparative Methods: An Introduction.* London: Routledge, pp. 185-215.

- K. Newton, and J. Deth, (2010) 'Democratic Change and Persistence', in *Foundations of Comparative Politics: Democracies of the Modern World*. Cambridge: Cambridge University Press, pp. 53-67.

- J. Haynes, (1999) 'State and Society', in *The Democratization.* Oxford: Blackwell, pp. 20-38; 39-63.

- Smith, (2003) 'Democratization in the Third World', in *Understanding Third World Politics: Theories of Political Change and Development*. London: Palgrave Macmillan, pp.250-274.

- M. Burgess, (2006) *Comparative Federalism: Theory and Practice*. London: Routledge, pp. 135-161.

- R. Watts, (2008) 'Introduction', in *Comparing Federal Systems.* Montreal and Kingston: McGill Queen's University Press, pp. 1-27

- R. Saxena, (2011) 'Introduction', in Saxena, R (eds.) *Varieties of Federal Governance: Major Contemporary Models.* New Delhi: Cambridge University Press, pp. xii-x1.

CC-9: Public Policy and Administration in India **Credit 06**

C9T: Public Policy and Administration in India

I. Public Policy

a. Definition, characteristics and models
b. Public Policy Process in India

II. Decentralization

a. Meaning, significance and approaches and types
b. Local Self Governance: Rural and Urban

III. Budget

a. Concept and Significance of Budget
b. Budget Cycle in India

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

c. Various Approaches and Types Of Budgeting

IV. Citizen and Administration Interface

a. Public Service Delivery
b. Redressal of Public Grievances: RTI, Lokpal, Citizens' Charter and E-Governance

V. Social Welfare Administration

a. Concept and Approaches of Social Welfare
b. Social Welfare Policies:

- ✓ **Education**: Right To Education,
- ✓ **Health:** National Health Mission,
- ✓ **Food**: Right To Food Security
- ✓ **Employment**: MNREGA

Suggested Readings :

- T. Dye, (1984) *Understanding Public Policy,* 5th Edition. U.S.A: Prentice Hall
- R.B. Denhardt and J.V. Denhardt, (2009) *Public Administration,* New Delhi: Brooks/Cole
- J. Anderson, (1975) *Public Policy Making*. New York: Thomas Nelson and sons Ltd.
- M. Howlett, M. Ramesh, and A. Perl, (2009), *Studying Public Policy: Policy Cycles and Policy subsystems,* 3rd edition, Oxford: Oxford University Press
- T. Dye, (2002) *Understanding Public Policy*, New Delhi: Pearson
- Y. Dror, (1989) *Public Policy Making Reexamined.* Oxford: Transaction Publication Satyajit Singh and Pradeep K. Sharma [eds.] *Decentralisation: Institutions And Politics In Rural India*, OUP,2007
- D. A. Rondinelli and S.Cheema, *Decentralisation and Development*, Beverly Hills: Sage Publishers, 1983
- N.G.Jayal, *Democracy and The State: Welfare, Secular and Development in Contemporary India*, Oxford : Oxford University Press,1999
- Bidyut Chakrabarty, *Reinventing Public Administration: The Indian Experience*, Orient Longman,2007
- Noorjahan Bava, *Development Policies and Administration in India*, Delhi: Uppal Publishers, 2001
- Gabriel Almond and Sidney Verba, *The Civic Culture*, Boston: Little Brown, 1965
- M.P.Lester, *Political Participation- How and Why do People Get Involved in Politics* Chicago: McNally, 1965

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Erik-Lane, J. (2005) *Public Administration and Public Management: The Principal Agent Perspective.* New York: Routledge

- Henry, N.(1999) *Public Administration and Public Affairs.* New Jersey:Prentice Hall

- Caiden, N.(2004) ' Public Budgeting Amidst Uncertainity and Instability', in Shafritz, J.M. & Hyde, A.C. (eds.) *Classics of Public Administration.* Belmont: Wadsworth

- R. Putnam , *Making Democracy Work* , Princeton University Press, 1993

- Jenkins, R. and Goetz, A.M. (1999) 'Accounts and Accountability: Theoretical Implications of the Right to Information Movement in India', in *Third World Quarterly.* June Sharma, P.K. & Devasher, M. (2007) 'Right to Information in India' in Singh, S. and Sharma, P. (eds.) *Decentralization: Institutions and Politics in Rural India*. New Delhi: Oxford University Press

- Vasu Deva, *E-Governance In India: A Reality*, Commonwealth Publishers, 2005

- *World Development Report*, World Bank, Oxford University Press, 1992.

- M.J.Moon, *The Evolution of Electronic Government Among Municipalities: Rheoteric or Reality*, American Society For Public Administration, Public Administration Review, Vol 62, Issue 4, July –August 2002

- Pankaj Sharma, E-*Governance: The New Age Governance*, APH Publishers, 2004

- Pippa Norris, *Digital Divide: Civic Engagement, Information Poverty and the Internet in Democratic Societies*, Cambridge: Cambridge University Press, 2001.

- Stephan Goldsmith and William D. Eggers, *Governing By Network: The New Shape of the Public Sector*, Brookings Institution [Washington], 2004

- United Nation Development Programme, *Reconceptualising Governance*, New York, 1997 Mukhopadyay, A. (2005) 'Social Audit', in *Seminar.* No.551.

- Jean Drèze and Amartya Sen, *India, Economic Development and Social Opportunity*, Oxford: Oxford University Press, 1995

- J.Dreze and Amartya Sen, *Indian Development: Selected Regional Perspectives*, Oxford: Clareland Press, 1997

- Reetika Khera- Rural Poverty And Public Distribution System, EPW, Vol-XLVIII, No.45-46, Nov 2013

- Pradeep Chaturvedi [ed.], *Women And Food Security: Role of Panchayats*, Concept Publishers, 1997 National Food Security Mission: nfsm.gov.in/Guidelines/XIIPlan/NFSMXII.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Jugal Kishore, *National Health Programs of India: National Policies and Legislations*, Century Publications, 2005

- K. Lee and Mills, *The Economic Of Health In Developing Countries*, Oxford: Oxford University Press, 1983

- K. Vijaya Kumar, *Right to Education Act 2009: Its Implementation as to Social Development in India*, Delhi: Akansha Publishers, 2012.

- Marma Mukhopadhyay and Madhu Parhar(ed.) *Education in India: Dynamics of Development*, Delhi: Shipra Publications, 2007

- Nalini Juneja, *Primary Education for All in the City of Mumbai: The Challenge Set By Local Actors'*, International Institute For Educational Planning, UNESCO: Paris, 2001

- Surendra Munshi and Biju Paul Abraham [eds.] *Good Governance, Democratic Societies and Globalisation*, Sage Publishers, 2004

- Basu Rumki (2015) *Public Administration in India Mandates, Performance and Future Perspectives*, New Delhi, Sterling Publishers
  - ✓ www.un.org/millenniumgoals
  - ✓ http://www.cefsindia.org
  - ✓ www.righttofoodindia.org

CC-10: Global Politics **Credit 06**

C10T: Global Politics

I. Globalization: Conceptions and Perspectives

a. Understanding Globalization and its Alternative Perspectives
b. Political: Debates on Sovereignty and Territoriality
c. Global Economy: Its Significance and Anchors of Global Political Economy: IMF,
d. World Bank, WTO, TNCs
e. Cultural and Technological Dimension
f. Global Resistances (Global Social Movements and NGOs)

II. Contemporary Global Issues

a. Ecological Issues: Historical Overview of International Environmental Agreements, Climate Change, Global Commons Debate
b. Proliferation of Nuclear Weapons
c. International Terrorism: Non-State Actors and State Terrorism; Post 9/11 developments
d. Migration
e. Human Security

III. Global Shifts: Power and Governance

Suggested Readings :

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- G. Ritzer, (2010) *Globalization: A Basic Text*, Sussex: Wiley-Blackwell, pp. 33-62.
- M. Strager, (2009) *Globalization: A Very Short Introduction,* London: Oxford University Press, pp. 1-16.
- R. Keohane and J. Nye Jr, (2000) 'Globalization: What's New? What's Not? (And So What?)', in *Foreign Policy*, No 118, pp. 104-119.
- McGrew, (2011) 'Globalization and Global Politics', in J. Baylis, S. Smith and P. Owens (eds.) *Globalization of World Politics: An Introduction to International Relations*, New York: Oxford University Press, pp. 14-31.
- Heywood, (2011) *Global Politics,* New York: Palgrave-McMillan, pp. 1-24. W. Ellwood, (2005) *The No-nonsense Guide to Globalization,* Jaipur: NI-Rawat Publications, pp. 12-23.
- Heywood, (2011) *Global Politics,* New York: Palgrave-McMillan, pp. 112-134.
- R. Keohane, (2000) 'Sovereignty in International Society', in D. Held and A. McGrew (eds.) *The Global Trans-Formations Reader,* Cambridge: Polity Press, pp. 109-123.
- K. Shimko, (2005) *International Relations: Perspectives and Controversies,* New York: Houghton Mifflin, pp. 195-219.
- Heywood, (2011) *Global Politics,* New York: Palgrave-McMillan, pp. 454-479.
- T. Cohn, (2009) *Global Political Economy: Theory and Practice,* pp. 130-140 (IMF), 208-218 (WTO).
- R. Picciotto, (2003) 'A New World Bank for a New Century', in C. Roe Goddard et al., *International Political: State-Market Relations in a Changing Global Order,* Boulder: Lynne Reinner, pp. 341-351.
- Narlikar, (2005) *The World Trade Organization: A Very Short Introduction,* New York: Oxford University Press, pp. 22-98.
- J. Goldstein, (2006) *International Relations,* New Delhi: Pearson, pp. 392-405 (MNC). P. Hirst, G. Thompson and S. Bromley, (2009) *Globalization in Question,* Cambridge: Polity Press, pp. 68-100 (MNC).
- G. Ritzer, (2010) *Globalization: A Basic Text,* Sussex: Wiley-Blackwell, pp. 180-190.
- F. Lechner and J. Boli (ed.), (2004) *The Globalization Reader,* London: Blackwell, pp. 236-239(WTO).
- D. Held et al, (1999) *Global Transformations: Politics, Economics and Culture,* California: Stanford University Press, pp. 242-282 (MNC).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- T. Cohn, (2009) *Global Political Economy*, New Delhi: Pearson, pp. 250-323 (MNC).
- D. Held and A. McGrew (eds.), (2002) *Global Transformations Reader: Politics, Economics and Culture*, Cambridge: Polity Press, pp. 1-50; 84-91.
- M. Steger, (2009) 'Globalization: A Contested Concept', in *Globalization: A Very Short Introduction*, London: Oxford University Press, pp. 1-16.
- Appadurai, (2000) 'Grassroots Globalization and the Research Imagination', in *Public Culture*, Vol. 12(1), pp. 1-19.
- J. Beynon and D. Dunkerley, (eds.), (2012) *Globalisation: The Reader*, New Delhi: Rawat Publications, pp. 1-19.
- Vanaik, (ed.), (2004) *Globalization and South Asia: Multidimensional Perspectives*, New Delhi: Manohar Publications, pp. 171-191, 192-213, 301-317, 335-357.
- G. Ritzer, (2010) *Globalization: A Basic Text*, Sussex: Wiley-Blackwell, pp. 487-504.
- R. O'Brien et al., (2000) *Contesting Global Governance: Multilateral Economic Institutions and Global Social Movements*, Cambridge: Cambridge University Press, pp. 1-23.
- J. Fisher, (1998) *Non-Governments: NGOs and Political Development in the Third World*, Connecticut: Kumarian Press, pp. 1- 37 (NGO).
- G. Laxter and S. Halperin (eds.), (2003) *Global Civil Society and Its Limits*, New York: Palgrave, pp. 1-21.
- Heywood, (2011) *Global Politics*, New York: Palgrave-McMillan, pp. 150-156 (NGO).
- P. Willets, (2011) 'Trans-National Actors and International Organizations in Global Politics', in J. Baylis, S. Smith and P. Owens (eds.) *Globalization of World Politics*, New York: Oxford University Press, pp. 334-342. (NGO)
- J. Volger, (2011) 'Environmental Issues', in J. Baylis, S. Smith and P. Owens (eds.) *Globalization of World Politics*, New York: Oxford University Press, pp. 348-362.
- Heywood, (2011) *Global Politics*, New York: Palgrave, pp. 383-411. N. Carter, (2007) *The Politics of Environment: Ideas, Activism, Policy*, Cambridge: Cambridge University Press, pp. 13-81.P. Bidwai, (2011) 'Durban: Road to Nowhere', in *Economic and Political Weekly*, Vol.46, No.53, December, pp. 10-12.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- K.Shimko, (2005) *International Relations Perspectives and Controversies*, New York:Hughton-Mifflin, pp. 317-339.
- D. Howlett, (2011) 'Nuclear Proliferation', in J. Baylis, S. Smith and P. Owens (eds.) *Globalization of World Politics,* New York: Oxford University Press, pp. 384-397.
- P. Viotti and M. Kauppi, (2007) *International Relations and World Politics: Security, Economy and Identity,* New Delhi: Pearson, pp. 238-272.
- Heywood, (2011) *Global Politics,* New York: Palgrave, pp. 264-281.
- P. Viotti and M. Kauppi, (2007) *International Relations,* New Delhi: Pearson, pp. 276-307.
- Heywood, (2011) *Global Politics,* New York: Palgrave, pp. 282-301.
- J. Kiras, (2011) 'Terrorism and Globalization', in J. Baylis, S. Smith and P. Owens (eds.) *Globalization of World Politics,* New York: Oxford University Press, pp. 366-380.
- Vanaik, (2007) *Masks of Empire,* New Delhi: Tulika, pp. 103-128.
- G. Ritzer, (2010) *Globalization: A Basic Text,* Sussex: Wiley-Blackwell, pp. 298-322.
- S. Castles, (2012) 'Global Migration', in B. Chimni and S. Mallavarapu (eds.) *International Relations: Perspectives For the Global South*, New Delhi: Pearson, pp. 272-285.
- Acharya, (2011) 'Human Security', in J. Baylis, S. Smith and P. Owens (eds.) *Globalization of World Politics,* New York: Oxford University Press, pp. 480-493.
- S. Tadjbakhsh and A. Chenoy, (2007) *Human Security*, London: Routledge, pp. 13-19; 123- 127; 236-243.
- Acharya, (2001) 'Human Security: East versus West', in *International Journal,* Vol. 56, no. 3, pp. 442-460.
- J. Rosenau, (1992) 'Governance, Order, and Change in World Politics', in J. Rosenau, and E. Czempiel (eds.) *Governance without Government: Order and Change in World Politics,* Cambridge: Cambridge University Press, pp. 1-29.
- Kumar and D. Messner (eds), (2010) *Power Shifts and Global Governance: Challenges from South and North,* London: Anthem Press.
- P. Dicken, (2007) *Global Shift: Mapping the Changing Contours of the World Economy*, New York: The Guilford Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- J. Close, (2001) 'The Global Shift: A quantum leap in human evolution', Available at http://www.stir-global-shift.com/page22.php, Accessed: 19.04.2013.

CC-11: Classical Political Philosophy **Credit 06**

C11T: Classical Political Philosophy

I. Text and Interpretation
II. Antiquity
Plato
Philosophy and Politics, Theory of Forms, Justice, Philosopher King/Queen, Communism
Presentation theme: Critique of Democracy; Women and Guardianship, Censorship

Aristotle
Forms, Virtue, Citizenship, Justice, State and Household
Presentation themes: Classification of governments; man as zoon politikon

III. Interlude:
Machiavelli
Virtu, Religion, Republicanism
Presentation themes: morality and statecraft; vice and virtue

IV. Possessive Individualism
Hobbes
Human nature, State of Nature, Social Contract, State
Presentation themes: State of nature; social contract; Leviathan; atomistic individuals.

Locke
Laws of Nature, Natural Rights, Property,
Presentation themes: Natural rights; right to dissent; justification of property

Suggested Readings :

- T. Ball, (2004) 'History and Interpretation' in C. Kukathas and G. Gaus, (eds.) *Handbook of Political Theory*, London: Sage Publications Ltd. pp. 18-30.

- B. Constant, (1833) 'The Liberty of the Ancients Compared with that of the Moderns', in D. Boaz, (ed), (1997) *The Libertarian Reader*, New York: The Free Press.

- J. Coleman, (2000) 'Introduction', in *A History of Political Thought: From Ancient Greece to Early Christianity*, Oxford: Blackwell Publishers, pp. 1-20.

- Q. Skinner, (2010) 'Preface', in *The Foundations of Modern Political Thought Volume I*,Cambridge: Cambridge University Press pp. ix-xv.

- Skoble and T. Machan, (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education, pp. 9-32.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- R. Kraut, (1996) 'Introduction to the study of Plato', in R. Kraut (ed.) *The Cambridge Companion to Plato*. Cambridge: Cambridge University Press, pp. 1-50.

- Reeve, (2009) 'Plato', in D. Boucher and P. Kelly, (eds) *Political Thinkers: From Socrates to the Present,* Oxford: Oxford University Press, pp. 62-80

- S. Okin, (1992) 'Philosopher Queens and Private Wives', in S. Okin *Women in Western Political Thought,* Princeton: Princeton University Press, pp. 28-50

- R. Kraut, (1996) 'The Defence of Justice in Plato's Republic', in R. Kraut (ed.) *The Cambridge Companion to Plato.* Cambridge: Cambridge University Press, pp. 311-337

- T. Saunders, (1996) 'Plato's Later Political Thought', in R. Kraut (ed.) *The Cambridge Companion to Plato.* Cambridge: Cambridge University Press, pp. 464-492.

- Skoble and T. Machan, (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education, pp. 53-64.

- T. Burns, (2009) 'Aristotle', in D. Boucher, and P. Kelly, (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp.81-99.

- Taylor, (1995) 'Politics', in J. Barnes (ed.), *The Cambridge Companion to Aristotle*. Cambridge: Cambridge University Press, pp. 232-258

- J. Coleman, (2000) 'Aristotle', in J. Coleman *A History of Political Thought: From Ancient Greece to Early Christianity,* Oxford: Blackwell Publishers, pp.120-186

- Hutchinson, (1995) 'Ethics', in J. Barnes, (ed.), *The Cambridge Companion to Aristotle* Cambridge: Cambridge University Press, pp. 195-232.

- Skoble and T. Machan, (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education, pp. 124-130

- Q. Skinner, (2000) 'The Adviser to Princes', in *Machiavelli: A Very Short Introduction*, Oxford: Oxford University Press, pp. 23-53

- J. Femia, (2009) 'Machiavelli', in D. Boucher, and P. Kelly, (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp. 163-184

- Q. Skinner, (2000) 'The Theorist of Liberty', in *Machiavelli: A Very Short Introduction*. Oxford: Oxford University Press, pp. 54-87.

- Skoble and T. Machan, (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education pp. 131-157.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Baumgold, (2009) 'Hobbes', in D. Boucher and P. Kelly (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp. 189-206.

- Macpherson (1962) *The Political Theory of Possessive Individualism: Hobbes to Locke*. Oxford University Press, Ontario, pp. 17-29.

- Hampsher-Monk, (2001) 'Thomas Hobbes', in *A History of Modern Political Thought: Major Political Thinkers from Hobbes to Marx,* Oxford: Blackwell Publishers, pp. 1-67.

- Ryan, (1996) 'Hobbes's political philosophy', in T. Sorell, (ed.) *Cambridge Companion to Hobbes*. Cambridge: Cambridge University Press, pp. 208-245.

- Skoble and T. Machan, (2007) *Political Philosophy: Essential Selections*. New Delhi: Pearson Education, pp. 181-209.

- J. Waldron, (2009) 'John Locke', in D. Boucher and P. Kelly, (eds) *Political Thinkers: From Socrates to the Present.* Oxford: Oxford University Press, pp. 207-224

- Macpherson, (1962) *The Political Theory of Possessive Individualism: Hobbes to Locke*. Oxford University Press, Ontario, pp. 194-214.

- R. Ashcraft, (1999) 'Locke's Political Philosophy', in V. Chappell (ed.) *The Cambridge Companion to Locke*, Cambridge. Cambridge University Press, pp. 226-251.

- Hampsher-Monk, (2001) *A History of Modern Political Thought: Major Political Thinkers from Hobbes to Marx,* Oxford: Blackwell Publishers, pp. 69-116

CC-12: Indian Political Thought-I **Credit 06**

C12T: Indian Political Thought-I

I. Traditions of Pre-colonial Indian Political Thought
   a. Brahmanic and Shramanic
   b. Islamic and Syncretic.

II. Ved Vyasa (Shantiparva): Rajadharma

III. Manu: Social Laws

IV. Kautilya: Theory of State

V. Aggannasutta (Digha Nikaya): Theory of kingship

VI. Barani: Ideal Polity

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

VII. Abul Fazal: Monarchy

VIII. Kabir: Syncretism

Suggested readings :

- B. Parekh, (1986) 'Some Reflections on the Hindu Tradition of Political Thought', in T. Pantham, and K. Deutsch (eds.), *Political Thought in Modern India*, New Delhi: Sage Publications, pp. 17- 31.

- Altekar, (1958) 'The Kingship', in *State and Government in Ancient India,* 3rd edition, Delhi: Motilal Banarsidass, pp. 75-108.

- M. Shakir, (1986) 'Dynamics of Muslim Political Thought', in T. Pantham, and K. Deutsch (eds.), *Political Thought in Modern India*, New Delhi: Sage Publications, pp. 142- 160

- G. Pandey, (1978) *Sraman Tradition: Its History and Contribution to Indian Culture*, Ahmedabad: L. D. Institute of Indology, pp. 52-73.

- S. Saberwal, (2008) 'Medieval Legacy', in *Spirals of Contention*, New Delhi: Routledge, pp.1-

- *The Mahabharata* (2004), Vol. 7 (Book XI and Book XII, Part II), Chicago and London: University of Chicago Press.

- V. Varma, (1974) *Studies in Hindu Political Thought and Its Metaphysical Foundations*, Delhi: Motilal Banarsidass, pp. 211- 230.

- Chaturvedi, (2006) 'Dharma-The Foundation of Raja-Dharma, Law and Governance', in *The Mahabharta: An Inquiry in the Human Condition*, Delhi: Orient Longman, pp. 418- 464.

- Manu, (2006) 'Rules for Times of Adversity', in P. Olivelle, (ed. & trans.) *Manu's Code of Law: A Critical Edition and Translation of the Manava- Dharamsastra*, New Delhi: OUP, pp. 208-213.

- V. Mehta, (1992) 'The Cosmic Vision: Manu', in *Foundations of Indian Political Thought*,Delhi: Manohar, pp. 23- 39.

- R. Sharma, (1991) 'Varna in Relation to Law and Politics (c 600 BC-AD 500)', in *Aspects of Political Ideas and Institutions in Ancient India*, Delhi: Motilal Banarsidass, pp. 233- 251.

- P. Olivelle, (2006) 'Introduction', in *Manu's Code of Law: A Critical Edition and Translation of the Manava –Dharmasastra*, Delhi: Oxford University Press, pp. 3-50.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Kautilya, (1997) 'The Elements of Sovereignty' in R. Kangle (ed. and trns.), *Arthasastra of Kautilya*, New Delhi: Motilal Publishers, pp. 511- 514.

- V. Mehta, (1992) 'The Pragmatic Vision: Kautilya and His Successor', in *Foundations of Indian Political Thought,* Delhi: Manohar, pp. 88- 109.

- R. Kangle, (1997) *Arthashastra of Kautilya-Part-III: A Study,* Delhi: Motilal Banarsidass, rpt., pp. 116- 142.

- J. Spellman, (1964) 'Principle of Statecraft', in *Political Theory of Ancient India: A Study of Kingship from the Earliest time to Ceirca AD 300,* Oxford: Clarendon Press, pp. 132- 170.

- S. Collins, (ed), (2001) *Agganna Sutta*: An Annotated Translation, New Delhi: Sahitya Academy, pp. 44-49.

- S. Collins, (2001) 'General Introduction', in *Agganna Sutta: The Discussion on What is Primary (An Annotated Translation from Pali),* Delhi: *Sahitya Akademi,* pp. 1- 26.

- Gokhale, (1966) 'The Early *Buddhist* View of the State', in *The Journal of Asian Studies,* Vol. XXVI, (1), pp. 15- 22.

- L. Jayasurya, 'Budhism, Politics and Statecraft', Available at *ftp.buddhism.org/Publications/.../Voll1_03_Laksiri%20Jayasuriya.pdf,*Accessed: 19.04.2013.

- Habib, (1998) 'Ziya Barni's Vision of the State', in *The Medieval History Journal,* Vol. 2, (1), pp. 19- 36.

- M. Alam, (2004) 'Sharia Akhlaq', in *The Languages of Political Islam in India 1200- 1800,* Delhi: Permanent Black, pp. 26- 43

- Fazl, (1873) *The Ain-i Akbari* (translated by H. Blochmann), Calcutta: G. H. Rouse, pp. 47-57.

- V. Mehta, (1992) 'The Imperial Vision: Barni and Fazal', in *Foundations of Indian Political Thought,* Delhi: Manohar, pp. 134- 156.

Additional Readings:

- M. Alam, (2004) 'Sharia in Naserean Akhlaq', in *Languages of Political Islam in India1200-1800,* Delhi: Permanent Black, pp. 46- 69.

- Habib, (1998) 'Two Indian Theorist of The State: Barani and Abul Fazal', in *Proceedings of the Indian History Congress*. Patiala, pp. 15- 39.

- Kabir. (2002) *The Bijak of Kabir,* (translated by L. Hess and S. Singh), Delhi: Oxford University Press, No. 30, 97, pp. 50- 51 & 69- 70.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- V. Mehta, (1992) *Foundation of Indian Political Thought*, Delhi: Manohar, pp. 157- 183.

- G. Omvedt, (2008) 'Kabir and Ravidas, Envisioning Begumpura', in *Seeking Begumpura: The Social Vision of Anti Caste Intellectual*, Delhi: Navayana, pp. 91-107.

Additional Reading:

- L. Hess and S. Singh, (2002) 'Introduction', in *The Bijak of Kabir*, New Delhi: Oxford University Press, pp. 3- 35.

CC-13: Modern Political Philosophy **Credit 06**

C13T: Modern Political Philosophy

I. Modernity and its discourses

This section will introduce students to the idea of modernity and the discourses around modernity. Two essential readings have been prescribed.

II. Romantics

a) **Jean Jacques Rousseau**
Presentation themes: General Will; local or direct democracy; self-government; origin of inequality.

b) **Mary Wollstonecraft**
Presentation themes: Women and paternalism; critique of Rousseau's idea of education; legal rights

III. Liberal socialist

John Stuart Mill
Presentation themes: Liberty, suffrage and subjection of women, right of minorities; utility principle.

IV. Radicals

a) **Karl Marx**
Presentation themes: Alienation; difference with other kinds of materialism; class struggle

b) Alexandra Kollontai
Presentation themes: Winged and wingless Eros; proletarian woman; socialization of housework; disagreement with Lenin

Suggested Readings :

- Kant. (1784) 'What is Enlightenment?,' available at http://theliterarylink.com/kant.html, Accessed: 19.04.2013

- S. Hall (1992) 'Introduction', in *Formations of Modernity* UK: Polity Press pages 1-16

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- B. Nelson, (2008) *Western Political Thought*. New York: Pearson Longman, pp. 221-255.

- M. Keens-Soper, (2003) 'Jean Jacques Rousseau: The Social Contract', in M. Forsyth and M. Keens-Soper, (eds) *A Guide to the Political Classics: Plato to Rousseau.* New York: Oxford University Press, pp. 171-202.

- C. Jones, (2002) 'Mary Wollstonecraft's *Vindications* and their Political Tradition' in C. Johnson, (ed.) *The Cambridge Companion to Mary Wollstonecraft*, Cambridge: Cambridge University Press, pp. 42-58.

- S. Ferguson, (1999) 'The Radical Ideas of Mary Wollstonecraft', in *Canadian Journal of Political Science* XXXII (3), pp. 427-50, Available at http://digitalcommons.ryerson.ca/politics, Accessed: 19.04.2013.

- H. Magid, (1987) 'John Stuart Mill', in L. Strauss and J. Cropsey, (eds), *History of Political Philosophy*, 2nd edition. Chicago: Chicago University Press, pp. 784-801.

- P. Kelly, (2003) 'J.S. Mill on Liberty', in D. Boucher, and P. Kelly, (eds.) *Political Thinkers: From Socrates to the Present*. New York: Oxford University Press, pp. 324-359.

- J. Cropsey, (1987) 'Karl Marx', in L. Strauss and J. Cropsey, (eds) *History of Political Philosophy*, 2ndEdition. Chicago: Chicago University Press, pp. 802-828.

- L. Wilde, (2003) 'Early Marx', in D. Boucher and P. Kelly, P. (eds) *Political Thinkers: From Socrates to the Present.* New York: Oxford University Press, pp. 404-435.

- V. Bryson, (1992) 'Marxist Feminism in Russia' in *Feminist Political Theory*, London: Palgrave Macmillan, pp. 114-122

- C. Sypnowich, (1993) 'Alexandra Kollontai and the Fate of Bolshevik Feminism' *Labour/Le Travail* Vol. 32 (Fall 1992) pp. 287-295

- Kollontai (1909), *The Social Basis of the Woman Question*, Available at http://www.marxists.org/archive/kollonta/1909/social-basis.htm, Accessed: 19.04.2013

- Bloom, (1987) 'Jean-Jacques Rousseau', in Strauss, L. and Cropsey, J. (eds.) *History ofPolitical Philosophy*, 2nd edition. Chicago: Chicago University Press, pp. 559-580.

- Selections from *A Vindication of the Rights of Woman*, Available at http://oregonstate.edu/instruct/phl302/texts/wollstonecraft/womana. html#CHAPTER%20II, Accessed: 19.04.2013.

- Skoble and T. Machan, (2007) *Political Philosophy: Essential Selections*, New Delhi:Pearson Education, pp. 328-354.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Ollman (1991) *Marxism: An Uncommon Introduction,* New Delhi: Sterling Publishers.

- G. Blakely and V. Bryson (2005) *Marx and Other Four Letter Words,* London: Pluto

- Skoble, and T. Machan, (2007) *Political Philosophy: Essential Selections*, New Delhi: Pearson Education, pp. 286-327.

- Kollontai, (1977) 'Social Democracy and the Women's Question', in *Selected Writings of Alexandra Kollontai,* London: Allison & Busby, pp. 29-74.

- Kollontai, (1977) 'Make Way for Winged Eros: A Letter to the Youth', in *Selected Writings of Alexandra Kollontai* Allison & Busby, pp. 201-292.

- Porter, (1980) *Alexandra Kollontai: The Lonely Struggle of the Woman who defied Lenin,* New York: Dutton Children's Books.

CC-14: Indian Political Thought-II **Credit 06**

C14T: Indian Political Thought-II

I. Introduction to Modern Indian Political Thought
II. Rammohan Roy: Rights
III. Pandita Ramabai: Gender
IV. Vivekananda: Ideal Society
V. Gandhi: Swaraj
VI. Ambedkar: Social Justice
VII. Tagore: Critique of Nationalism
VIII. Iqbal: Community
IX. Savarkar: Hindutva
X. Nehru: Secularism
XI. Lohia: Socialism

Suggested Readings :

- V. Mehta and T. Pantham (eds.), (2006) *'A Thematic Introduction to Political Ideas in Modern India: Thematic Explorations, History of Science, Philosophy and Culture in Indian civilization'* Vol. 10, Part: 7, New Delhi: Sage Publications, pp. xxvii-ixi.

- D. Dalton, (1982) 'Continuity of Innovation', in *Indian Idea of Freedom: Political Thought of Swami Vivekananda, Aurobindo Ghose, Rabindranath Tagore and Mahatma Gandhi,* Academic Press: Gurgaon, pp. 1-28.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- R. Roy, (1991) 'The Precepts of Jesus, the Guide to Peace and Happiness', S. Hay, (ed.) *Sources of Indian Traditio, Vol. 2*. Second Edition. New Delhi: Penguin, pp. 24-29.

- C. Bayly, (2010) 'Rammohan and the Advent of Constitutional Liberalism in India 1800-1830', in Sh. Kapila (ed.), *An intellectual History for India,* New Delhi: Cambridge University Press, pp. 18- 34.

- T. Pantham, (1986) 'The Socio-Religious Thought of Rammohan Roy', in Th. Panthom and K. Deutsch, (eds.) *Political Thought in Modern India,* New Delhi: Sage, pp.32-52.

- S. Sarkar, (1985) 'Rammohan Roy and the break With the Past', in *A Critique on colonial India,* Calcutta: Papyrus, pp. 1-17.

- P. Ramabai, (2000) 'Woman's Place in Religion and Society', in M. Kosambi (ed.), *Pandita Ramabai Through her Own Words: Selected Works*, New Delhi: Oxford University Press, pp. 150-155.

- M. Kosambi, (1988) 'Women's Emancipation and Equality: Pandita Ramabai's Contribution to Women's Cause', in *Economic and Political Weekly*, Vol. 23(44), pp. 38-49.

- U. Chakravarti, (2007) *Pandita Ramabai - A Life and a Time*, New Delhi: Critical Quest, pp. 1-

- G. Omvedt, (2008) 'Ramabai: Women in the Kingdom of God', in *Seeking Begumpura*: *The Social Vision of Anti Caste Intellectuals*, New Delhi: Navayana. pp. 205-224.

- S. Vivekananda, (2007) 'The Real and the Apparent Man', S. Bodhasarananda (ed.), *Selections from the Complete Works of Swami Vivekananda*, Kolkata: Advaita Ashrama, pp. 126-129.

- Sen, (2003) 'Swami Vivekananda on History and Society', in *Swami Vivekananda,* Delhi: Oxford University Press, pp. 62- 79.

- H. Rustav, (1998) 'Swami Vivekananda and the Ideal Society', in W. Radice (ed.), *Swami Vivekananda and the Modernisation of Hinduism,* Delhi: Oxford University Press, pp. 264-280.

- Raghuramaraju, (2007) 'Swami and Mahatma, Paradigms: State and Civil Society', in *Debates in Indian Philosophy: Classical, Colonial, and Contemporary*, Delhi: Oxford University Press, pp. 29-65.

- M. Gandhi, (1991) 'Satyagraha: Transforming Unjust Relationships through the Power of the Soul', in S. Hay (ed.), *Sources of Indian Tradition,* Vol. 2.Second Edition, New Delhi: Penguin, pp. 265-270.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Parel, (ed.), (2002) 'Introduction', in *Gandhi, freedom and Self Rule,* Delhi: Vistaar Publication.

- D. Dalton, (1982) *Indian Idea of Freedom: Political Thought of Swami Vivekananda,AurobindoGhose, Mahatma Gandhi and Rabindranath Tagore,* Gurgaon: The AcademicPress, pp. 154- 190.

- R. Terchek, (2002) 'Gandhian Autonomy in Late Modern World', in A. Parel (ed.), *Gandhi,Freedom and Self Rule*. Delhi: Sage.

- Ambedkar, (1991) 'Constituent Assembly Debates', S. Hay (ed.), *Sources of IndianTradition, Vol. 2,* Second Edition, New Delhi: Penguin, pp. 342-347.

- V. Rodrigues, (2007) 'Good society, Rights, Democracy Socialism', in S. Thorat and Aryama(eds.), *Ambedkar in Retrospect - Essays on Economics, Politics and Society*, Jaipur*: IIDS* andRawat Publications.

- Mungekar, (2007) 'Quest for Democratic Socialism', in S. Thorat, and Aryana (eds.), *Ambedkar in Retrospect - Essays on Economics, Politics and Society,* Jaipur*: IIDS* and Rawat Publications, pp. 121-142.

- P. Chatterjee, (2005) 'Ambedkar and the Troubled times of Citizenship', in V. Mehta and Th. Pantham (eds.), *Political ideas in modern India: Thematic Explorations*, New Delhi: Sage, pp. 73-92.

- R. Tagore, (1994) 'The Nation', S. Das (ed.), *The English Writings of Rabindranath Tagore*, *Vol. 3*, New Delhi: Sahitya Akademi, pp. 548-551.

- R. Chakravarty, (1986) 'Tagore, Politics and Beyond', in Th. Panthams and K. Deutsch (eds.), *Political Thought in Modern India*, New Delhi: Sage, pp. 177-191.

- M. Radhakrishnan, and Debasmita, (2003) 'Nationalism is a Great Menace: Tagore and Nationalism' in P. Hogan, Colm and L. Pandit, (eds.) *Rabindranath Tagore: Universality and Tradition,* London: Rosemont Publishing and Printing Corporation, pp. 29-39.

- Nandy, (1994) 'Rabindranath Tagore & Politics of Self', in *Illegitimacy of Nationalism*, Delhi: Oxford University Press, pp. 1-50.

- M. Iqbal, (1991) 'Speeches and Statements', in S. Hay (ed.), *Sources of Indian Tradition, Vol. 2,* Second Edition, New Delhi: Penguin, pp. 218-222.

- Engineer, (1980) 'Iqbal's Reconstruction of Religious Thought in Islam', in *Social Scientist*, Vol.8 (8), pp. 52-63.

- Madani, (2005) *Composite Nationalism and Islam*, New Delhi: Manohar, pp. 66-91.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- L. Gordon-Polonskya, (1971) 'Ideology of Muslim Nationalism', in H. Malik (ed.), *Iqbal: Poet- Philosopher of Pakistan***,** New York: Columbia University Press, pp. 108-134.

- V.Savarkar, 'Hindutva is Different from Hinduism', available at http://www.savarkar.org/en/hindutva-/essentials-hindutva/hindutva-different-hinduism, Accessed: 19.04.2013

- J. Sharma, (2003) *Hindutva: Exploring the Idea of Hindu Nationalism,* Delhi: Penguin, pp. 124-172.

- Dh. Keer, (1966) *Veer Savarkar*, Bombay: Popular Prakashan, pp. 223-250.

- J. Nehru, (1991) 'Selected Works', in S. Hay (ed.), *Sources of Indian Tradition, Vol. 2,* Second Edition, New Delhi: Penguin, pp. 317-319.

- R. Pillai, (1986) 'Political thought of Jawaharlal Nehru', in Th. Pantham, and K. Deutsch (eds.), *Political Thought in Modem India*, New Delhi: Sage, pp. 260- 274.

- Zachariah, (2004) *Nehru*, London: Routledge Historical Biographies, pp. 169-213.

- P. Chatterjee, (1986) 'The Moment of Arrival: Nehru and the Passive Revolution', in *Nationalist Thought and the Colonial World: A Derivative Discourse?* London: Zed Books, pp. 131-166

- M. Anees and V. Dixit (eds.), (1984) *Lohia: Many Faceted Personality*, Rammanohar Lohia Smarak Smriti.

- S. Sinha, (2010) 'Lohia's Socialism: An underdog's perspective', in *Economic and Political Weekly*, Vol. XLV (40) pp. 51-55.

- Kumar, (2010) 'Understanding Lohia's Political Sociology: Intersectionality of Caste, Class, Gender and Language Issue', in *Economic and Political Weekly*, Vol. XLV (40), pp. 64-70.

DISCIPLINE SPECIFIC ELECTIVE (DSE)

DSE-1: India's Foreign Policy in a Globalizing World **Credit 06**

DSE1T: India's Foreign Policy in a Globalizing World

I. India's Foreign Policy: From a Postcolonial State to an Aspiring Global Power
II. India's Relations with the USA and USSR/Russia

III. India's Engagements with China

IV. India in South Asia: Debating Regional Strategies

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

V. India's Negotiating Style and Strategies: Trade, Environment and Security Regimes
VI. India in the Contemporary Multipolar World

Suggested Readings :

- S. Ganguly and M. Pardesi, (2009) 'Explaining Sixty Years of India's Foreign Policy', in *India Review*, Vol. 8 (1), pp. 4–19.

- Ch. Ogden, (2011) 'International 'Aspirations' of a Rising Power', in David Scott (ed.), *Handbook of India's International Relations*, London: Routeledge, pp.3-31

- W. Anderson, (2011) 'Domestic Roots of Indian Foreign Policy', in W. Anderson, *Trysts with Democracy: Political Practice in South Asia*, Anthem Press: University Publishing Online.

- J. Bandhopadhyaya, (1970) *The Making Of India's Foreign Policy*, New Delhi: Allied Publishers.

- S. Mehrotra, (1990) 'Indo-Soviet Economic Relations: Geopolitical and Ideological Factors', in *India and the Soviet Union: Trade and Technology Transfer*, Cambridge University Press: Cambridge, pp. 8-28.

- R. Hathaway, (2003) 'The US-India Courtship: From Clinton to Bush', in S. Ganguly (ed.), *India as an Emerging Power*, Frank Cass: Portland.

- Singh, (1995) 'India's Relations with Russia and Central Asia', in *International Affairs*, Vol. 71 (1): 69-81.

- M. Zafar, (1984), 'Chapter 1', in *India and the Superpowers: India's Political Relations with the Superpowers in the 1970s*, Dhaka, University Press.

- H. Pant, (2008) 'The U.S.-India Entente: From Estrangement to Engagement', in H. Pant, *Contemporary Debates in Indian Foreign and Security Policy: India Negotiates Its Rise in the International System*, Palgrave Macmillan: London.

- D. Mistry, (2006) 'Diplomacy, Domestic Politics, and the U.S.-India Nuclear Agreement', in *Asian Survey*, Vol. 46 (5), pp. 675-698.

- H. Pant, (2011) 'India's Relations with China', in D. Scott (ed.), *Handbook of India's International Relations*, London: Routeledge, pp. 233-242.

- Tellis and S. Mirski, (2013) 'Introduction', in A. Tellis and S. Mirski (eds.), *Crux of Asia: China, India, and the Emerging Global Order*, Carnegie Endowment for International Peace: Washington.

- S. Raghavan, (2013) 'Stability in Southern Asia: India's Perspective', in A. Tellis and S. Mirski (eds.), *Crux of Asia: China, India, and the Emerging Global Order*, Carnegie Endowment for International Peace: Washington.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Li Li, (2013) 'Stability in Southern Asia: China's Perspective', in A. Tellis and S. Mirski (eds.), *Crux of Asia: China, India, and the Emerging Global Order*, Carnegie Endowment for International Peace: Washington.

- S. Muni, (2003) 'Problem Areas in India's Neighbourhood Policy', in *South Asian Survey*, Vol. 10 (2), pp. 185-196.

- S. Cohen, (2002) *India: Emerging Power*, Brookings Institution Press.V. Sood, (2009) 'India and regional security interests', in Alyssa Ayres and C. Raja Mohan (eds), *Power realignments in Asia: China, India, and the United States*, New Delhi: Sage.

- M. Pardesi, (2005) 'Deducing India's Grand Strategy of Regional Hegemony from Historical and Conceptual Perspectives', IDSS Working Paper, 76, Available at http://www.rsis.edu.sg/publications/WorkingPapers/WP76.pdf, Accessed: 19.04.2013.

- D. Scott, (2009) 'India's "Extended Neighbourhood" Concept: Power Projection for a Rising Power', in *India Review*, Vol. 8 (2), pp. 107-143

- S. Cohen, (2002) 'The World View of India's Strategic Elite', in S. Cohen, *India: Emerging Power*, Brookings Institution Press, pp. 36-65.

- Narlikar, (2007) 'All that Glitters is not Gold: India's Rise to Power', in *Third World Quarterly*, Vol. 28 (5) pp. 983 – 996.

- N. Dubash, (2012) 'The Politics of Climate Change in India: Narratives of Enquiry and Cobenefits', Working Paper, New Delhi: Centre for Policy Research.

- N. Jayaprakash, (2000) 'Nuclear Disarmament and India', in *Economic and Political Weekly*, Vol. 35 (7), pp. 525-533.

- P. Bidwai, (2005) 'A Deplorable Nuclear Bargain', in *Economic and Political Weekly*, Vol. 40 (31), pp. 3362-3364.

- Anant, (2011) 'India and International Terrorism', in D. Scott (ed.), *Handbook of India's International Relations*, London: Routledge, pp. 266-277.

- R. Rajgopalan and V. Sahni (2008), 'India and the Great Powers: Strategic Imperatives, Normative Necessities', in *South Asian Survey*, Vol. 15 (1), pp. 5–32.

- Mohan, (2013) 'Changing Global Order: India's Perspective', in A. Tellis and S. Mirski (eds.), *Crux of Asia: China, India, and the Emerging Global Order*, Carnegie Endowment for International Peace: Washington.

- Narlikar, (2006) 'Peculiar Chauvinism or Strategic Calculation? Explaining the Negotiating Strategy of a Rising India', in *International Affairs*, Vol. 82 (1), pp. 59-76.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- P. Mehta, (2009) 'Still Under Nehru's Shadow? The Absence of Foreign Policy Frameworks in India', in *India Review*, Vol. 8 (3), pp. 209–233.

Online Resources:
Government of India's Ministry of External Relations website at http://www.mea.gov.in/ and specially its library which provides online resources at http://mealib.nic.in/ The Council of Foreign Relations has a regularly updated blog on India's foreign policy: http://www.cfr.org/region/india/ri282 Centre for Policy Research's blog on IR and strategic affairs though it is not exclusively on India's foreign policy. http://www.cprindia.org/blog/international- relations-and-security-blog
Institute for Defence Studies and Analyses: http://www.idsa.in/
Research and Information System: www.ris.org.in/
Indian Council of World Affairs: www.icwa.in/
Institute of Peace and Conflict Studies: www.ipcs.org/
Indian Council for Research on International Economic Relations: www.icrier.org/

OR

DSE-1: Development Process and Social Movements in Contemporary India

Credit 06

DSE1T: Development Process and Social Movements in Contemporary India

I. Development Process since Independence

a. State and planning
b. Liberalization and reforms

II. Industrial Development Strategy and its Impact on the Social Structure

a. Mixed economy, privatization, the impact on organized and unorganized labour
b. Emergence of the new middle class

III. Agrarian Development Strategy and its Impact on the Social Structure

a. Land Reforms, Green Revolution
b. Agrarian crisis since the 1990s and its impact on farmers

IV. Social Movements

a. Tribal, Peasant, Dalit and Women's movements
b. Maoist challenge
c. Civil rights movements

Suggested Readings :

- Mozoomdar, (1994) 'The Rise and Decline of Development Planning in India', in T. Byres (ed.) *The State and Development Planning in India*. Delhi: Oxford University Press, pp. 73-108.

- Varshney, (2010) 'Mass Politics or Elite Politics? Understanding the Politics of India's Economic Reforms' in R. Mukherji (ed.) *India's Economic Transition: The Politics of Reforms*, Delhi: Oxford University Press, pp 146-169.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- P. Chatterjee, (2000) 'Development Planning and the Indian State', in Zoya Hasan (ed.), *Politics and the State in India*, New Delhi: Sage, pp.116-140.

- P. Patnaik and C. Chandrasekhar, (2007) 'India: Dirigisme, Structural Adjustment, and the Radical Alternative', in B. Nayar (ed.), *Globalization and Politics in India*. Delhi: Oxford University Press, pp. 218-240.

- P. Bardhan, (2005) 'Epilogue on the Political Economy of Reform in India', in *The Political Economy of Development in India*. 6th impression, Delhi: Oxford University Press.

- T. Singh, (1979) 'The Planning Process and Public Process: a Reassessment', *R. R. Kale Memorial Lecture*, Pune: Gokhale Institute of Politics and Economics.

- Aggarwal, (2006) 'Special Economic Zones: Revisiting the Policy Debate', in *Economic and Political Weekly*, XLI (43-44), pp.4533-36.

- Nayar (1989) *India's Mixed Economy: The Role of Ideology and its Development*, Bombay: Popular Prakashan.

- F. Frankel, (2005) 'Crisis of National Economic Planning', in *India's Political Economy (1947-2004): The Gradual Revolution*, Delhi: Oxford University Press, pp. 93-340.

- L. Fernandes, (2007) *India's New Middle Class: Democratic Politics in an Era of Economic Reform*, Delhi: Oxford University Press.

- S. Shyam, (2003) 'Organizing the Unorganized', in *Seminar*, [Footloose Labour: A Symposium on Livelihood Struggles of the Informal Workforce, 531] pp. 47-53.

- S. Chowdhury, (2007) 'Globalization and Labour', in B. Nayar (ed.) *Globalization and Politics in India*, Delhi: Oxford University Press, pp.516-526.

- V. Chibber, (2005) 'From Class Compromise to Class Accommodation: Labor's Incorporation into the Indian Political Economy' in R. Ray, and M.F. Katzenstein (eds.) *SocialMovements in India*, Delhi: Oxford University Press, pp 32-60.

- Desai, (ed.), (1986) *Agrarian Struggles in India After Independence*, Delhi: Oxford University Press, pp. xi-xxxvi

- F. Frankel, (1971) *India's Green Revolution: Economic Gains and Political Costs*, Princeton and New Jersey: Princeton University Press.

- F. Frankel, (2009) *Harvesting Despair: Agrarian Crisis in India*, Delhi: Perspectives, pp. 161-169.

- J. Harriss, (2006) 'Local Power and the Agrarian Political Economy' in Harriss, J. (ed) *Power Matters: Essays on Institutions, Politics, and Society in India*, Delhi. Oxford University Press, pp. 29-32.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- K. Suri, (2006) 'Political economy of Agrarian Distress', in *Economic and Political Weekly*, XLI(16) pp. 1523-1529.

- P. Joshi, (1979) *Land Reforms in India: Trends and Perspectives*, New Delhi: Allied publishers.

- P. Appu, (1974) 'Agrarian Structure and Rural Development', in *Economic and Political Weekly*, IX (39), pp.70 – 75.

- P. Sainath, (2010) 'Agrarian Crisis and Farmers', Suicide', *Occasional Publication*22, New Delhi: India International Centre (IIC).

- M. Sidhu, (2010) 'Globalisation vis-à-vis Agrarian Crisis in India', in R. Deshpande and S. Arora, (eds.) *Agrarian Crises and Farmer Suicides (Land Reforms in India Series),* New Delhi: Sage, pp. 149-174.

- V. Sridhar, (2006) 'Why Do Farmers Commit Suicide? The Case Study of Andhra Pradesh', in *Economic and Political Weekly*, XLI (16).

- G. Haragopal, and K. Balagopal, (1998) 'Civil Liberties Movement and the State in India', in M. Mohanty, P. Mukherji and O. Tornquist, (eds.) *People's Rights*: *Social Movements and the State in the Third World* New Delhi: Sage, pp. 353-371.

- M. Mohanty, (2002) 'The Changing Definition of Rights in India', in S. Patel, J. Bagchi, and K. Raj (eds.) *Thinking Social Sciences in India: Essays in Honour of Alice Thorner* Patel, New Delhi: Sage.

- G. Omvedt, (2012) 'The Anti-caste Movement and the Discourse of Power', in N. Jayal (ed.) *Democracy in India*, New Delhi: Oxford India Paperbacks, sixth impression, pp.481-508.

- P. Ramana, (2011) 'India's Maoist Insurgency: Evolution, Current Trends and Responses', in M. Kugelman (ed.) *India's Contemporary Security Challenges*, Woodrow Wilson International Centre for Scholars Asia Programme, Washington D.C., pp.29-47.

- Ray, (1996) 'Civil Rights Movement and Social Struggle in India', in *Economic and Political Weekly*, XXI (28). pp. 1202-1205.

- Roy, (2010) 'The Women's Movement', in N.Jayal and P. Mehta (eds.) *The Oxford Companion to Politics in India*, New Delhi: Oxford University Press, pp.409-422.

- N. Sundar, (2011) 'At War with Oneself: Constructing Naxalism as India's Biggest Security Threat', in M. Kugelman (ed.) *India's Contemporary Security Challenges*, Woodrow Wilson International Centre for Scholars Asia Programme, Washington D.C., pp.46-68.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- M. Weiner, (2001) 'The Struggle for Equality: Caste in Indian Politics', in A.Kohli. (ed.) *The Success of India's Democracy*, Cambridge: CUP, pp.193-225.
- S. Sinha, (2002) 'Tribal Solidarity Movements in India: A Review', in G. Shah. (ed.) *Social Movements and the State*, New Delhi: Sage, pp. 251-266.
- S. Banerjee, (1986) 'Naxalbari in Desai', in A.R. (ed.) *Agrarian Struggles in India After Independence*. Delhi: Oxford University Press, pp.566-588.
- Nayar, (ed.), (2007) *Globalization and Politics in India*. Delhi: Oxford University Press.
- S. Roy and K. Debal, (2004) *Peasant Movements in Post-Colonial India: Dynamics ofMobilization and Identity*, Delhi: Sage.
- G. Omvedt, (1983) *Reinventing Revolution, New Social Movements and the Socialist Tradition in India*, New York: Sharpe.
- G. Shah, (ed.), (2002) *Social Movements and the State*. New Delhi: Sage Publications.
- G. Shah, (2004) *Social Movements in India: A Review of Literature*, New Delhi: Sage Publications.
- G. Rath, (ed.), (2006) *Tribal development in India: The Contemporary Debate*, New Delhi: Sage Publications.
- J. Harris, (2009) *Power Matters: Essays on Institutions, Politics, and Society in India*. Delhi: Oxford University Press.
- K. Suresh, (ed.), (1982) *Tribal Movements in India*, Vol I and II, New Delhi: Manohar (emphasis on the introductory chapter).
- M. Mohanty, P. Mukherji and O.Tornquist, (1998) *People's Rights: Social Movements and the State in the Third World*. New Delhi: Sage Publications.
- M. Rao, (ed.), (1978) *Social Movements in India*, Vol. 2, Delhi: Manohar.
- N. Jayal, and P. Mehta, (eds.), (2010) *The Oxford Companion to Politics in India*, Delhi:Oxford University Press.
- P. Bardhan, (2005) *The Political Economy of Development in India*, 6th impression, Delhi: Oxford University Press.
- R. Mukherji, (ed.), (2007) *India's Economic Transition: The Politics of Reforms*, Delhi: Oxford University Press.
- R, Ray and M. Katzenstein, (eds.), (2005) *Social Movements in India*, Delhi: Oxford University Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- S. Chakravarty, (1987) *Development Planning: The Indian Experience*, Delhi: Oxford University Press.

DSE-2: Understanding South Asia **Credit 06**

DSE2T: Understanding South Asia

.

I. South Asia- Understanding South Asia as a Region

a) Historical and Colonial Legacies
b) Geopolitics of South Asia

II. Politics and Governance

a) Regime types: democracy, authoritarianism, monarchy
b) Emerging constitutional practices: federal experiments in Pakistan; constitutional debate in Nepal and Bhutan; devolution debate in Sri Lanka

III. Socio-Economic Issues

a) Identity politics and economic deprivation: challenges and impacts (case studies of Pakistan, Bangladesh, Nepal, Sri Lanka)

IV. Regional Issues and Challenges

a) South Asian Association for Regional Cooperation (SAARC): problems and prospects
b) Terrorism Migration

Suggested Readings:

- Hewitt, V. (1992) 'Introduction', in The International Politics of South Asia. Manchester: Manchester University Press, pp.1-10.

- Hewitt, V. (2010) 'International Politics of South Asia' in Brass, P. (ed.) Routledge Handbook of South Asian Politics. London: Routledge, pp.399-418.

- Muni, S.D. (2003) 'South Asia as a Region', South Asian Journal, 1(1), August-September, pp. 1-6

- Baxter, C. (ed.) (1986) The Government and Politics of South Asia. London: Oxford University Press, pp.376-394.

- Baxter, C. (2010) 'Introduction', Brass, P. (ed.) Routledge Handbook of South Asian Politics. London: Routledge, pp.1-24

- De Silva, K.M. (2001)'The Working of Democracy in South Asia', in Panandikar, V.A (ed.) Problems of Governance in South Asia. New Delhi: Centre for Policy Research & Konark Publishing House, pp. 46-88.

- Wilson, J. (2003) 'Sri Lanka: Ethnic Strife and the Politics of Space', in Coakley, J. (ed.) The Territorial Management of Ethnic Conflict. Oregon: Frank Cass, pp. 173-193.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Mendis, D. (2008) 'South Asian Democracies in Transition', in Mendis, D. (ed.) Electoral Processes and Governance in South Asia. New Delhi: Sage, pp.15-52.

- Subramanyam, K. (2001) 'Military and Governance in South Asia', in V.A (ed.) Problems of Governance in South Asia. New Delhi: Centre for Policy Research & Konark Publishing House, pp.201-208.

- Hachethi, K. and Gellner, D.N.(2010) 'Nepal : Trajectories of Democracy and Restructuring of the State', in Brass, P. (ed.) Routledge Handbook of South Asian Politics. London: Routledge, pp. 131-146.

- Kukreja, V. 2011. 'Federalism in Pakistan', in Saxena R. (ed.) Varieties of Federal Governance. New Delhi: Foundation Books, pp. 104-130.

- Jha, N.K. (2008) 'Domestic Turbulence in Nepal: Origin, Dimensions and India's Policy Options', in Kukreja, V. and Singh, M.P. (eds.) Democracy, Development and Discontent in South Asia. New Delhi: Sage, pp. 264-281.

- Burki, S.J. (2010) 'Pakistan's Politics and its Economy', in Brass, P. (ed.) Routledge Handbook of South Asian Politics. London: Routledge, pp. 83-97.

- Kaul, N. (2008)'Bearing Better Witness in Bhutan', Economic and Political Weekly, 13 September, pp. 67-69.

- Phadnis, U.(1986) 'Ethnic Conflicts in South Asian States', in Muni, S.D. et.al. (eds.) Domestic Conflicts in South Asia : Political, Economic and Ethnic Dimensions. Vol. 2. New Delhi: South Asian Publishers, pp.100-119.

- Kukreja, V. (2003) Contemporary Pakistan. New Delhi: Sage, pp. 75-111 and 112-153.

- Narayan, S. (2010) 'SAARC and South Asia Economic Integration', in Muni, S.D. (ed.) Emerging dimensions of SAARC. New Delhi: Foundation Books, pp. 32-50.

- Muni, S.D. and Jetley, R. (2010) 'SAARC prospects: the Changing Dimensions', in Muni, S.D. (ed.) Emerging dimensions of SAARC. New Delhi: Foundation Books, pp. 1-31.

- Baral, L.R. (2006) 'Responding to Terrorism: Political and Social Consequences in South Asia',in Muni, S.D. (ed.) Responding to terrorism in South Asia. New Delhi: Manohar, pp.301-332.

- Muni, S.D. (2006) 'Responding to Terrorism: An Overview', in Muni, S.D. (ed.) Responding to terrorism in South Asia. New Delhi: Manohar, pp.453-469.

- Hoyt, T.D. (2005) 'The War on Terrorism: Implications for South Asia', in Hagerty, D.T. (ed.) South Asia in World Politics. Lanham: Roman and Littlefield Publishers, pp.281-295.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Lama, M. (2003) 'Poverty, Migration and Conflict: Challenges to Human Security in South Asia', in Chari, P.R. and Gupta, S. (eds.) Human Security in South Asia: Gender, Energy, Migration and Globalisation. New Delhi: Social Science Press, pp. 124-144

- Acharya, J. and Bose, T.K. (2001) 'The New Search for a Durable Solution for Refugees: South Asia', in Samaddar, S. and Reifeld, H. (eds.) Peace as Process: Reconciliation and Conflict Resolution in South Asia. New Delhi: Vedams ,pp-137-157

- Baxter, C. (ed.) (1986) The Government and Politics of South Asia. London: Oxford University Press.

- Rizvi, G. (1993) South Asia in a Changing International Order. New Delhi: Sage.

- Thakur, R.and Wiggin, O.(ed.) (2005) South Asia and the world. New Delhi: Bookwell.

- Hagerty, D.T. (ed.) (2005) South Asia in World Politics, Oxford: Rowman and Littlefield.

- Samaddar, R.(2002) 'Protecting the Victims of Forced Migration: Mixed Flows and Massive Flows', in Makenkemp, M. Tongern, P.V. and Van De Veen, H. (eds.) Searching for Peace in Central and South Asia. London: Lynne Reinner.

- Kukreja, V. and Singh, M.P. (eds) (2008) Democracy, Development and Discontent in SouthAsia. New Delhi: Sage.

OR

DSE-2: United Nations and Global Conflicts **Credit 06**

DSE2T: United Nations and Global Conflicts

.

I. The United Nations

(a) An Historical Overview of the United Nations
(b) Principles and Objectives
(c) Structures and Functions: General Assembly; Security Council, and Economic and Social Council; the International Court of Justice and the specialised agencies (International Labour Organisation [ILO], United Nations Educational, Scientific and Cultural Organisation [UNESCO], World Health Organisation [WHO], and UN programmes and funds: United Nations Children's Fund [UNICEF], United Nations Development Programme [UNDP], United Nations Environment Programme [UNEP], United Nations High Commissioner for Refugees [UNHCR])

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

(d) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect
(e) Millennium Development Goals

II. Major Global Conflicts since the Second World War

(a) Korean War
(b) Vietnam War
(c) Afghanistan Wars
(d) Balkans: Serbia and Bosnia

III. Assessment of the United Nations as an International Organisation: Imperatives of Reforms and the Process of Reforms

Suggested Readings:

- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 39-62.
- Goldstein, J. and Pevehouse, J.C. (2006) *International relations*. 6th edn. New Delhi: Pearson, pp. 265-282.
- Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium*. London: Continuum, pp. 1-20.
- Gareis, S.B. and Varwick, J. (2005) *The United Nations: an introduction.* Basingstoke: Palgrave, pp. 1-40.
- Gowan, P. (2010) 'US: UN', in Gowan, P. 'A calculus of power: grand strategy in the twentyfirst century. London: Verso, pp. 47-71.
- Baylis, J. and Smith, S. (eds.) (2008) *The globalization of world politics. an introduction to international relations*. 4th edn. Oxford: Oxford University Press, pp. 405-422.
- Thakur, R. (1998) 'Introduction', in Thakur, R. (eds.) *Past imperfect, future uncertain: The UN at Ffifty*. London: Macmillan, pp. 1-14.
- Basu, Rumki (2014) United Nations: Structure and Functions of an international
- organization, New Delhi, Sterling Publishers
- Gareis, S.B. and Varwick, J. (2005) *The United Nations: An introduction.* Basingstoke: Palgrave, pp. 15-21.
- Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium*. London: Continuum, pp. 21-141.
- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 119-135.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Nambiar, S. (1995) 'UN peace-keeping operations', in Kumar, S. (eds.) *The United Nations at fifty*. New Delhi, UBS, pp. 77-94.
- Whittaker, D.J. (1997) 'Peacekeeping', in *United Nations in the contemporary world*. London: Routledge, pp. 45-56.
- White, B. et al. (eds.) (2005) *Issues in world politics*. 3rd edn. New York: Macmillan, pp. 113-132.
- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp.264-266.
- Sangal, P.S. (1986) 'UN, peace, disarmament and development', in Saxena, J.N. et.al. *United Nations for a better world*. New Delhi: Lancers, pp.109-114.
- Baxi, U. (1986) 'Crimes against the right to development', in Saxena, J.N. et.al. *United Nations for a better world*. New Delhi: Lancers, pp.240-248.
- Ghali, B.B. (1995) *An agenda for peace*. New York: UN, pp.5-38.
- United Nations Department of Public Information. (2008) *The United Nations Today*. New York: UN.
- Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp. 116-124.
- Armstrong, D., Lloyd, L. and Redmond, J. (2004) *International organisations in world politics.* 3rd edn. New York: Palgrave Macmillan, pp. 42-43.
- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 64-65 and 172-173.
- Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp.528-546.
- Baylis, J. and Smith, S. (eds.) (2008) *The globalization of world politics. an introduction to international relations.* 4th edn. Oxford: Oxford University Press, pp. 562-564.
- Achcar, G. (2004) *Eastern cauldron*. New York: Monthly Review Press, pp. 29-45 and 234- 241.
- Achcar, G. (2003) *The clash of barbarisms: Sept. 11 and the making of the new world disorder*. Kolkata: K.P. Bachi & Co., pp. 76-81.
- Prashad, V. (2002) *War against the planet*. New Delhi: Leftword, pp. 1-6. Ali, T. (ed.) (2000) *Masters of the Universe*. London: Verso, pp. 203-216.
- Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp.570-576.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Ali, T. (ed.) (2000) *Masters of the Universe*. London: Verso, pp. 230-245 and 271-284.
- Kaldor, M. and Vashee, B. (eds.) (1997) *New wars.* London: Wider Publications for the UN University, pp. 137-144 and 153-171.
- Viotti, P.R. and Kauppi, M.V. (2007) *International relations and world politics-security, economy, identity*. 3rd edn. New Delhi: Pearson Education, pp. 470-471.
- Goldstein, J.S. (2003) *International relations.* 3rd edn. Delhi: Pearson Education, pp 43-51. Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp.24-27.
- Roberts, A. and Kingsbury, B. (eds.) (1994) *United Nations, Divided World.* 2nd edn. Oxford: Clarendon Press, pp. 420-436.
- Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium*. London: Continuum, pp. 196-223 and 295-326.
- Gareis, S.B. and Varwick, J. (2005) *The United Nations: An introduction.* Basingstoke: Palgrave, pp. 214-242.
- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 91-112.
- Claude, I. (1984) *Swords into plowshares: the progress and problems of international organisation*. 4th edn. New York: Random House.
- Dodds, F. (ed.) (1987) *The way forward: beyond the agenda 21*. London: Earthscan.
- Rajan, M.S., Mani, V.S and Murthy, C.S.R. (eds.) (1987) *The nonaligned and the United Nations*. New Delhi: South Asian Publishers.
- South Asia Human Rights Documentation Centre. (2006) *Human rights: an overview*. New Delhi: Oxford University Press.
- Anan, K. (1997) *Renewing the United Nations: A Programme for Survival*. General Assembly Document: A/51/950; 14 July 1997. Available from: http://daccessdds.un.org/doc/UNDOC/GEN/N97/189/79/1MG/n9718979.pdf,Open Element (accessed on 13 October 2011).

DSE-3: Citizenship in a Globalizing World **Credit 06**

DSE3T: Citizenship in a Globalizing World

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

1. Classical conceptions of citizenship
2. The Evolution of Citizenship and the Modern State
3. Citizenship and Diversity
4. Citizenship beyond the Nation-state: Globalization and global justice
5. The idea of cosmopolitan citizenship

Suggested Readings

- Acharya, Ashok. (2012) *Citizenship in a Globalising World.* New Delhi: Pearson.
- Beiner, R. (1995) *Theorising Citizenship*. Albany: State University of New York Press.
- Held, David (1995), *Democracy and the Global Order: From the Modern State to Cosmopolitan Governance* (Stanford: Stanford University Press).
- Kymlicka, Will (1999), "Citizenship in an Era of Globalization: A Response to Held," in Ian Shapiro and Casiano Hacker-Cordon (eds.), *Democracy's Edges* (Cambridge, UK: Cambridge University Press).
- Oliver, D. and D. Heater (1994). *The Foundations of Citizenship*. London, Harvester Wheatsheaf.
- Scholte, Jan Aart (2000), *Globalization: A Critical Introduction* (New York: St. Martin's).
- Zolo, Danilo (1997), *Cosmopolis: Prospects for World Government* (Cambridge, UK: Polity Press).

OR

DSE-3 : Women, Power and Politics **Credit 06**

DSE3T : Women, Power and Politics

I. Groundings

1. Patriarchy
    a. Sex-Gender Debates
    b. Public and Private
    c. Power
2. Feminism
3. Family, Community, State
    a. Family
    b. Community
    c. State

II. Movements and Issues

1. History of the Women's Movement in India
2. Violence against women
3. Work and Labour
    a. Visible and Invisible work
    b. Reproductive and care work

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

c. Sex work

Suggested Readings :

- T. Shinde, (1993) 'Stree Purusha Tulna', in K. Lalitha and Susie Tharu (eds), *Women Writing in India,* New Delhi, Oxford University Press, pp. 221-234

- U. Chakravarti, (2001) 'Pitrasatta Par ek Note', in S. Arya, N. Menon & J. Lokneeta (eds.) *Naarivaadi Rajneeti: Sangharsh evam Muddey,* University of Delhi: Hindi Medium Implementation Board, pp.1-7

- V Geetha, (2002) *Gender,* Kolkata, Stree, pp. 1-20

- M. Kosambi, (2007) *Crossing the Threshold,* New Delhi, Permanent Black, pp. 3-10; 40-46

- N. Menon, (2008) 'Power', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction,* Delhi: Pearson, pp.148-157

- Hooks, (2010) 'Feminism: A Movement to End Sexism', in C. Mc Cann and S. Kim (eds), *The Feminist Reader: Local and Global Perspectives,* New York: Routledge, pp. 51-57

- R. Delmar, (2005) 'What is Feminism?', in W. Kolmar & F. Bartkowski (eds) *Feminist Theory: A Reader,* pp. 27-37

- R. Palriwala, (2008) 'Economics and Patriliny: Consumption and Authority within the Household' in M. John. (ed) *Women's Studies in India,* New Delhi: Penguin, pp. 414-423

- U. Chakravarti, (2003) *Gendering Caste through a Feminist Len,* Kolkata, Stree, pp. 139-159.

- MacKinnon, 'The Liberal State' from *Towards a Feminist Theory of State,* Available at http://fair-use.org/catharine-mackinnon/toward-a-feminist-theory-of-the-state/chapter-8, Accessed: 19.04.2013.

- K. Millet, (1968) *Sexual Politics,* Available at http://www.marxists.org/subject/women/authors/millett-kate/sexual-politics.htm, Accessed: 19.04.2013.

- N. Menon (2008) 'Gender', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction,* New Delhi: Pearson, pp. 224-233

- R. Hussain, (1988) 'Sultana's Dream', in *Sultana's Dream and Selections from the Secluded Ones – translated by Roushan Jahan,* New York: The Feminist Press

- S. Ray 'Understanding Patriarchy', Available at http://www.du.ac.in/fileadmin/DU/Academics/course_material/hrge_06.pdf, Accessed: 19.04.2013.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- S. de Beauvoir (1997) *Second Sex*, London: Vintage.
- Saheli Women's Centre, (2007) *Talking Marriage, Caste and Community: Women's Voices from Within*, New Delhi: monograph
- Agnihotri and V. Mazumdar, (1997) 'Changing the Terms of Political Discourse: Women's Movement in India, 1970s-1990s', *Economic and Political Weekly*, 30 (29), pp. 1869-1878.
- R. Kapur, (2012) 'Hecklers to Power? The Waning of Liberal Rights and Challenges to Feminism in India', in A. Loomba *South Asian Feminisms*, Durham and London: Duke University Press, pp. 333-355
- N. Menon, (2004) 'Sexual Violence: Escaping the Body', in *Recovering Subversion*, New Delhi: Permanent Black, pp. 106-165
- P. Swaminathan, (2012) 'Introduction', in *Women and Work*, Hyderabad: Orient Blackswan, pp.1-17
- J. Tronto, (1996) 'Care as a Political Concept', in N. Hirschmann and C. Stephano, *Revisioning the Political*, Boulder: Westview Press, pp. 139-156
- Durbar Mahila Samanwaya Committee, Kolkata (2011) 'Why the so-called Immoral Traffic (Preventive) Act of India Should be Repealed', in P. Kotiswaran, *Sex Work*, New Delhi, Women Unlimited, pp. 259-262
- N. Jameela, (2011) 'Autobiography of a Sex Worker', in P. Kotiswaran, *Sex Work*, New Delhi: Women Unlimited, pp. 225-241
- Zetkin, 'Proletarian Woman', Available at http://www.marxists.org/archive/zetkin/1896/10/women.htm, Accessed: 19.04.2013.
- Engles, *Family, Private Property and State*, Available at http://readingfromtheleft.com/PDF/EngelsOrigin.pdf, Accessed: 19.04.2013.
- J. Ghosh, (2009) *Never Done and Poorly Paid: Women's Work in Globalising India*, Delhi: Women Unlimited
- *Justice Verma Committee Report*, Available at http://nlrd.org/womens-rightsinitiative/ justice-verma-committee-report-download-full-report, Accessed: 19.04.2013.
- N. Gandhi and N. Shah, (1992) *Issues at Stake – Theory and Practice in the Women's Movement*, New Delhi: Kali for Women.
- V. Bryson, (1992) *Feminist Political Theory*, London: Palgrave-MacMillan, pp. 175-180; 196- 200

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- M. Mies, (1986) 'Colonisation and Housewifisation', in *Patriarchy and Accumulation on a World Scale* London: Zed, pp. 74-111, Available at http://caringlabor.wordpress.com/2010/12/29/maria-mies-colonization-andhousewifization/, Accessed: 19.04.2013.

- R. Ghadially, (2007) *Urban Women in Contemporary India,* Delhi: Sage Publications.

- S. Brownmiller, (1975) *Against our Wills,* New York: Ballantine.

- Saheli Women's Centre (2001) 'Reproductive Health and Women's Rights, Sex Selection and feminist response' in S Arya, N. Menon, J. Lokneeta (eds), *Nariwadi Rajneeti,* Delhi, pp. 284-306

- V. Bryson (2007) *Gender and the Politics of Time,* Bristol: Polity Press

- D. Mehrotra, (2001) *Bhartiya Mahila Andolan: Kal, Aaj aur Kal,* Delhi: Books for Change

- Joshi, (2004) *Bharat Mein Stree Asmaanta: Ek Vimarsh,* University of Delhi: Hindi Medium Implementation Board

- N. Menon (2008) 'Power', in R. Bhargava and A. Acharya (eds) *Political Theory: An Introduction,* New Delhi: Pearson

- N. Menon (2008) 'Gender', in R. Bhargava and A. Acharya (eds) *Political Theory: An Introduction,* New Delhi, Pearson

- R. Upadhyay and S. Upadhyay (eds.) (2004) *Aaj ka Stree Andolan,* Delhi: Shabd Sandhan.

- S. Arya, N. Menon and J. Lokneeta (eds.) (2001) *Naarivaadi Rajneeti: Sangharsh evam Muddey,* University of Delhi: Hindi Medium Implementation Board.

DSE-4: Human Rights in a Comparative Perspective **Credit 06**

DSE4T: Human Rights in a Comparative Perspective

I. Human Rights: Theory and Institutionalization

a. Understanding Human Rights: Three Generations of Rights
b. Institutionalization: Universal Declaration of Human Rights
c. Rights in National Constitutions: South Africa and India

II. Issues

a. Torture: USA and India
b. Surveillance and Censorship: China and India
c. Terrorism and Insecurity of Minorities: USA and India

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

III. Structural Violence

a. Caste and Race: South Africa and India
b. Gender and Violence: India and Pakistan
c. Adivasis/Aboriginals and the Land Question: Australia and India

Suggested Readings:

- J. Hoffman and P. Graham, (2006) 'Human Rights', *Introduction to Political Theory*, Delhi, Pearson, pp. 436-458.

- SAHRDC (2006) 'Introduction to Human Rights'; 'Classification of Human Rights: An Overview of the First, Second, and Third Generational Rights', in *Introducing Human Rights*, New Delhi: Oxford University Press.

- The Constitution of the Republic of South Africa, Chapter 2: Bill of Rights. The Constitution of India, Chapter 3: Fundamental Rights

- M. Lippman, (1979) 'The Protection of Universal Human Rights: The Problem of Torture'*Universal Human Rights*, Vol. 1(4), pp. 25-55

- J. Lokaneeta, (2011) 'Torture in the TV Show 24: Circulation of Meanings'; 'Jurisprudence on Torture and Interrogations in India', in *Transnational Torture Law, Violence, and State Power in the United States and India*, Delhi: Orient Blackswan,

- D. O'Byrne, (2007) 'Torture', in *Human Rights: An Introduction***,** Delhi: Pearson, pp. 164-197.

- D. O'Byrne, (2007) 'Censorship', in *Human Rights: An Introduction***,** Delhi: Pearson, pp. 106- 138.

- D. Lyon, (2008) Surveillance Society, Talk for Festival del Diritto, Piacenza, Italia, September 28, pp.1-7.

- Fu Hualing, (2012) 'Politicized Challenges, Depoliticized Responses: Political Monitoring in China's Transitions', paper presented at a conference on States of Surveillance: Counter- Terrorism and Comparative Constitutionalism, at the University of New South Wales, Sydney, 13-14 December.

- U. Singh, (2012) 'Surveillance Regimes in India', paper presented at a conference on States of Surveillance: Counter-Terrorism and Comparative Constitutionalism, at the University of New South Wales, Sydney, 13-14 December.

- E. Scarry, (2010) 'Resolving to Resist', in *Rule of Law, Misrule of Men***,** Cambridge: Boston Review Books**,** MIT, pp.1-53.

- M. Ahmad, (2002) 'Homeland Insecurities: Racial Violence the Day after September 11', *Social Text*, 72, Vol. 20(3), pp. 101-116.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- U. Singh, (2007) 'The Unfolding of Extraordinariness: POTA and the Construction of Suspect Communities', in *The State, Democracy and Anti-terror Laws in India***,** Delhi: Sage Publications, pp.165-219

- Pinto, (2001) 'UN Conference against Racism: Is Caste Race?', in *Economic and Political Weekly*, Vol. 36(30)

- D. O'Byrne, (2007) 'Apartheid', in *Human Rights: An Introduction*, Delhi: Pearson, pp. 241- 262.

- R. Wasserstorm, (2006), 'Racism, Sexism, and Preferential Treatment: An approach to the Topics', in R. Goodin and P. Pettit, *Contemporary Political Philosophy: an Anthology***,** Oxford: Blackwell, pp-549-574

- R. Wolfrum, (1998) 'Discrimination, Xenophobia and Racism' in J. Symonides, *Human Rights: New Dimensions and Challenges*, Aldershot, Ashgate/UNESCO, pp.181-198.

- Khan and R. Hussain, (2008), 'Violence Against Women in Pakistan: Perceptions and Experiences of Domestic Violence', *Asian Studies Review*, Vol. 32, pp. 239 – 253

- K. Kannabiran (2012) 'Rethinking the Constitutional Category of Sex', in *Tools of Justice: Non-Discrimination and the Indian Constitution***,** New Delhi, Routledge, pp.425-443

- N. Menon (2012) 'Desire', *Seeing Like a Feminist*, New Delhi: Zubaan/Penguin, pp. 91-146

- H. Goodall, (2011) 'International Indigenous Community Study: Adivasi Indigenous People in India', in A. Cadzow and J. Maynard (eds**.),** *Aboriginal Studies*, Melbourne: Nelson CengageLearning, pp.254-259.

- K. Kannabiran, (2012) 'Adivasi Homelands and the Question of Liberty', in *Tools of Justice: Non-Discrimination and the Indian Constitution*, New Delhi: Routledge, pp.242-271.

- N. Watson (2011) 'Aboriginal and Torres Strait Islander Identities' in A. Cadzow and J. Maynard (eds**.),** *Aboriginal Studies*, Melbourne: Nelson Cengage Learning, pp.43-52.

- W. Fernandes (2008) 'India's Forced Displacement Policy and Practice. Is Compensation up to its Functions?', in M. Cernea and H. Mathus (eds), *Can Compensation Prevent mpoverishment? Reforming Resettlement through Investments and Benefit-Sharing***,** pp. 181-207, New Delhi: Oxford University Press.

- Laws and V. Iacopino, (2002) 'Police Torture in Punjab, India: An Extended Survey', in *Health and Human Rights*, Vol. 6(1), pp. 195-210

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- D. O'Byrne, (2007) 'Theorizing Human Rights', in *Human Rights: An Introduction*, Delhi, Pearson, pp.26-70.
- J. Morsink, (1999) *The Universal Declaration of Human Rights: Origins, Drafting and Intent*, Philadelphia: University of Pensylvania Press, pp. ix-xiv
- J. Nickel, (1987) *Making Sense of Human Rights: Philosophical Reflections on the Universal Declaration of Human Rights***,** Berkeley: University of California Press.
- J. Goldman, (2005) 'Of Treaties and Torture: How the Supreme Court Can Restrain the Executive', in *Duke Law Journal*, Vol. 55(3), pp. 609-640.
- K. Tsutsui and C. Wotipka, (2004) Global Civil Society and the International Human Rights Movement: Citizen Participation in Human Rights International Nongovernmental Organizations, in *Social Forces*, Vol. 83(2), pp. 587-620.
- L. Rabben, (2001) Amnesty International: Myth and Reality, in *Agni*, No. 54, Amnesty International Fortieth Anniversary pp. 8-28
- M. Mohanty, (2010) 'In Pursuit of People's Rights: An Introduction', in M. Mohanty et al., *Weapon of the Oppressed: Inventory of People's Rights in India*, New Delhi: Danish Books, pp.1-11
- M. Cranston, (1973) *What are Human Rights?* New York: Taplinger
- M. Ishay, (2004) *The History of Human Rights: From Ancient Times to the Globalization Era*, Delhi: Orient Blackswan.
- R. Sharan, (2009) 'Alienation and Restoration of Tribal Land in Jharkhand in N Sundar (ed.) *Legal Grounds*, New Delhi: Oxford University Press, pp. 82-112 Text of UDHR available at http://www.un.org/en/documents/udhr/index.shtml
- U. Baxi, (1989) 'From Human Rights to the Right to be Human: Some Heresies', in S. Kothari and H. Sethi (eds.), *Rethinking Human Rights*, Delhi: Lokayan, pp.181-166

OR

DSE-4: Project Work **Credit 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

Skill Enhancement Course (SEC)

SEC-1: Democratic Awareness with Legal Literacy **Credit 02**

SEC1T: Democratic Awareness with Legal Literacy

Course Content:

Unit I

- Outline of the Legal system in India
- System of courts/tribunals and their jurisdiction in India - criminal and civil courts, writ jurisdiction, specialized courts such as juvenile courts, Mahila courts and tribunals.
- Role of the police and executive in criminal law administration.
- Alternate dispute mechanisms such as lok adalats, non - formal mechanisms.

Unit II

- Brief understanding of the laws applicable in India
- Constitution - fundamental rights, fundamental duties, other constitutional rights and their manner of enforcement, with emphasis on public interest litigation and the expansion of certain rights under Article 21 of the Constitution.
- Laws relating to criminal jurisdiction - provision relating to filing an FIR, arrest, bail search and seizure and some understanding of the questions of evidence and procedure in Cr. P.C. and related laws, important offences under the Indian PenalCode, offences against women, juvenile justice, prevention of atrocities on Scheduled Castes and Scheduled Tribes.
- Concepts like Burden of Proof, Presumption of Innocence, Principles of Natural Justice, Fair comment under Contempt laws.
- Personal laws in India : Pluralism and Democracy
- Laws relating to contract, property and tenancy laws.
- Laws relating to dowry, sexual harassment and violence against women
- Laws relating to consumer rights
- Laws relating to cyber crimes
- Anti-terrorist laws: implications for security and human rights
- Practical application: Visit to either a (I) court or (ii) a legal aid centre set up by the
- Legal Services Authority or an NGO or (iii) a Lok Adalat, and to interview a litigant or person being counselled. Preparation of a case history.

Unit III

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

Access to courts and enforcement of rights

- Critical Understanding of the Functioning of the Legal System
- Legal Services Authorities Act and right to legal aid, ADR systems

Practical application:

- What to do if you are arrested ; if you are a consumer with a grievance; if you are a victim of sexual harassment; domestic violence, child abuse, caste, ethnic and religious discrimination; filing a public interest litigation. How can you challenge administrative orders that violate rights, judicial and administrative remedies
- Using a hypothetical case of (for example) child abuse or sexual harassment or any other violation of a right, preparation of an FIR or writing a complaint addressed to the appropriate authority.

Exercises for students

1. Discuss the debates around any recent Ordinance, Bill or Act in Parliament.
2. How to file an FIR? In case there has been a theft in the neighbourhood how would you file the first Hand Information Report?
3. Under what circumstances can detention and arrest become illegal?
4. Discuss any contemporary practice or event that violates the equality and protection against discrimination laws.
5. Read Ordinance XV -D of University of Delhi and make a list of the kinds of conduct that would qualify as sexual harassment.
6. Your friend has shared with you an incident of unwelcome verbal remarks on her by a person of higher authority in your college, what would you do?
7. You have seen a lady in your neighbourhood being beaten up by her husband. Identify the concerned Protection Officer in case you want to provide information about this incident.
8. Read the Vishakha Guidelines as laid down by the Supreme Court and the Act against sexual harassment at the workplace. Discuss what constitutes sexual harassment and the mechanisms available for its redressal in your institution.
9. What is the procedure to file an RTI?
10. You bought a product from a nearby shop which was expired, the shop keeper Refused to return it. Use your knowledge of Consumer Protection Act to decide what you do next?
11. What must you keep in mind as a consumer while making a purchase that may later help you make use of Consumer Protection Act? (Hint- Should you ask for a Bill?)
12. In your surroundings have you witnessed any incident that would be considered offensive under the SC and ST Act? Make a class- room presentation on it.

Suggested Readings:

- *Creating Legal Awareness*, edited by Kamala Sankaran and Ujjwal Singh (Delhi: OUP, 2007)
- Legal literacy: available amongst interdisciplinary courses on Institute of Life Long Learning(Delhi University) Virtual Learning Portal namely vle.du.ac.in
- Multiple Action Research Group, *Our Laws Vols 1-10*, Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Indian Social Institute, New Delhi, *Legal Literacy Series Booklets*.
- S.K. Agarwala, *Public Interest Litigation in India*, K.M. Munshi Memorial Lecture, Second Series, Indian Law Institute, Delhi, 1985.
- S.P. Sathe, *Towards Gender Justice*, Research Centre for Womens' Studies, SNDT Women's University, Bombay, 1993.
- Asha Bajpai, *Child Rights in India : Law, Policy, and Practice*, Oxford University Press, New Delhi,2003
- Agnes, Flavia *Law and Gender Equality*, OUP, 1997.
- Sagade, Jaga, *Law of Maintenance: An Empirical Study*, ILS Law College, Pune 1996.
- B.L. Wadhera, *Public Interest Litigation - A Handbook*, Universal, Delhi, 2003.
- Nomita Aggarwal, Women and Law in India, New Century, Delhi, 2002.
- P.C. Rao and William Sheffiled *Alternate Dispute Resolution: What it is and How it Works*, , Universal Law Books and Publishers, Delhi, 2002
- V.N. Shukla's *Constitution of India* by Mahendra P. Singh, Eastern Book Co. 10th edition 2001.
- Parmanand Singh, *'Access to Justice and the Indian Supreme Court'*, 10 & 11 Delhi Law Review 156, 1981-82.
- J. Kothari, (2005) 'Criminal Law on Domestic Violence', *Economic and Political Weekly*,Vol. 40(46), pp. 4843-4849.
- H. Mander, and A. Joshi, *The Movement for Right to Information in India, People's Powerfor the Control of Corruption*. Available at http://www.rtigateway.org.in/Documents/References/English/Reports/12.%20An%20armticle%20on%20RTI%20by%20Harsh%20Mander.pdf.
- P. Mathew, and P. Bakshi, (2005) '*Indian Legal System'*, New Delhi: Indian Social Institute.
- P. Mathew, and P. Bakshi, (2005) '*Women and the Constitution'*, New Delhi: Indian Social Institute.
- N. Menon, (2012) 'Sexual Violence', in *Seeing Like a Feminist*, New Delhi: Zubaan and Penguin, pp. 113-146.
- M, Mohanty et al. (2011) *Weapon of the Oppressed, Inventory of People's Rights in India*. Delhi: Danish Books.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Centre for Good Governance, (2008) *Right to Information Act, 2005: A Citizen's Guide*, Availableat http:// www.rtigateway.org.in/Documents/Publications/A%20CITIZEN'S%20GUIDE.pdf

- Pandey, (2004) *Rights of the Consumer*. New Delhi: Indian Social Institute.

- Andrew, (1996) 'Arbitrary Government and the Rule of Law', in *Arguing About the Law, An Introduction to Legal Philosophy,* Wordsworth, Boston., pp.3-19.

- SAHRDC, (2006) 'Criminal Procedure and Human Rights in India' in *Oxford Handbook of Human Rights and Criminal Justice in India- The system and Procedure*, New Delhi: Oxford University Press, pp.5-15.

- K. Sankaran and U. Singh, (2008) 'Introduction', in *Towards Legal Literacy*. New Delhi: Oxford University Press, pp. xi – xv.

- Pandey, (2008) 'Laws Relating to Criminal Justice: Challenges and Prospects', in K.Sankaran and U. Singh, *Towards Legal Literacy,* New Delhi: Oxford University Press, pp.61-77.

- SAHRDC, (2006)'Reporting a Crime: First Information Report', in *Oxford Handbook of Human Rights and Criminal Justice in India- The system and Procedure*, New Delhi: Oxford University Press, pp.16-26.

- SAHRDC, (2006) 'Bail', in *Oxford Handbook of Human Rights and Criminal Justice in India- The system and Procedure*, New Delhi: Oxford University Press, pp.59-71.

- SAHRDC, (2006) 'Detention', in *Oxford Handbook of Human Rights and Criminal Justice in India- The system and Procedure*. New Delhi: Oxford University Press, Pp.72-84.

- P. Mathew, (2003) *Your Rights if you are Arrested,* New Delhi. Indian Social Institute.

- Gender Study Group, (1996) Sexual Harassment in Delhi University, A Report, Delhi: University of Delhi.

- P. Mathew, (2002) *The Law on Atrocities Against Scheduled Castes and Scheduled Tribes,* New Delhi: Indian Social Institute.

- K. Saxena, (2011) 'Dalits', in M. Mohanty et al., *Weapon of the Oppressed, Inventory of People's Rights in India*. Delhi: Danish Books, Pp.15-38

- K. Saxena, (2011) 'Adivasis', in M. Mohanty et al., *Weapon of the Oppressed, Inventory of People's Rights in India*, Delhi: Danish Books, Pp.39-65.

- S. Durrany, (2006) *The Protection of Women From Domestic Violence Act 2005*, New Delhi: Indian Social Institute.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- V. Kumari, (2008) 'Offences Against Women', in K, Sankaran and U. Singh (eds.) *Towards Legal Literacy,* New Delhi: Oxford University Press.

- P. D. Mathew,(2004)*The Measure to Prevent Sexual Harassment of Women in Work Place.* New Delhi: Indian Social Institute.

- D. Srivastva, (2007) 'Sexual Harassment and Violence against Women in India: Constitutional and Legal Perspectives', in C. Kumar and K. Chockalingam (eds) *Human Rights, Justice, and Constitutional Empowerment*, Delhi: Oxford University Press.

- S. Naib, (2013) 'Right to Information Act 2005', in *The Right to Information in India*, New Delhi: Oxford University Press, Available at http://www.humanrightsinitiative.org/publications/rti/guide_to_use_rti_act_2005_Eng lish2012_light_Aspire.pdf.

Bare Acts:

- *Consumer Protection Act, 1986,* Available http://chdslsa.gov.in/right_menu/act/pdf/consumer.pdf.

- *Criminal law Amendment Act, 2013,* Available at http://egazette.nic.in/WriteReadData/2013/E_17_2013_212.pdf , Accessed: 10.04.2013.

- *Protection of Women Against Domestic Violence Act, 2005*, Available at http://wcd.nic.in/wdvact.pdf.

- *Right to Information Act, 2005*, Available at http://righttoinformation.gov.in/rti-act.pdf.

- *Scheduled Castes and Scheduled Tribes Prevention of Atrocities Act, 1989,* Available at http://tribal.nic.in/writereaddata/linkimages/poaact989E4227472861.pdf.

- *Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights)Act2006,*Availableathttp://tribal.gov.in/writereaddata/mainlinkFile/File1033.pdf.

- *The Persons with Disabilities (Equal Opportunities, Protection of Rights, Full Participation)Act,1995,*Availableathttp://bhind.nic.in/Sparsh_disability%20act%201995.pdf.

- *The Right of Children to Free and Compulsory Education Act, 2009,* Available at http://www.delta.org.in/form/rte.pdf.

- *The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Bill, 2012***,** Available at http://164.100.24.219/BillsTexts/LSBillTexts/PassedLoksabha/144C_2010_LS_Eng.pdf.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- *Criminal Law Amendment Act*, 2013**,** Available at ,mha.nic.in/pdfs/TheCrimnalLaw030413.pdfFile Format: PDF/Adobe Acrobat – Quick View.

OR

SEC-1: Public Opinion and Survey Research **Credit 02**

SEC1T: Public Opinion and Survey Research

I. Introduction to the course

Definition and characteristics of public opinion, conceptions and characteristics, debates about its role in a democratic political system, uses for opinion poll

II. Measuring Public Opinion with Surveys: Representation and sampling

b. What is sampling? Why do we need to sample? Sample design.
c. Sampling error and non-response
d. Types of sampling: Non random sampling (quota, purposive and snowball sampling); random sampling: simple and stratified

III. Survey Research

a. Interviewing: Interview techniques pitfalls, different types of and forms of interview
b. Questionnaire: Question wording; fairness and clarity.

IV. Quantitative Data Analysis

a. Introduction to quantitative data analysis
a. Basic concepts: correlational research, causation and prediction, descriptive and inferential Statistics

V. Interpreting polls

Prediction in polling research: possibilities and pitfalls
Politics of interpreting polling

Student Exercises:

1. Discussion of readings and Indian examples.
2. Groups of students to collect examples of and discuss various sample based studies across many fields: e.g. consumer behaviour, unemployment rates, educational standards, elections, medicinal trials etc.
3. Non-random sampling: The students have to identify one group of people or behavior that is unique or rare and for which snowball sampling might be needed. They have to identify how they might make the initial contact with this group to start snowball rolling.
4. Give the students the electoral list of an area in Delhi (http://ceodelhi.gov.in). The students have to draw a random sample of n number of respondents.
5. For this activity, working with a partner will be helpful. The class should first decide on a topic of interest. Then each pair should construct a five-item self report questionnaire. Of the five items, there should be at least one

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

nominal response, one ordinal response and one interval. After the common questionnaire is constructed putting together the questions from everyone, working in pairs, the questionnaire should be administered on 10 different individuals.

6. Give the students a questionnaire from any public opinion survey and ask them to identify the type of variables.

SuggestedReadings:

- R. Erikson and K. Tedin, (2011) *American Public Opinion,* 8th edition, New York: Pearson Longman Publishers,. pp. 40-46.
- G. Gallup, (1948) *A guide to public opinion polls* Princeton, Princeton University Press, 1948. Pp. 3-13.
- G. Kalton, (1983) *Introduction to Survey Sampling* Beverly Hills, Sage Publication.
- Lokniti Team (2009) 'National Election Study 2009: A Methodological Note', *Economic and Political Weekly,* Vol. XLIV (39)
- Lokniti Team, (2004) 'National Election Study 2004', *Economic and Political Weekly,* Vol. XXXIX (51).
- 'Asking About Numbers: Why and How', *Political Analysis* (2013), Vol. 21(1): 48-69, (first published online November 21, 2012)
- H. Asher, (2001) 'Chapters 3 and 5', in *Polling and the Public: What Every Citizen Should Know,* Washington DC: Congressional Quarterly Press.
- R. Erikson and K. Tedin, (2011) *American Public Opinion,* 8th edition, New York, Pearson Longman Publishers, pp. 40-46.
- Agresti and B. Finlay, (2009) *Statistical methods for the Social Sciences,* 4th edition, Upper saddle river, NJ: Pearson-Prentice Hall,
- S. Kumar and P. Rai, (2013) 'Chapter 1', in *Measuring Voting Behaviour in India,* New Delhi: Sage.
- R. Karandikar, C. Pyne and Y. Yadav, (2002) 'Predicting the 1998 Indian Parliamentary Elections', *Electoral Studies,* Vol. 21, pp.69-89.
- M. McDermott and K. A. Frankovic, (2003) 'Horserace Polling and Survey Methods Effects: An Analysis of the 2000 Campaign', *Public Opinion Quarterly* 67, pp. 244-264.
- K. Warren, (2001) 'Chapter 2', in *In Defense of Public Opinion Polling,* Boulder: Westview Press, pp. 45-80.
- W. Cochran, (2007) 'Chapter 1', *Sampling Techniques,* John Wiley & Sons.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- G. Gallup, (1948) *A Guide to Public Opinion Polls.* Princeton: Princeton University Press, pp. 14-20; 73-75.

- D. Rowntree (2000) *Statistics Without Tears: an Introduction for Non Mathematicians,* Harmondsworth: Penguin.

SEC-2: Legislative Practices and Procedures **Credit 02**

SEC2T: Legislative Practices and Procedures

I. Powers and functions of people's representative at different tiers of governance
Members of Parliament, State legislative assemblies, functionaries of rural and urban local self - government from Zila Parishad, Municipal Corporation to Panchayat/ward.

II. Supporting the legislative process
How a bill becomes law, role of the Standing committee in reviewing a bill, legislative consultants, the framing of rules and regulations.

III. Supporting the Legislative Committees
Types of committees, role of committees in reviewing government finances, policy, programmes, and legislation.

IV. Reading the Budget Document
Overview of Budget Process, Role of Parliament in reviewing the Union Budget, Railway Budget, Examination of Demands for Grants of Ministries, Working of Ministries.

V. Support in media monitoring and communication
Types of media and their significance for legislators; Basics of communication in print and electronic media.

Suggested Readings :

- M. Madhavan, and N. Wahi, (2008) *Financing of Election Campaigns* PRS, Centre for Policy Research, New Delhi, Available at: http://www.prsindia.org/uploads/media/conference/Campaign_finance_brief.pdf, Accessed: 19.04.2013

- S. Vanka, (2008) *Primer on MPLADS,* Centre for Policy Research, New Delhi, Available at http://www.prsindia.org/parliamenttrack/primers/mplads-487/, Accessed: 19.04.2013

- H. Kalra, (2011) *Public Engagement with the Legislative Process* PRS, Centre for Policy Research, New Delhi, Available at: http://www.prsindia.org/administrator/uploads/media/Conference%202011/Public%20Engagement%20with%20the%20Legislative%20Process.pdf,Accessed: 19.04.2013.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Government of India (*Lok Sabha* Secretariat), (2009) *Parliamentary Procedures (Abstract Series)*, Available at http://164.100.47.132/LssNew/abstract/index.aspx, Accessed: 19.04.2013

- Government of India, (Ministry of Parliamentary Affairs), (2009) *Legislation, Parliamentary Procedure*, Available at http://mpa.nic.in/Manual/Manual_English/Chapter/chapter-09.htm, Accessed: 19.04.2013

- Government of India, (Ministry of Parliamentary Affairs) (2009), *Subordinate Legislation, Parliamentary Procedure*, Available at: http://mpa.nic.in/Manual/Manual_English/Chapter/chapter-11.htm Accessed: 19.04.2013

- D. Kapur and P. Mehta, (2006) 'The Indian Parliament as an Institution of Accountability', *Democracy, Governance and Human Rights*, Programme Paper Number 23, United Nations Research Institute for Social Development, Available at:http://www.unrisd.org/UNRISD/website/document.nsf/240da49ca467a53f80256b4f005ef245/8e6fc72d6b546696c1257123002fcceb/$FILE/KapMeht.pdf, Accessed: 19.04.2013

- O. Agarwal and T. Somanathan, (2005) '*Public Policy Making in India: Issues and Remedies*', Available at: http://www.cprindia.org/admin/paper/Public_Policy_Making_in_India_14205_TV_SOMANA THAN.pdf, Accessed: 19.04.2013

- Debroy, (2001) 'Why we need law reform' *Seminar* January.

- P. Mehta, 'India's Unlikely Democracy: The Rise of Judicial Sovereignty', *Journal of Democracy*, Vol. 18(2), pp.70-83.

- Government link: http://loksabha.nic.in/; http://rajyasabha.nic.in/; http://mpa.nic.in/

- K. Sanyal, (2011) *Strengthening Parliamentary Committees* PRS, Centre for Policy Research, New Delhi, Available at:http://www.prsindia.org/administrator/uploads/media/Conference%202011/Strengthening%20Parliamentary%20Committees.pdf, Accessed: 19.04.2013

- Celestine, (2011) *How to Read the Union Budget* PRS, Centre for Policy Research, New Delhi, Available at http://www.prsindia.org/parliamenttrack/primers/how-to-read-theunion- budget-1023/, Accessed: 19.04.2013

- G. Rose, (2005) **'**How to Be a Media Darling: There's No getting Away From It', *StateLegislatures*, Vol. 31(3).

- N. Jayal and P. Mehta (eds), (2010)*The Oxford Companion to Politics in India*, Oxford University Press: New Delhi,Jalan, (2007) *India's Politics*, New Delhi: Penguin.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Initiating Discussion on Various Type of Debates in *Rajya Sabha*, Available athttp://rajyasabha.nic.in/rsnew/publication_electronic/75RS.pdf, Accessed: 19.04.2013.

- *Praxis of Parliamentary Committees: Recommendations of Committee on Rules* published by *Rajya Sabha*, available at: http://rajyasabha.nic.in/rsnew/publication_electronic/Praxis.pdf,Accessed: 19.04.2013.

- S.J. Phansalkar, Policy Research in the Indian Context

- N. Singh, *'Some Economic Consequences of India's Institutions of Governance: A Conceptual Framework'*, Available at: http://econ.ucsc.edu/faculty/boxjenk/wp/econ_conseq_2003_rev2.pdf,Accessed:19.04.2013.

- R. Guha, (2007), *India After Gandhi*, Macmillan: New Delhi.

- *Parliamentary Procedures (Abstract Series)* published by *Lok Sabha*, Available at http://164.100.47.132/LssNew/abstract/index.aspx, website: www.loksabha.nic.in,Accessed: 19.04.2013.

- *Committees of Lok Sabha*, Available at: http://164.100.47.134/committee/committee_list.aspxAccessed: 19.04.2013. *Ethics Committee of Rajya Sabha*, available at: http://rajyasabha.nic.in/rsnew/publication_electronic/ethics_committee.pdf,Accessed: m19.04.2013.

- *Committees of Parliament, Parliamentary Procedure, Ministry of Parliamentary Affairs*, Available at http://mpa.nic.in/Manual/Manual_English/Chapter/chapter-12.htm, Accessed: 19.04.2013.

- *Nomination of Members of Parliament on Committees, Councils, Boards and Commissions, etc., set up by the Government, Ministry of Parliament Affairs*, Available at http://mpa.nic.in/Manual/Manual_English/Chapter/chapter-14.htm, Accessed: 19.04.2013.

- *Parliamentary Procedures: Problems and Perspectives 2009 Published* by *Rajya Sabha*,Availableathttp://rajyasabha.nic.in/rsnew/publication_electronic/parl_procedure2009.pdf, Accessed: 19.04.2013.

- *Primer on the Budget Process* published by PRS, Available at http://www.prsindia.org/parliamenttrack/primers/the-budget-process-484/, Accessed: 19.04.2013.

- *Background note on Financial Oversight by Parliament* published by PRS, Availableathttp://www.prsindia.org/administrator/uploads/media/Conference%20note/Conference%20note%20on%20financial%20oversight.pdf,Accessed: 19.04.2013.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- P. Keefer and S Khemani, (2009) 'When Do Legislators Pass On "Pork"? The Determinants of Legislator Utilization of a Constituency Development Fund in India', in *World Bank Policy*

- *Research Working Paper Series* 4929, pp. 1-45, Available at SSRN: http://ssrn.com/abstract=1405160, Accessed: 19.04.2013.

- *Parliamentary Procedures (Abstract Series), Lok Sabha*, Available at http://164.100.47.132/LssNew/abstract/process.htm

- *Budget, Parliamentary Procedure, Ministry of Parliamentary Affairs*, available at http://mpa.nic.in/Manual/Manual_English/Chapter/chapter-07.htm, Accessed: 19.04.2013. http://mpa.nic.in/mpahandbook/parlia13.pdf

OR

SEC-2: Peace and Conflict Resolution **Credit 02**

SEC2T: Peace and Conflict Resolution

Unit-1
International Peace and Conflict Resolution: Sources of War: International and Domestic Issues and Trends

Unit-2
What is Conflict: Introduction to International Conflict Resolution

Unit-3
International Conflict Resolution Theory: Models developed by Johan Galtung, Joseph Montville, Morton Deutsch, William Zartman, Levy Jack

Unit-4
Conflict resolution: Back ground of Various Peace Movements and Concepts, Principles used to resolve conflict

Unit-5
Cross-boarder relationships between the world's peaceful and war-torn zones (migration and information flows, economic transactions, international rules and regulations, normative concepts and political decisions)

Unit-6
Conflict Transformation: is Peace Possible? Resolve problems through conflict analyses and instrumentation of peace concepts

Unit-7
Current perspective of peace and conflict resolution: Grass-roots level perspective on war and Peace

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Kriesberg, Louis, Constructive Conflicts: From Escalation to Resolution, Rowman & Littlefield, Maryland, 1998, pp. 58-150
- Starkey, Boyer, and Wilkenfield, Negotiating a Complex World. Rowman & Littlefield, Maryland, 1999, pp. 1-74
- Zartman, William (ed.), Collapsed States: The Disintegration and Restoration of Legitimate Authority, Reiner, Boulder, 1995, pp. 1-14 and 267-273
- Zartman, William & Touval, Saadia "International Mediation in the Post-Cold War Era", in Crocker et al., Managing Global Chaos, USIP, 1996, pp. 445-461
- Zartman, William, "Dynamics and Constraints in Negotiations in Internal Conflicts", in Zartman, William (ed), Elusive Peace: Negotiating an End to Civil Wars, The Brookings Institution, Washington, 1995, pp. 3-29

- Zartman, William (ed.), Collapsed States: The Disintegration and Restoration of Legitimate Authority, Reiner, Boulder, 1995, pp. 1-14 and 267-273
- Zartman, William & Touval, Saadia "International Mediation in the Post-Cold War Era", in Crocker et al., Managing Global Chaos, USIP, 1996, pp. 445-461

- Levy, Jack, "Contending Theories of International Conflict: A Levels-of-Analysis Approach" in Crocker et al, Managing Global Chaos, USIP, 1995, pp. 3-24
- Carr, Edward H., "Realism and Idealism," Richard Betts (ed), Conflict After the Cold War, Boston: Simon & Schuster, 1994.

- Carr, Edward H., "Realism and Idealism," Richard Betts (ed), Conflict After the Cold War, Boston: Simon & Schuster, 1994.

- Waltz, Kenneth N., "Structural Causes and Economic Effects," Richard Betts (ed), Conflict After the Cold War, Boston: Simon & Schuster, 1994.
- Hampson, Fen Osler, Nurturing Peace, USIP, 1996, pp. 3-25
- Galtung, Johan, There Are Alternatives: Four Roads to Peace and Security, Nottingham, Spokesman, 1984, pp. 162-205
- Galtung, Johan, Peace by Peaceful Means: Peace and conflict, Development and Civilization, Sage, London, 1996, pp. 9-114
- Galtung, Johan, The True Worlds: A Transnational Perspective, New York, Free Press, 1980, pp. 107-149
- Kelman, Herbert C., "Interactive Problem Solving", in Fisher, Ronald J. (ed.) Interactive Conflict Resolution, Syracuse University Press, 1997, pp. 56-74
- Kritz, Neil J., "The Rule of Law in the Post-conflict Phase: Building a Stable Peace", in Crocker et al, Managing Global Chaos, USIP, 1996, pp. 587-606

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Galtung, Johan, "The Basic Need Approach", in Human Needs: a Contribution to the Current Debate, Verlag, Cambridge, 1980, pp. 55-126
- Saunders, Harold H., A Public Peace Process: Sustained Dialogue to Transform Racial and Ethnic Conflicts, New York, 1999, pp. 1-80
- Galtung, Johan, There Are Alternatives: Four Roads to Peace and Security, Nottingham, Spokesman, 1984, pp. 162-205
- Galtung, Johan, "The Basic Need Approach", in Human Needs: a Contribution to the Current Debate, Verlag, Cambridge, 1980, pp. 55-126
- Galtung, Johan, Peace by Peaceful Means: Peace and conflict, Development and Civilization, Sage, London, 1996, pp. 9-114
- Galtung, Johan, The True Worlds: A Transnational Perspective, New York, Free Press, 1980, pp. 107-149
- Deutsch, Morton, The Resolution of Conflict: Constructive and Destructive Processes, New Haven, Yale University Press, 1973, pp. 1-123
- Galtung, Johan, Peace by Peaceful Means: Peace and conflict, Development and Civilization, Sage, London, 1996, pp. 9-114
- Zartman, William, "Dynamics and Constraints in Negotiations in Internal Conflicts", in Zartman, William (ed), Elusive Peace: Negotiating an End to Civil Wars, The Brookings Institution, Washington, 1995, pp. 3-29
- Kelman, Herbert C., "Interactive Problem Solving", in Fisher, Ronald J. (ed.) Interactive Conflict Resolution, Syracuse University Press, 1997, pp. 56-74

Generic Elective (GE)
[Interdisciplinary for other department]

GE-1: Nationalism in India **Credit 06**

GE1T: Nationalism in India

I. Approaches to the Study of Nationalism in India

Nationalist, Imperialist, Marxist, and Subaltern Interpretations

II. Reformism and Anti-Reformism in the Nineteenth Century

Major Social and Religious Movements in 19th century

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

III. Nationalist Politics and Expansion of its Social Base

a. Phases of Nationalist Movement: Liberal Constitutionalists, Swadeshi and the Radicals; Beginning of Constitutionalism in India
b. Gandhi and Mass Mobilisation: Non-Cooperation Movement, Civil Disobedience Movement, and Quit India Movement
c. Socialist Alternatives: Congress Socialists, Communists

IV. Social Movements

a. The Women's Question: Participation in the National Movement and its Impact
b. The Caste Question: Anti-Brahminical Politics
c. Peasant, Tribals and Workers Movements

V. Partition and Independence

a. Communalism in Indian Politics
b. The Two-Nation Theory, Negotiations over Partition

Suggested Readings:

- S. Bandopadhyay, (2004) *From Plassey to Partition: A History of Modern India*, New Delhi: Orient Longman, pp. 184-191

- R. Thapar, (2000) 'Interpretations of Colonial History: Colonial, Nationalist, Post-colonial', in P. DeSouza, (ed.) *Contemporary India: Transitions*, New Delhi: Sage Publications, pp. 25-36.

- S. Bandopadhyay, (2004) From Plassey to Partition: A History of Modern India, New Delhi: Orient Longman, pp.139-158, 234-276.

- Sen, (2007) 'The idea of Social Reform and its Critique among Hindus of Nineteenth Century India', in S. Bhattacharya, (ed.) *Development of Modern Indian Thought and the Social Sciences*, Vol. X. New Delhi: Oxford University Press.

- S. Bandopadhyay, (2004) *From Plassey to Partition: A History of Modern India*. New Delhi:Orient Longman, pp. 279-311.

- S. Sarkar, (1983*) Modern India (1885-1947)*, New Delhi: Macmillan,

- P. Chatterjee, (1993) 'The Nation and its Pasts', in P. Chatterjee, *The Nation and its Fragments: Colonial and Postcolonial Histories*. New Delhi: Oxford University Press, pp. 76-115.

- S. Bandopadhyay, (2004) *From Plassey to Partition: A history of Modern India*. New Delhi: Orient Longman, pp. 342-357, 369-381.

- G. Shah, (2002) *Social Movements and the State*, New Delhi: Sage, pp. 13-31

- Jalal, and S. Bose, (1997) *Modern South Asia: History, Culture, and Political Economy*. New Delhi: Oxford University Press, pp. 135-156.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Nandy, (2005) *Rashtravad banam Deshbhakti* Translated by A. Dubey, New Delhi: Vani Prakashan. pp. 23-33. (The original essay in English is from A. Nandy, (1994) New Delhi: Oxford University Press, pp. 1-8.)

- Chakrabarty and R. Pandey, (2010) *Modern Indian Political Thought*, New Delhi: Sage Publications.

- P. Chatterjee, (1993) *The Nation and its Fragments: Colonial and Postcolonial Histories*, New Delhi: Oxford University Press.

- R. Pradhan, (2008) *Raj to Swaraj*, New Delhi: Macmillan (Available in Hindi).

- S. Islam, (2006) *Bharat Mein Algaovaad aur Dharm*, New Delhi: Vani Prakashan.

OR

GE-1: Feminism: Theory and Practice **Credit 06**

GE1T: Feminism: Theory and Practice

I. Approaches to understanding Patriarchy

- Feminist theorising of the sex/gender distinction. Biologism versus social constructivism
- Understanding Patriarchy and Feminism
- Liberal, Socialist, Marxist, Radical feminism, New Feminist Schools/Traditions

II. History of Feminism

- Origins of Feminism in the West: France, Britain and United States of America
- Feminism in the Socialist Countries: China, Cuba and erstwhile USSR
- Feminist issues and women's participation in anti-colonial and national liberation movements with special focus on India

III. The Indian Experience **(16 Lectures)**

- Traditional Historiography and Feminist critiques. Social Reforms Movement and position of women in India. History of Women's struggle in India
- Family in contemporary India - patrilineal and matrilineal practices. Gender Relations in the Family, Patterns of Consumption: Intra Household Divisions, entitlements and bargaining, Property Rights
- Understanding Woman's Work and Labour – Sexual Division of Labour, Productive and Reproductive labour, Visible - invisible work – Unpaid (reproductive and care),Underpaid and Paid work,- Methods of computing women's work , Female headed households

Suggested Readings:

- Geetha, V. (2002) *Gender*. Calcutta: Stree. Geetha, V. (2007) *Patriarchy*. Calcutta: Stree. Jagger, Alison. (1983) *Feminist Politics and Human Nature*. U.K.: Harvester Press, pp. 25-350.

- Ray, Suranjita. *Understanding Patriarchy*. Available at: http://www.du.ac.in/fileadmin/DU/Academics/course_material/hrge_06.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Lerner, Gerda. (1986) *The Creation of Patriarchy*. New York: Oxford University Press.
- Rowbotham, Shiela. (1993) *Women in Movements*. New York and London: Routledge, Section I, pp. 27-74 and 178-218.
- Jayawardene, Kumari. (1986) *Feminism and Nationalism in the Third World*. London: ZedBooks, pp. 1-24, 71-108, and Conclusion.
- Forbes, Geraldine (1998) *Women in Modern India*. Cambridge: Cambridge University Press,pp. 1-150.
- Eisentein, Zillah. (1979) *Capitalist Patriarchy and the Case for Socialist Feminism*. New York:Monthly Review Press, pp. 271-353.
- Funk, Nanette & Mueller, Magda. (1993) *Gender, Politics and Post-Communism*. New York and London: Routledge, Introduction and Chapter 28.
- Chaudhuri, Maiyatree. (2003) 'Gender in the Making of the Indian Nation State', in Rege, Sharmila. (ed.) *The Sociology of Gender: The Challenge of Feminist Sociological Knowledge*.New Delhi: Sage.
- Banarjee, Sikata. (2007) 'Gender and Nationalism: The Masculinisation of Hinduism andFemale Political Participation', in Ghadially, Rehana. (ed.) *Urban Women in ContemporaryIndia: A Reader*. New Delhi: Sage.
- Roy, Kumkum. (1995) 'Where Women are Worshipped, There Gods Rejoice: The Mirage ofthe Ancestress of the Hindu Women', in Sarkar, Tanika & Butalia, Urvashi. (eds.) *Women and the Hindu Right*. Delhi: Kali for Women, pp. 10-28.
- Chakravarti, Uma. (1988) 'Beyond the Altekarian Paradigm: Towards a New Understanding of Gender Relations in Early Indian History', *Social Scientist*, Volume 16, No. 8.
- Banerjee, Nirmala. (1999) 'Analysing Women's work under Patriarchy' in Sangari, Kumkum & Chakravarty, Uma. (eds.) *From Myths to Markets: Essays on Gender*. Delhi: Manohar.
- Gandhi, Nandita & Shah, Nandita. (1991) *The Issues at Stake – Theory and Practice in Contemporary Women's Movement in India*. Delhi: Zubaan, pp. 7-72.
- Shinde, Tarabai (1993) 'Stri-Purush Tulna', in Tharu, Susie & Lalita, K. (eds.) *Women Writing in India, 600 BC to the Present. Vol. I.* New York: Feminist Press.
- Desai, Neera & Thakkar, Usha. (2001) *Women in Indian Society*. New Delhi: National Book Trust.

GE-2: Contemporary Political Economy **Credit 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

GE2T: Contemporary Political Economy

I. Approaches to Political Economy

Classical Liberalism, Marxism, Welfarism, Neo-liberalism and Gandhian approach

II. Capitalist Transformation

a. European Feudalism and Transition to Capitalism
b. Globalization: Transnational Corporations, World Trade Organization, Non-governmental Organizations (their role in development)

III. Issues in Development

I. Culture: Media and Television
II. Big Dams and Environmental Concerns
III. Military: Global Arms Industry and Arms Trade
IV. Knowledge Systems

IV. Globalization and Development Dilemmas

I. IT revolution and Debates on Sovereignty
II. Gender
III. Racial and Ethnic Problems
IV. Migration

Suggested Readings :

- Arblaster, A. (2006) 'The Rise and Decline of Western Liberalism' in Lal, D. *Reviving the Invisible Hand: The Case for Classical Liberalism in the Twentyfirst Century*. Princeton: Princeton University Press, pp. 1- 8, 17- 30, and 48- 51.

- Mandel, E. (1979) *An Introduction to Marxist Economic Theory*. New York: Pathfinder Press, 3rd print, pp. 3-73.

- Kersbergen, K.V. and Manow, P. (2009) *Religion, Class Coalition and Welfare State*. Cambridge: Cambridge University Press, chapters 1 and 10, pp. 1-38; 266-295

- Andersen, J. G. (ed.) (2008) 'The Impact of Public Policies' in Caramani, D *Comparative Politics.* Oxford: Oxford University Press, ch 22, pp. 547- 563 .

- Harvey, D. (2005) A *Brief History of Neo-liberalism.* Oxford: Oxford University Press, pp. 1-206.

- Ghosh, B.N. (2007) *Gandhian Political Economy: Principles, Practice and Policy*. Ashgate Publishing Limited, pp. 21- 88.

- Phukan, M. (1998) *The Rise of the Modern West: Social and Economic History of Early Modern Europe.* Delhi: Macmillan India, (ch.14: Transition from Feudalism to Capitalism), pp. 420- 440.

- Gilpin, R. (2003) *Global Political Economy: Understanding the International Economic Order*. Hyderabad: Orient Longman, pp. 278- 304.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Kennedy, P. (1993) *Preparing for the Twentieth Century*. UK: Vintage, Ch. 3 Gelinas, J. B. (2003) *Juggernaut Politics- Understanding Predatory Globalization.* Halifax, Fernwood, Ch.3. Available from: *www.globalpolicy.org*

- Gilpin, R. (2003) *Global Political Economy: Understanding the International Economic Order*. Hyderabad: Orient Longman, Ch. 8, pp. 196- 233.

- Prasad, K. (2000) *NGOs and Social-economic Development Opportunities*. New Delhi: Deep & Deep, ch. 1, 2, 3, 5.

- Fisher, J. (2003) *Non-governments – NGOs and the Political Development in the Third World.* Jaipur: Rawat, ch. 1, 4, 6.81

- Media and Television Mackay, H. (2004) 'The Globalization of Culture' in Held, D. (ed.) *A Globalizing World? Culture, Economics and Politics*. London: Routledge, pp. 47- 84

- Tomlinson, J. (2004) 'Cultural Imperialism' in Lechner, F. J and Boli, J. (eds.) *The*
- *Globalization Reader*. Oxford: Blackwell, pp. 303- 311.

- Lechner, F. J and Boli, J. (eds.) (2004) *The Globalization Reader.* Oxford: Blackwell, pp. 361- 376 and 398- 404.

- Held, D. and Mcrew, A. (eds.) (2000) *The Global Transformations Reader*. Cambridge: Polity Press, pp. 374- 386.

- Singh, S. (1997) *Taming the Waters: The Political Economy of Large Dams in India*. New Delhi: Oxford University Press, pp. 133- 163, 182- 203, 204- 240.

- Kesselman, M. (2007) *The Politics of Globalization.* Boston: Houghton Mifflin Company, pp. 330- 339.

- Marglin, S. (1990) 'Towards the Decolonisation of the Mind' in Marglin, S. and Marglin, F. A. (eds.) *Dominating Knowledge: Development, Culture and Resistance*. Oxford: Oxford University Press, pp. 1- 28.

- *L. Lechner, F. J and Boli, J. (eds.) (2004) The Globalization Reader. Oxford: Blackwell, pp. 211- 244.*

- *Held, D. and Mcrew, A. (eds.) (2000) The Global Transformations Reader. Cambridge: Polity Press, pp. 105-155.*

- *Omahe, K. (2004) 'The End of the Nation State', L. Lechner, F. J and Boli, J. (eds.) The Globalization Reader. Oxford: Blackwell, ch. 29.*

- *Glen, J. (2007) Globalization: North-South Perspectives.* London: Routledge, ch.6.

- Sen, A. (2006) *Identity and Violence: Illusion and Destiny.* London: Penguin/Allen Lane, ch.7, pp. 130-148.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Berkovitch, N. (2004) 'The Emergence and Tranformation of the International Women's Movements' in L. Lechner, F. J and Boli, J. (eds.) *The Globalization Reader*. Oxford: Blackwell, ch.31, pp. 251- 257.

- Steans, J. (2000) 'The Gender Dimension' in Held, D. and Mcrew, A. (eds.), *The Global Transformations Reader*. Cambridge: Polity Press, ch.35, pp. 366- 373.

- Tickner, J. A. (2008) 'Gender in World Politics' in Baylis, J.,Smith, S. & Owens, P. (eds.) *Globalization of World Politics*, 4th edn., New Delhi: Oxford University Press, ch.15.

- Kesselman, M. and Krieger, J. (2006) *Readings in Comparative Politics: Political Challenges and Changing Agendas*. Boston: Houghton Miffin Company, pp. 243- 254 and 266- 276.

- Arya, S. and Roy, A. (eds.) *Poverty Gender and Migration.* New Delhi: Sage, Ch. 1

- Kesselman, M. (2007) *The Politics of Globalization.* Boston: Houghton Mifflin Company, pp. 450- 462.

- Nayyar, D. (ed.) (2002) *Governing Globalization.* Delhi: OUP, pp. 144- 176.

OR

GE-2 : Governance: issues and challenges **Credit 06**

GE2T : Governance: issues and challenges

1. Government and governance: concepts
Role of State in the Era of Globalisation
State, Market and Civil Society

2. Governance and development
Changing Dimensions of Development Strengthening Democracy through Good Governance

3. Environmental governance
Human-Environment Interaction
Green Governance: Sustainable Human Development

4. Local governance

Democratic decentralisation
People's Participation in Governance

5. Good governance initiatives in india: best practices
- Public Service Guarantee Acts
- Electronic Governance

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Citizens Charter & Right to Information
- Corporate Social Responsibility

Suggested Readings :

- Chakrabarty and M. Bhattacharya, (eds.) *The Governance Discourse.* New Delhi: Oxford University Press,1998
- Surendra Munshi and Biju Paul Abraham [eds.] , *Good Governance, Democratic Societies And Globalisation*, Sage Publishers, 2004
- United Nation Development Programme , *Reconceptualising Governance*, New York, 1997
- Carlos Santiso, *Good Governance and Aid Effectiveness: The World Bank and Conditionality* Johns Hopkins University, The Georgetown Public Policy Review ,Volume VII, No.1, 2001
- Vasudha Chotray and Gery Stroker , Governance Theory: A Cross Disciplinary Approach , Palgrave Macmillan ,2008
- J. Rosenau, 'Governance, Order, and Change in World Politics', in J. Rosenau, and E. Czempiel (eds.) *Governance without Government: Order and Change in World Politics*, Cambridge: Cambridge University Press ,1992
- Nayar (ed.), *Globalization and Politics in India*. Delhi: Oxford University Press, 2007 pp. 218-240.
- Smita Mishra Panda , *Engendering Governance Institutions: State, Market And Civil Society*, Sage Publications,2008
- Neera Chandhoke, *State And Civil Society Explorations In Political Theory* , Sage Publishers,1995
- C. Smith, *Good Governance and Development*, Palgrave, 2007
- World Bank Report, *Governance And Development*, 1992
- P. Bardhan, 'Epilogue on the Political Economy of Reform in India', in *The Political Economy of Development in India*. 6th edition, Delhi: Oxford University Press, 2005
- J. Dreze and A. Sen, *India: Economic Development and Social Opportunity*. New Delhi: Oxford University Press, 1995
- Niraja Gopal Jayal[ed.], *Democracy in India*, Oxford University Press, 2007
- Ramachandra Guha, *Environmentalism: A Global History*, Longman Publishers, 1999

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- J.P. Evans, *Environmental Governance*, Routledge , 2012
- Emilio F. Moran, *Environmental Social Science: Human - Environment interactions and Sustainability*, Wiley-Blackwell, 2010
- Burns H Weston and David Bollier, *Green Governance: Ecological Survival, Human Rights, and the Law of the Commons*, Cambridge University Press, 2013
- Bina Agarwal, *Gender And Green Governance* , Oxford University Press, Oxford, 2013
- J. Volger, 'Environmental Issues', in J. Baylis, S. Smith and P. Owens (eds.) *Globalization of World Politics*, New York: Oxford University Press, 2011, pp. 348-362.
- Heywood, *Global Politics*, New York: Palgrave, 2011, pp. 383-411.
- N. Carter, *The Politics of Environment: Ideas, Activism, Policy*, Cambridge: Cambridge University Press, 2007, pp. 13-81.
- Pranab Bardhan and Dilip Mookherjee, *Decentralization And Local Governance In*
- *Developing Countries: A Comparative Perspective*, MIT Press, 2006
- T.R. Raghunandan, *Decentralization And Local Governments: The Indian Experience, Readings On The Economy, Polity And Society*, Orient Blackswan, 2013
- Pardeep Sachdeva, *Local Government In India*, Pearson Publishers, 2011
- P. de Souza, (2002) 'Decentralization and Local Government: The Second Wind of Democracy in India', in Z. Hasan, E. Sridharan and R. Sudarshan (eds.) *India's Living Constitution: Ideas, Practices and Controversies*, New Delhi: Permanent Black, 2002
- Mary John, 'Women in Power? Gender, Caste and Politics of Local Urban Governance', in *Economic and Political Weekly*, Vol. 42(39), 2007
- Niraja Gopal Jayal **,** *Democracy and the State: Welfare, Secularism, and Development in Contemporary India*, Oxford University Press, 1999
- Reetika Khera[ed.], *The Battle for Employment Guarantee*, Oxford University Press,2011
- Nalini Juneja, *Primary Education for All in the City of Mumbai: The Challenge Set By Local Actors'* , International Institute For Educational Planning, UNESCO : Paris, 2001
- Maxine Molyneux and Shahra Razavi , *Gender, Justice, Development, and Rights* , Oxford University Press, 2002

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Jugal Kishore, National Health Programs of India: National Policies and Legislations, Century Publications, 2005
- Jean Drèze and Amartya Sen, *India, Economic Development and Social Opportunity,* Oxford University Press, 1995
- K. Lee and Mills, *The Economic Of Health In Developing Countries,* Oxford University Press,1983
- Marmar Mukhopadhyay and Madhu Parhar (eds.) *Education in India: Dynamics of Development,* Shipra Publications, 2007
- K. Vijaya Kumar, *Right to Education Act 2009: Its Implementation as to Social Development in India,* Akansha Publishers, 2012
- Amartya Sen and Jean Dreze, *Omnibus: Poverty and Famines, Hunger and Public Action, India- Economic Development and Social Opportunity,* Oxford University Press, 1998
- Jean Dreze and Amartya Sen, *An Uncertain Glory: India And Its Contradictions,* Princeton University Press, 2013
- Reetika Khera- *Rural Poverty And Public Distribution System,* EPW, Vol-XLVIII,No.45-46,Nov 2013
- Pradeep Chaturvedi , *Women And Food Security: Role Of Panchayats* , Concept Publishing House, 2002
- Bidyut Mohanty, "Women, Right to Food and Role of Panchayats", Mainstream, Vol. LII, No. 42, October 11, 2014
- Crowther, *Corporate Social Responsibility,* Deep and Deep Publishers, 2008Sanjay K. Agarwal, *Corporate Social Responsibility in India,* Sage Publishers, 2008
- Pushpa Sundar, *Business & Community: The Story of Corporate Social Responsibility in India,*New Delhi: Sage Publications, 2013

GE-3: Gandhi and the Contemporary World **Credit 06**

GE3T: Gandhi and the Contemporary World

I. Gandhi on Modern Civilization and Ethics of Development

a. Conception of Modern Civilisation and Alternative Modernity
b. Critique of Development: Narmada Bachao Andolan

II. Gandhian Thought: Theory and Action

a. Theory of Satyagraha
b. Satyagraha in Action
    i. Peasant Satyagraha: Kheda and the Idea of Trusteeship

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

ii. Temple Entry and Critique of Caste
iii. Social Harmony: 1947and Communal Unity

III. Gandhi's Legacy

a) Tolerance: Anti - Racism Movements (Anti - Apartheid and Martin Luther ling)
b) The Pacifist Movement
c) Women's Movements
d) *Gandhigiri*: Perceptions in Popular Culture

IV. Gandhi and the Idea of Political

a) Swaraj
b) Swadeshi

Suggested Readings :

- Parekh, (1997) 'The Critique of Modernity', in *Gandhi: A Brief Insight,* Delhi: Sterling Publishing Company, pp. 63-74.
- K. Ishii, (2001) 'The Socio-economic Thoughts of Mahatma Gandhi: As an Origin of Alternative Development', *Review of Social Economy*. Vol. 59 (3), pp. 297-312.
- Hardiman, (2003) 'Narmada Bachao Andolan', in *Gandhi in his Time and Ours*. Delhi: Oxford University Press, pp. 224- 234.
- A Baviskar, (1995) 'The Politics of the Andolan', in In the Belly of the River: Tribal ConflictOver Development in the Narmada Valley, Delhi: Oxford University Press, pp.202-228.
- R Iyer, (ed) (1993) 'Chapter 4' in *The Essential Writings of Mahatma Gandhi*, New Delhi: Oxford University Press.
- R. Ramashray, (1984) 'Liberty Versus Liberation', in *Self and Society: A Study in GandhianThought*, New Delhi: Sage Publication.
- Parekh, (1997) 'Satyagrah', in *Gandhi: A Brief Insight,* Delhi: Sterling Publishing Company, pp. 51-63.
- Dalton, (2000) 'Gandhi's originality', in A. Parel (ed) *Gandhi, Freedom and Self-Rule*, New Delhi: Lexington Books, pp.63-86.
- Hardiman, (1981) 'The Kheda Satyagraha', in *Peasant Nationalists of Gujarat: Kheda District, 1917-1934*, Delhi: Oxford University Press, pp. 86-113.
- J. Brown, (2000) 'Gandhi and Human Rights: In search of True humanity', in A. Parel (ed) *Gandhi, Freedom and Self-Rule*, New Delhi: Lexington Books, pp. 93-100.
- R. Iyer, (2000) 'Chapter 10 and 11', in *The Moral and Political Thought of Mahatma Gandhi*, New Delhi: Oxford University Press, pp. 251-344
- Knudegaard, (2010), *Gandhi's Vision for Indian Society: Theory and Action,* Master Thesis in History, University of Oslo, Available at https://docs.google.com/viewer?a=v&q=cache:Eqj9br1n3_oJ:https://www.duo.uio.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

no/bitstream/handle/123456789/23275/IngfridxKnudegaardxmasteroppgavexixhistorie.pdf?sequence%3D1+gandhi+and+temple+entry&hl=en&gl=in&pid=bl&srcid=ADGEESiKGssA7q2z1kxiuitm3bciHPh_HI3chWKbJlVo9HE4LcWCLmKdKXCirPaIzh7Tp47fyoBQlHX9GUesefn8YCAQeaQSKMRdrwvYT2Q8c7XV95tQhSGuO9bNCGEdlYGoBjzoVdJc&sig=AHIEtbQ78zwxGvh92AnwmRHiA7t2wWXXJQ, Accessed: 14.04.2013, pp.27-38.

- P. Rao, (2009) 'Gandhi, Untouchability and the Postcolonial Predicament: A Note'. *Social Scientist.* Vol. 37 (1/2). Pp. 64-70.

- B. Parekh, (1999) 'Discourse on Unsociability', in *Colonialism, Tradition and Reform: An Analysis of Gandhi's Political Discourse*, New Delhi: Sage Publication.

- Hardiman, (2003) 'Fighting Religious Hatreds', in *Gandhi in His Time and Ours*. Delhi:Oxford University Press.

- Hardiman, (2003) 'Gandhi's Global Legacy', in *Gandhi in His Time and Ours*. Delhi: OxfordUniversity Press, pp. 238-283.

- Manimala, (1984) 'Zameen Kenkar? Jote Onkar: Women's participation in the Bodhgaya struggles', in M. Kishwar and R. Vanita (eds) *In Search of Answers: Indian Women's Voices from Manushi,* London: Zed Press.

- M. Shah, (2006) 'Gandhigiri; A Philosophy of Our Times', *The Hindu* Available at http://www.hindu.com/2006/09/28/stories/2006092802241000.htm, Accessed: 14.04.2013.

- Ghosh and T. Babu, (2006) 'Lage Raho Munna Bhai: Unravelling Brand 'Gandhigiri',*Economic and Political Weekly*, 41 (51), pp. 5225 – 5227.

- H. Trivedi (2011) 'Literary and Visual Portrayal of Gandhi', in J Brown and A Parel (eds) *Cambridge Companion to Gandhi*, Cambridge University Press 2011, pp. 199-218.

- P. Chatterjee, (1986) 'The Moment of Maneuver', in *Nationalist Thought and the Colonial World: A derivative discourse?*, Delhi: Zed Books.

- Indian Council for Historical Research (1976) 'The Logic of Gandhian Nationalism: Civil Disobedience and the Gandhi – Irwin Pact, 1930-31', *Indian Historical Review*, Available at http://www.ichrindia.org/journal.pdf, Accessed: 18.04.2013.

- Dalton, (1996) 'Swaraj: Gandhi's Idea of Freedom', in *Mahatma Gandhi: Selected Political Writings*, USA: Hackett Publishing, pp. 95-148.

- Parel (ed.) (1997) 'Editor's Introduction', in *Gandhi, Hind Swaraj and Other Writings* Cambridge: Cambridge University Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Baviskar, (1995) 'National Development, Poverty and the environment', in *In the Belly of the River: Tribal Conflict Over Development in the Narmada Valley*, Delhi: Oxford University Press, pp. 18-33.

- Parekh, (1997) 'Religious Thought', in *Gandhi: A Brief Insight,* Delhi: Sterling Publishing Company.

- R. Iyer, (1993) *The Essential Writings of Mahatma Gandhi*, New Delhi: Oxford University Press, pp. 299-344; 347-373.

- S. Sarkar, (1982) *Modern India 1885-1947*, New Delhi: Macmillan, pp. 432-39.

- R. Iyer, (2001) *The Moral and Political Thought of Mahatma Gandhi*, New Delhi: Oxford University Press. pp. 344-358.

- H. Coward, (2003) 'Gandhi, Ambedkar, and Untouchability', in H. Coward (ed) *Indian Critiques of Gandhi*, New York: State University of New York Press, pp. 41-66.

- J. Lipner, (2003) 'A Debate for Our Times', in Harold Coward (ed) *Indian Critiques of Gandhi*, New York: State University of New York Press, pp. 239-58

- M. Gandhi, (1941) 'Chapter 1, 2, 9, 15, and 16', in *Constructive Programme: Its Meaning and Place*, Ahmedabad: Navjivan Trust.

- R. Terchek, (1998) *Gandhi: Struggling for Autonomy*, USA: Rowman and Littlefield Publishers.

- N. Dirks, (2001), 'The Reformation of Caste: Periyar, Ambedkar and Gandhi', in *Castes of Mind: Colonialism and the making of Modern India*, Princeton: Princeton University Press.

- R. Mukharjee, (ed) (1995), *The Penguin Gandhi Reader*, New Delhi: Penguin.

- T. Weber, (2006) 'Gandhi is dead, Long live Gandhi- The Post Gandhi Gandhian Movement in India', in *Gandhi, Gandhism and the Gandhians*, New Delhi: Roli.

- Taneja, (2005) Gandhi Women and the National Movement 1920-1947, New Delhi: Haranand Publishers.

- J. Brown, (2008) *Gandhi and Civil Disobedience: The Mahatma in Indian Politics*, Cambridge: Cambridge University Press, 2008

- R. Ramashray, (1984) 'What Beyond the Satanic Civilization?', in *Self and Society: A Study in Gandhian Thought*, New Delhi: Sage Publication.

Activities

Topic 1

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

1. Reading of primary texts:- M K Gandhi Chapter VI and XIII " Hind Swaraj" Navjeevan Trust, Ahmedabad, 1910
2. A site visit to any on-going developmental project preferably in NCT Delhi by students and submission of report on Environmental law Violation and Resistance by People in a Gandhian Way.

Topic 2

1. Reading of primary texts:- M K Gandhi Chapter XII&XIII, " Satyagraha in South Africa, Navjivan Trust, Ahmmedabad, 1928, pp. 95-107
2. A Report followed by presentation on functioning of Cooperative and Community engagement for example Amuland/or SEWA in Gujarat to understand Trusteeship and its relevance

Topic 3

1. Movie Screenings (Movies like Lage Raho Munna Bhai, Gandhi by Richard Attenboroughand Student's Participation in reviewing/discussing the movie from a Gandhian perspective or Cultural engagement of Students with Gandhian Ideas through Staging of a street play.

Topic 4

Student Visit to Any Gandhian Institution in Delhi like, Gandhi Darshan and Smiriti to understand on-going Gandhian work and programme and interacting with Gandhian activists.

OR

GE-3: Understanding Ambedkar **Credit 06**

GE3T: Understanding Ambedkar

I. Introducing Ambedkar

Approach to Study Polity, History, Economy, Religion and Society

II. Caste and Religion

a. Caste, Untouchability and Critique of Hindu Social Order
b. Religion and Conversion

III. Women's Question

a. Rise and Fall of Hindu Women
b. Hindu Code Bill

IV. Political Vision

a. Nation and Nationalism
b. Democracy and Citizenship

V. Constitutionalism

a. Rights and Representations
b. Constitution as an Instrument of Social Transformation

VI. Economy and Class Question

a. Planning and Development

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

b. Land and Labor
c. Students Presentations

a. Format for Student Presentations

1) Five presentations on any original writing/speeches by B. R Ambedkar can be used by the students for presentations (Preferably other than compulsory writings that has been suggested in the reading list)
2) Six Presentations on the different issues concerned to Ambedkar's works and their relevance in contemporary India. (Preferably other than compulsory writings that has been suggested in the reading list)
3) One Presentation on Critical understanding on Ambedkar's Ideas.

b. References for Students' Presentations:

1) Babasaheb Ambedkar, Writings and Speeches, 22 Volumes (Available on www.ambedkar.org)
2) Narendra Jadhav, Ambedkar Spoke, 3 Volumes
3) Any other related audio-visual source

Suggested Readings:

- G. Omvedt, (2008) 'Phule-Remembering The Kingdom of Bali', Seeking Begumpura Navyana, pp. 159-184.

- M. Gore, (1993) *The Social Context of an Ideology: Ambedkar's Political and Social Thought*, Delhi: Sage Publication, pp. 73-122 ; 196-225.

- Ambedkar, (1989) 'Annihilation of Caste with a Reply to Mahatma Gandhi', in *Dr. Babasaheb Ambedkar Writings and Speeches: Vol. 1*, Education Deptt., Government of Maharashtra, Mumbai, pp. 23-96.

- E. Zelliot, (1996) 'From Untouchable to Dalit: Essays on the Ambedkar Movement', in *The Leadership of Babasaheb Ambedkar*, Delhi: Manohar, pp. 53-78.

- G. Omvedt, *Liberty Equality and Community: Dr. Ambedkar's Vision of New Social Order*, Available at http://www.ambedkar.org/research/LibertyEquality.htm, Accessed: 19.04.2013.

- *The Untouchables Who were they and why they become Untouchables?*, Available athttp://www.ambedkar.org/ambcd/39A.Untouchables%20who%20were%20they_why%20they%20became%20PART%20I.htm, Accessed: 18.04.2013.

- Ambedkar, (1987) 'The Hindu Social Order: Its Essential Principles', in *Dr. Babasaheb Ambedkar Writings and Speeches: Vol. 3*, Education Deptt., Government of Maharashtra, 1989, pp. 95-129.

- Ambedkar, (2003) 'What way Emancipation?', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III*, Education Deptt., Government of Maharashtra, Mumbai, pp-175-201. Additional Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Ambedkar, (1987) 'Philosophy of Hinduism', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3,* Education Deptt., Government of Maharashtra, Mumbai, pp-3-92.

- Zelliot, (2013) 'Ambedkar's World: The Making of Babasaheb and the Dalit Movement', in *The Religious Conversion Movement-1935-1956,* Delhi, pp. 143-173.

- S. Rege, (2013) 'Against the Madness of Manu', in *B. R. Ambedkar's Writings on Brahmanical Patriarchy*, Navyana Publication, pp. 13-59 ; 191-232.

- Ambedkar, (2003) 'The Rise and Fall of Hindu Woman: Who was Responsible for It?', in *Dr. Babasaheb Ambedkar Writings and Speeches Vol. 17- II,* Education Deptt., Government of Maharashtra, Mumbai, pp. 109-129.

- Ambedkar, (1987) 'The Women and the Counter-Revolution', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3,* Education Deptt., Government of Maharashtra, Mumbai, pp. 427-437.

- P. Ramabai , (2013), *The High Caste Hindu Woman*, Critical Quest, Delhi.

- B. Ambedkar, (1991) 'What Gandhi and Congress have done to the Untouchables', in *Dr. Babasaheb Ambedkar Writings and Speeches*, Education Deptt, Government of Maharashtra, Vol.9, pp. 40-102; 181-198; 274-297.

- B. Ambedkar, (2003) 'Conditions Precedent for the successful working of Democracy', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III*, Education Deptt, Government of Maharashtra, Mumbai, pp. 472-486.

- G. Aloysius, (2009). *Ambedkar on Nation and Nationalism*, Critical Quest, Delhi.

- B. R. Ambedkar, (2003), 'I have no Homeland', in *Dr. Babasaheb Ambedkar Writings and Speeches Vol- 17,* Education Deptt., Government of Maharashtra, Mumbai, pp-51-58.

Additional Readings:

- B. Ambedkar, (2003), 'Role of Dr. B. R. Ambedkar in Bringing The Untouchables on the Political Horizon of India and Lying A Foundation of Indian Democracy', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-I*, Education Deptt., Government of Maharashtra, Mumbai, pp-63-178.

- B. Ambedkar, (2003) 'Buddhism paved way for Democracy and Socialistic Pattern of Society', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III*, Education Deptt., Government of Maharashtra, Mumbai, pp. 406-409.

- B. Ambedkar, (2003) 'Failure of Parliamentary Democracy will Result in Rebellion, Anarchy and Communism', in *Dr. Babasaheb Ambedkar Writings and*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

Speeches, Vol. 17-III, Education Deptt., Government of Maharashtra, Mumbai, pp. 423-437.

- B. Ambedkar, (2003) 'Prospects of Democracy in India', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III*, Education Deptt., Government of Maharashtra, Mumbai, pp. 519-523.

- B. Ambedkar, (2003) 'People cemented by feeling of one country, One Constitution and One Destiny, Take the Risk of Being Independent', in *Dr. Babasaheb Ambedkar Writings and Speeches Vol. 17-III*, Education Deptt, Government of Maharashtra, Mumbai, pp. 13-59.

- Ambedkar, Evidence before South Borough committee on Franchise, Available at http://www.ambedkar.org/ambcd/07.%20Evidence%20before%20the%20Southborough%20Committee.htm, Accessed: 19.04.2013.

- Constituent Assembly Debates, Ambedkar's speech on Draft Constitution on 4th November 1948, *CAD Vol. VII*, Lok Sabha Secretariat, Government of India, 3rd Print, pp. 31-41.

- B. Ambedkar, (2013), *States and Minorities*, Delhi: Critical Quest.

- Gajendran, (2007) 'Representation', in S. Thorat and Aryama (eds.), *Ambedkar in Retrospect: Essays on Economics, Politics and Society*, Delhi: Rawat Publishers, pp. 184-194.

- Ambedkar, (2003), 'Depressed Classes against Second Chamber: Dr. Ambedkar on Joint Parliamentary Committee Report Provision for Better Representation Demanded', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-I*, Education Deptt, Government of Maharashtra, Mumbai, pp. 231-243.

- Ambedkar, (1987) 'Buddha or Karl Marx', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3*, Education Deptt., Government of Maharashtra, Mumbai, pp-442-462.

- S. Thorat, (2007) 'Economic System, Development and Economic Planning', in S. Thorat and Aryama (eds), *Ambedkar in Retrospect: Essays on Economics, Politics and Society*, Delhi: Rawat Publishers, pp. 25-48.

- B. Ambedkar, (1991) '*Labor and Parliamentary Democracy and Welfare'*, in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 10*, Education Deptt., Government of Maharashtra, Mumbai, pp. 106-112; 139-143; 243-252

- B. Mungekar, (2007) 'Labour Policy' in S. Thorat and Aryama (eds), *Ambedkar in Retrospect: Essays on Economics, Politics and Society*, Delhi: Rawat Publishers, pp. 76-92.

- R. Ram, (2010) 'Dr, Ambedkar, Neo Liberal Market-Economy and Social Democracy in India', in *Human Rights Global Focus*, Vol. V (384), pp. 12-38, Available at www.roundtableindia.co.in, Accessed: 19.04.2013.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- B. Ambedkar, (2003) 'Trade Union must Enter Politics to Protect their Interests', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III*, Education Deptt, Government of Maharashtra, Mumbai, pp.174-192.

- B. Ambedkar, (1991) 'Why Indian Labour determined to War', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 10*, Education Deptt, Government of Maharashtra, Mumbai, pp.36-43.

- Teltumbde and S. Sen (eds), 'Caste Question in India', in *Scripting the Change, Selected Writings of Anuradha Ghandi*, pp. 62- 91.

GE-4: Politics of Globalization **Credit 06**

GE4T: Politics of Globalization

.

1. Concept of Globalisation: Globalisation debate; for and against.
2. Approaches to understanding globalisation:
    a. Liberal approach
    b. Radical approach
3. International Institutions/Regimes
    a. World Bank
    b. International Monetary Fund
    c. The World Trade Organisation
4. Issues in Globalisation: Alternative Perspectives on its nature and character, critical dimensions: economic, political and cultural
5. Globalisation and democracy: State, sovereignty and the civil society.
6. Globalisation and Politics in developing countries
    a. Globalisation and social movements
    b. Globalisation and the demise of Nation State
    c. Globalisation and human migration
7. The inevitability of globalisation: Domestic and Global responses

Suggested Reading:

- Anthony Giddens, The Globalizing of Modernity.
- Arjun Appadurai, Modernity at Large: Cultural Dimensions of Globalisation, University of Minnesota Press, 1996.
- David E. Korten, Niconor Perlas and Vandana Shiva (ed.), International Forum of Globalisation.
- Deepak Nayyar (ed.) Governing Globalisation: Issues and Institutions, Oxford University Press, 2002.
- Held, David and Anthony Mc grew (ed.), The Global Transformation Reader: An introduction to the Globalisation Debate, 2nd Cambridge, Polity Press, Blackwell Publishing.
- Jagdish Bhagwati, In defense of Globalisation, Oxford University Press, 2004.
- John Stopford, Multinational Corporations, Foreign Policy, Fall, 1998
- Joseph E Stiglitg, Globalisation and its discontents.
- Keohane Rebert and Joseph S. Nye Jr., Globalisation: What is new, what is not.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Kofi Annan, The politics of Globalisation,
- Marc Lindenberg and Coralie Bryant, Going Global: Transforming Relief and Development NGOs, Bloomfield, Kumarian Press.
- Noreena Hertz, The silent take over: Global Capitalism and the death of Democracy, Praeger, 2000.
- Nye Joseph S and John D. Donanu (ed.) Governance in a Globalizing World, Washington dc, Brookings.
- Nye Jr. Joseph S, Globalisation and American Power.
- Pilpin Robert, The National State in the Global Economy.
- Samuel Huntington, The clash of Civilizations and the Remaking of world order.
- Stanley Hoffman, Clash of civilizations,
- Tyler Cowen, Creative Destruction: How Globalisation is changing the world's culture, New Jersey, Princeton University Press, 2000.
- Brahis John and Steeve Smith (ed.) The Globalisation of World Politics: An Introduction to International Relations, Oxford University Press, 2001.
- John Clark (ed.), Globalising Civic Engagement: Civil Society and Transnational Action, London, Earthscan, 2003.
- Sanjeev Khagram, James Riker and Korthrxu Sikkink (ed.) Restructuring World Politics: Transnational Social Movements, MN, University of Minnesota Press, 2002.
- Bernard Hoelkman and Michel Kostecki, the Political Economy of the World Trading System: From GATT to WTO, New York, OUP,

OR

GE-4: United Nations and Global Conflicts **Credit 06**

GE4T: United Nations and Global Conflicts

I. The United Nations

(a) An Historical Overview of the United Nations
(b) Principles and Objectives
(c) Structures and Functions: General Assembly; Security Council, and Economic and Social Council; the International Court of Justice and the specialised agencies (International Labour Organisation [ILO], United Nations Educational, Scientific and Cultural Organisation [UNESCO], World Health Organisation [WHO], and UN programmes and funds: United Nations Children's Fund [UNICEF], United Nations Development Programme [UNDP], United Nations Environment Programme [UNEP], United Nations High Commissioner for Refugees [UNHCR])
(d) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect
(e) Millennium Development Goals

II. Major Global Conflicts since the Second World War

(a) Korean War
(b) Vietnam War

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

(c) Afghanistan Wars
(d) Balkans: Serbia and Bosnia

III. Assessment of the United Nations as an International Organisation: Imperatives of Reforms and the Process of Reforms

Suggested Readings:

- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 39-62.
- Goldstein, J. and Pevehouse, J.C. (2006) *International relations*. 6th edn. New Delhi: Pearson, pp. 265-282.
- Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium*. London: Continuum, pp. 1-20.
- Gareis, S.B. and Varwick, J. (2005) *The United Nations: an introduction.* Basingstoke: Palgrave, pp. 1-40.
- Gowan, P. (2010) 'US: UN', in Gowan, P. 'A calculus of power: grand strategy in the twentyfirst century. London: Verso, pp. 47-71.
- Baylis, J. and Smith, S. (eds.) (2008) *The globalization of world politics. an introduction to international relations*. 4th edn. Oxford: Oxford University Press, pp. 405-422.
- Thakur, R. (1998) 'Introduction', in Thakur, R. (eds.) *Past imperfect, future uncertain: The UN at Ffifty*. London: Macmillan, pp. 1-14.
- Basu, Rumki (2014) United Nations: Structure and Functions of an international organization, New Delhi, Sterling Publishers
- Gareis, S.B. and Varwick, J. (2005) *The United Nations: An introduction.* Basingstoke: Palgrave, pp. 15-21.
- Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium*. London: Continuum, pp. 21-141.
- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 119-135.
- Nambiar, S. (1995) 'UN peace-keeping operations', in Kumar, S. (eds.) *The United Nations at fifty*. New Delhi, UBS, pp. 77-94.
- Whittaker, D.J. (1997) 'Peacekeeping', in *United Nations in the contemporary world*. London: Routledge, pp. 45-56.
- White, B. et al. (eds.) (2005) *Issues in world politics*. 3rd edn. New York: Macmillan, pp. 113- 132.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp.264-266.
- Sangal, P.S. (1986) 'UN, peace, disarmament and development', in Saxena, J.N. et.al. *United Nations for a better world*. New Delhi: Lancers, pp.109-114.
- Baxi, U. (1986) 'Crimes against the right to development', in Saxena, J.N. et.al. *United Nations for a better world*. New Delhi: Lancers, pp.240-248.
- Ghali, B.B. (1995) *An agenda for peace*. New York: UN, pp.5-38.
- United Nations Department of Public Information. (2008) *The United Nations Today*. New York: UN.
- Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp. 116-124.
- Armstrong, D., Lloyd, L. and Redmond, J. (2004) *International organisations in world politics.* 3rd edn. New York: Palgrave Macmillan, pp. 42-43.
- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 64-65 and 172-173.
- Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp. 528-546.
- Baylis, J. and Smith, S. (eds.) (2008) *The globalization of world politics. an introduction to international relations.* 4th edn. Oxford: Oxford University Press, pp. 562-564.
- Achcar, G. (2004) *Eastern cauldron.* New York: Monthly Review Press, pp. 29-45 and 234-241.
- Achcar, G. (2003) *The clash of barbarisms: Sept. 11 and the making of the new world disorder*. Kolkata: K.P. Bachi & Co., pp. 76-81.
- Prashad, V. (2002) *War against the planet*. New Delhi: Leftword, pp. 1-6. Ali, T. (ed.) (2000) *Masters of the Universe*. London: Verso, pp. 203-216.
- Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp.570-576.
- Ali, T. (ed.) (2000) *Masters of the Universe*. London: Verso, pp. 230-245 and 271-284.
- Kaldor, M. and Vashee, B. (eds.) (1997) *New wars.* London: Wider Publications for the UN University, pp. 137-144 and 153-171.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

- Viotti, P.R. and Kauppi, M.V. (2007) *International relations and world politics-security, economy, identity*. 3rd edn. New Delhi: Pearson Education, pp. 470-471.

- Goldstein, J.S. (2003) *International relations.* 3rd edn. Delhi: Pearson Education, pp 43-51

- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education,pp.24-27.

- Roberts, A. and Kingsbury, B. (eds.) (1994) *United Nations, Divided World.* 2nd edn. Oxford: Clarendon Press, pp. 420-436.

- Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium*. London: Continuum, pp. 196-223 and 295-326.

- Gareis, S.B. and Varwick, J. (2005) *The United Nations: An introduction.* Basingstoke: Palgrave, pp. 214-242.

- Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 91-112.

- Claude, I. (1984) *Swords into plowshares: the progress and problems of international organisation*. 4th edn. New York: Random House.

- Dodds, F. (ed.) (1987) *The way forward: beyond the agenda 21*. London: Earthscan.

- Rajan, M.S., Mani, V.S and Murthy, C.S.R. (eds.) (1987) *The nonaligned and the United Nations*. New Delhi: South Asian Publishers.

- South Asia Human Rights Documentation Centre. (2006) *Human rights: an overview*. New Delhi: Oxford University Press.

- Anan, K. (1997) *Renewing the United Nations: A Programme for Survival*. General Assembly Document: A/51/950; 14 July 1997. Available from: http://daccessdds.un.org/doc/UNDOC/GEN/N97/189/79/1MG/n9718979.pdf,Open Element (accessed on 13 October 2011).

END

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:15:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Political_Science_Hons.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (General)
in
Political Science

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

VIDYASAGAR UNIVERSITY
B A (General) in Political Science
[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	**I**	**SEMESTER-I**					**CA**	**ESE**	**TOTAL**
		Core-1 (DSC-1A)		**Introduction to political theory**	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-1 **(Core)**		English-I	6	5-1-0	15	60	75
		AECC-1 **(Elective)**		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
		SEMESTER-II							
	II	Core-3 (DSC-1B)		**Indian Government and Politics**	6	5-1-0	15	60	75
		Core-4 (DSC-2B)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-2 **(Core)**		MIL - I	6	5-1-0	15	60	75
		AECC-2 **(Elective)**		Environmental Studies	4		20	80	100
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	**III**	**SEMESTER-III**					**CA**	**ESE**	**TOTAL**
		Core-5 (DSC-1C)		**Comparative Government and Politics**	6	5-1-0	15	60	75
		Core-6 (DSC-2C)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-3 **(Core)**		English-II	6	5-1-0	15	60	75
		SEC-1		SEC-1: Legislative Support	2	1-1-0	10	40	50
				Semester - 3 : Total	**20**				**275**
		SEMESTER-IV							
	IV	Core-7 (DSC-1D)		**Introduction to International Relations**	6	5-1-0	15	60	75
		Core-8 (DSC-2D)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-4 **(Core)**		MIL - II	6	5-1-0	15	60	75
		SEC-2		SEC-2: Public Opinion and Survey Research	2	1-1-0	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Any one from Discipline -1(Political Sc.) (DSE-1A: Themes in Comparative Political Theory Or Democracy and Governance)	6	5-1-0	15	60	75
		DSE-2A		Other Discipline(Discipline -2) / TBD	6		15	60	75
		GE-1		TBD	6		15	60	75
		SEC-3		SEC-3:Democratic Awareness with Legal Literacy	2	1-1-0	10	40	50
				Semester - 5 : Total	**20**				**275**
		SEMESTER-VI							
	VI	DSE-1B		Any one from Discipline -1(Political Sc.) (DSE-1B:Administration and Public Policy: Concepts and Theories **Or** Understanding Globalization)	6	5-1-0	15	60	75
		DSE-2B		Other Discipline (Discipline -2) / TBD	6		15	60	75
		GE-2		TBD	6		15	60	75
		SEC-4		SEC-4: Conflict and Peace Building	2	1-1-0	10	40	50
				Semester - 6 : Total	**20**				**275**
	Total in all semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

List of Core Courses and Electives
Core Courses (CC)

DSC-1A: Introduction to Political Theory
DSC-1B: Indian Government and Politics
DSC-1C: Comparative Government and Politics
DSC-1D: Introduction to International Relations

Discipline Specific Courses (DSE)

DSE-1A: Themes in Comparative Political Theory
Or
DSE-1A: Democracy and Governance
DSE-1B: Administration and Public Policy: Concepts and Theories
Or
DSE-1B: Understanding Globalization

Skill Enhancement Courses (SEC)

SEC-1: Legislative Support
SEC-2: Public Opinion and Survey Research
SEC-3: Democratic Awareness with Legal Literacy
SEC-4: Conflict and Peace Building

Generic Electives (GE)
[Interdisciplinary for other department]

GE-1: Reading Gandhi
Or
GE-1: Nationalism in India
Or
GE-1: Understanding Ambedkar
GE-2: Human Rights, Gender and Environment
Or
GE-2: Contemporary Political Economy
Or
GE-2: United Nations and Global Conflicts

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

Core Courses (CC)

DSC-1A (CC-1): Introduction to Political Theory **Credit 06**

DSC1AT: Introduction to Political Theory

1. Course Content:

a. What is Politics?

b. What is Political Theory and what is its relevance?

2. Concepts:

Democracy, Liberty, Equality, Justice, Rights, Gender, Citizenship, Civil Society and State

3. Debates in Political Theory:

a. Is democracy compatible with economic growth?

b. On what grounds is censorship justified and what are its limits?

c. Does protective discrimination violate principles of fairness?

d. Should the State intervene in the institution of the family?

Suggested Readings:

1. Bhargava, R. (2008) 'What is Political Theory', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 2-17.
2. Bhargava, R. (2008) 'Why Do We Need Political Theory', in Bhargava, R. and Acharya, A.(eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 18-37.
3. Sriranjani, V. (2008) 'Liberty', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.*New Delhi: Pearson Longman, pp. 40-57.
4. Acharya, A. (2008) 'Equality', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.*New Delhi: Pearson Longman, pp. 58-73.
5. Menon, K. (2008) Justice', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 74-82.
6. Talukdar, P.S. (2008) 'Rights', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.*New Delhi: Pearson Longman, pp. 88-105.
7. Srinivasan, J. (2008) 'Democracy', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.*New Delhi: Pearson Longman, pp. 106-128.
8. Roy, A. 'Citizenship', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 130-147.
9. Das, S. (2008) 'State', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi:Pearson Longman, pp. 170-187.
10. Singh, M. (2008) 'Civil Society', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.*New Delhi: Pearson Longman, pp. 188-205.
11. Menon, N. (2008) 'Gender', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An*
12. *Introduction.* New Delhi: Pearson Longman, pp. 224-235.
13. Shorten, A. (2008) 'Nation and State', in McKinnon, C. (ed.) *Issues in Political Theory*, New York: OxfordUniversity Press, pp. 33-55.
14. Christiano, Thomas. (2008) 'Democracy', in McKinnon, Catriona. (ed.) *Issues in Political Theory*, New York: Oxford University Press, pp. 80-96.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

15. Riley, J. (2008) 'Liberty', in McKinnon, C. (ed.) *Issues in Political Theory*, New York: Oxford University Press, pp. 103-125.
16. Casal, P. & William, A. (2008) 'Equality', in McKinnon, C. (ed.) *Issues in Political Theory*. New York: Oxford University Press, pp. 149- 165.
17. Wolf, J. (2008) 'Social Justice', in McKinnon, C. (ed.) *Issues in Political Theory.* New York: Oxford University Press, pp. 172-193.
18. Brighouse, H. (2008) 'Citizenship', in McKinnon, C. (ed.) *Issues in Political Theory.* New York: Oxford University Press, pp. 241-259.
19. Chambers, C. (2008) 'Gender', in McKinnon, C. (ed.) *Issues in Political Theory.* New York: Oxford University Press, pp. 241-288.
20. Swift, A. (2001) *Political Philosophy: A Beginners Guide for Students and Politicians.* Cambridge: Polity Press.
21. Sen, A. (2003) 'Freedom Favours Development,' in Dahl, R., Shapiro, I. and Cheibub, A. J. (eds.) *The Democracy Sourcebook.* Cambridge, Massachusetts: MIT Press, pp. 444-446.
22. Prezowrski, A., et al. (2003) 'Political Regimes and Economic Growth,' in Dahl, R., Shapiro, I. and Cheibub, A. J. (eds.) *The Democracy Sourcebook.* Cambridge, Massachusetts: MIT Press, pp. 447-454.
23. Sethi, A. (2008) 'Freedom of Speech and the Question of Censorship', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 308-319.
24. Acharya, A. (2008) 'Affirmative Action', in Bhargava, R. and Acharya, A. (eds.) *Political Theory: An Introduction.* New Delhi: Pearson Longman, pp. 298-307.
25. Frances E O. (1985) 'The Myth of State Intervention in the Family', *University of Michigan Journal of Law Reform*. 18 (4), pp. 835-64.
26. Jha, M. (2001) 'Ramabai: Gender and Caste', in Singh, M.P. and Roy, H. (eds.) *Indian Political Thought: Themes and Thinkers*, New Delhi: Pearson.

DSC-1B (CC-2): - Indian Government and Politics **Credit 06**

DSC1BT: - Indian Government and Politics

Course Content:

1) Approaches to the Study of Indian Politics and Nature of the State in India: Liberal, Marxist and Gandhian

2) Indian Constitution: basic features, debates on Fundamental Rights and Directive Principles

3) Institutional Functioning: Prime Minister, Parliament and Judiciary

4) Power Structure in India: Caste, class and patriarchy

5) Religion and Politics: debates on secularism and communalism

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

6) Parties and Party systems in India
7) Social Movements : Workers, Peasants, Environmental and Women's Movement
8) Strategies of Development in India since Independence: Planned Economy and Neo-liberalism

Suggested Readings:

1. Abbas, H., Kumar, R. & Alam, M. A. (2011) *Indian Government and Politics.* New Delhi: Pearson, 2011.
2. Chandhoke, N. & Priyadarshi, P. (eds.) (2009) *Contemporary India: Economy, Society, Politics.* New Delhi: Pearson.
3. Chakravarty, B. & Pandey, K. P. (2006) *Indian Government and Politics.* New Delhi: Sage.
4. Chandra, B., Mukherjee, A. & Mukherjee, M. (2010) *India After Independence.* New Delhi: Penguin.
5. Singh, M.P. & Saxena, R. (2008) *Indian Politics: Contemporary Issues and Concerns.* New Delhi: PHI Learning.
6. Vanaik, A. & Bhargava, R. (eds.) (2010) *Understanding Contemporary India: Critical Perspectives.* New Delhi: Orient Blackswan.
7. Menon, N. and Nigam, A. (2007) *Power and Contestation: India Since 1989.* London: Zed Book.
8. Austin, G. (1999) *Indian Constitution: Corner Stone of a Nation.* New Delhi: Oxford University Press.
9. Austin, G. (2004) *Working of a Democratic Constitution of India.* New Delhi: Oxford University Press.
10. Jayal, N. G. & Maheta, P. B. (eds.) (2010) *Oxford Companion to Indian Politics.* New Delhi: Oxford University Press.

DSC-1C (CC-3) : Comparative Government and Politics **Credit 06**

DSC1CT: Comparative Government and Politics

Course Content:

1. The nature, scope and methods of comparative political analysis

2. Comparing Regimes: Authoritarian and Democratic

3. Classifications of political systems:
a) Parliamentary and Presidential: UK and USA
b) Federal and Unitary: Canada and China

4. Electoral Systems: First past the post, proportional representation, mixed systems

5. Party Systems: one-party, two-party and multi-party systems
6. Contemporary debates on the nature of state: From state centric security to human centric security and the changing nature of nation-state in the context of globalization.
Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

1. Bara, J & Pennington, M. (eds.). (2009) *Comparative Politics.* New Delhi: Sage.
2. Caramani, D. (ed.). (2008) *Comparative Politics*. Oxford: Oxford University Press.
3. Hague, R. and Harrop, M. (2010) *Comparative Government and Politics: An Introduction.* (Eight Edition). London: Palgrave McMillan.
4. Ishiyama, J.T. and Breuning, M. (eds.). (2011) *21st Century Political Science: A Reference Book.* Los Angeles: Sage.
5. Newton, K. and Deth, Jan W. V. (2010) *Foundations of Comparative Politics: Democracies of the Modern World.* Cambridge: Cambridge University Press.
6. O'Neil, P. (2009) *Essentials of Comparative Politics.* (Third Edition). New York: WW. Norton & Company, Inc.
7. Palekar, S.A. (2009) *Comparative Government and Politics.* New Delhi: PHI Learning Pvt. Ltd.
8. Caramani, D. (2008) 'Introduction to Comparative Politics', in Caramani, D. (ed.) *Comparative Politics*. Oxford: Oxford University Press, pp. 1-23.
9. Mohanty, M. (1975) 'Comparative Political Theory and Third World Sensitivity', in *Teaching Politics.* Nos. 1 & 2, pp. 22-38.
10. Webb, E. (2011) 'Totalitarianism and Authoritarianism', in Ishiyama, J. T. and Breuning, M. (eds.) *21st Century Political Science: A Reference Book.* Los Angeles: Sage, pp. 249-257.
11. Hague, R. and Harrop, M. (2004) *Comparative Government and Politics: An Introduction.*London: Palgrave McMillan, pp. 36-50, 51-68.
12. Hague, R and Harrop, M. (2004) 'The Political Executive', in *Comparative Government and Politics: An Introduction.* London: Palgrave McMillan, pp. 268-290.
13. Cameron, D. R. (2002) 'Canada', in Ann L. G. (ed.) *Handbook of Federal Countries.* Montreal & Kingston: McGill-Queen's University Press, pp. 105-119.
14. Peter, H. (2002) 'Canada: A Federal Society-Despite Its Constitution', in Rekha Saxena. (ed. *Mapping Canadian Federalism for India.* New Delhi: Konark Publisher, Pvt., pp. 115-129.
15. Dhillon, Michael. (2009), 'Government and Politics', in *Contemporary China: An Introduction.* London, New York: Routledge, 2009, pp. 137-160.
16. Evans, Jocelyn A.J. (2009) 'Electoral Systems', in Bara, J. and Pennington, M. (eds.) *Comparative Politics*. New Delhi: Sage, pp. 93-119.
17. Downs, W. M. (2011) 'Electoral Systems in Comparative Perspectives', in Ishiyama, J. T. and Breuning, M. (eds.) *21st Century Political Science: A Reference Book.* Los Angeles: Sage, pp 159-167.
18. Cole, A. (2011) 'Comparative Political Parties: Systems and Organizations', in Ishiyama, J.T.and Breuning, M. (eds.) *21st Century Political Science: A Reference Book.* Los Angeles: Sage,pp. 150-158.
19. Caramani, D. (2008) 'Party Systems', in Caramani, D. (ed.) *Comparative Politics.* Oxford: Oxford University Press, pp. 293317, 318-347.
20. Poggi, Gianfranco. (2008) 'The nation-state', in Caramani, D. (ed.) *Comparative Politics.* Oxford: Oxford University Press pp. 85-107.
21. Hague, R. and Harrop, M. (2004) 'The state in a global context', in *Comparative Government and Politics: An Introduction.* London: Palgrave McMillan, pp. 17-34.
22. Bara, J. (2009) 'Methods for Comparative Analysis', in Bara, J. & Pennington, M. (eds.) *Comparative Politics.* New Delhi: Sage, pp. 40-65.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

23. Blondel, J. (1996) 'Then and Now: Comparative Politics', *Political Studies. Vol. 47, Issue 1*, pp. 152-160
24. Chandhoke, N. (1996) 'Limits of Comparative Political Analysis', *Economic and Political Weekly.* vol. 31, No. 4, (January 27), pp. PE 2-PE8.
25. Mair, P. (2008) 'Democracy', in Carmani, D. (ed.) *Comparative Politics.* Oxford: Oxford University Press, pp. 108-132.
26. Robbins, J. W. (2011) 'Parsidentialism Verses Parliamentarism', in Ishiyama, J. T. and Marijke, B. (eds.) *21st Century Political Science: A Reference Book.* Los Angeles: Sage, pp. 177- 185.
27. Watts, D. (2003) *Understanding US/UK Government and Politics.* Manchester: Manchester University Press, pp. 1-25; 66-105; 106-138.

DSC-1D (CC-4): Introduction to International Relations **Credit 06**

DSC1DT: Introduction to International Relations

Course Content:

1. Approaches to International Relations

a) Classical Realism (Hans Morgenthau) and Neo-Realism (Kenneth Waltz)
b) Neo-Liberalism: Complex Interdependence (Robert O. Keohane and Joseph Nye)
c) Structural Approaches: World Systems Approach (Immanuel Wallerstein) and Dependency School (Andre Gunder Frank)
d) Feminist Perspective (J. Ann Tickner)

2. Cold War & Post-Cold War Era

a) Second World War & Origins of Cold War
b) Phases of Cold War:
    i. First Cold War
    ii. Rise and Fall of Detente
    iii. Second Cold War
    iv. End of Cold War and Collapse of the Soviet Union
(c) Post Cold- War Era and Emerging Centers of Power (European Union, China, Russia and Japan)

3. India's Foreign Policy

a) Basic Determinants (Historical, Geo-Political, Economic, Domestic and Strategic)
b) India's Policy of Non-alignment
c) India: An Emerging Power

Suggested Readings:

1. William, P., Goldstein, D. M. and Shafritz, J. M. (eds.) (1999) *Classic Readings of International Relations.* Belmont: Wadsworth Publishing Co, pp. 30-58; 92-126.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

2. Art, R. J. and Jervis, R. (eds.) (1999) *International Political Enduring: Concepts and Contemporary Issues.*5th Edition. New York: Longman, pp. 7-14; 29-49; 119-126.

3. Jackson, R. and Sorenson, G. (2008) *Introduction to International Relations: Theories and Approaches*. New York: Oxford University Press, pp. 59-96.
4. Goldstein, J. and Pevehouse, J.C. (2009) *International Relations.* New Delhi: Pearson, pp. 81-111.

5. Tickner, J. A. (2001) *Gendering World Politics: Issues and Approaches in the Post-Cold War Era.* Columbia University Press.

6. Baylis, J. and Smith, S. (eds.) (2011) *The Globalization of World Politics: An Introduction to International Relations.* Fifth Edition. Oxford: Oxford University Press, pp. 90-123; 142-159; 262-277.

7. Wenger, A. and Zimmermann, D. (eds.) (2003) *International Relations: From the Cold World War to the Globalized World.* London: Lynne Rienner, pp. 54-89.

8. Appadorai and Rajan, M. S. (eds.) (1985) *India's Foreign Policy and Relations.* New Delhi: South AsiannPublishers.
9. Mewmillians, W.C. and Piotrowski, H. (2001) *The World Since 1945: A History of International Relations*.Fifth edition. London: Lynne Rienner Publishers.

10. Smith, M., Little, R. and Shackleton, M. (eds.) (1981) *Perspectives on World Politics.* London: Croom Helm

11. Indian Foreign Service Institute. (1997, 1998) *India's Foreign Policy: An Agenda for the 21st Century* Vols. 1 & 2, New Delhi: Konark Publishers, pp. 3-41; 102-119.

12. Ganguly, S. (ed.) (2009) *India's Foreign Policy: Retrospect and Prospect.* New Delhi: Oxford University Press.

13. Vanaik, A. (1995) *India in a Changing World: Problems, Limits and Successes of Its Foreign Policy.* New Delhi: Orient Longman. pp. 19-41; 63-67; 102-114; 118-124; 132-134.

14. Basu, Rumki (ed)(2012) *International Politics: Concepts theories and Issues*, New Delhi, Sage Publications India Pvt Ltd.

Discipline Specific Electives (DSE)

DSE-1A: Themes in Comparative Political Theory **Credit 06**

DSE1AT: Themes in Comparative Political Theory

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

Course Content:

1. Distinctive features of Indian and Western political thought
2. Western Thought: Thinkers and Themes
    a. Aristotle on Citizenship
    b. Locke on Rights
    c. Rousseau on inequality
    d. J. S. Mill on liberty and democracy
    e. Marx and Bakunin on State
3. Indian Thought: Thinkers and Themes
    a. Kautilya on State
    b. Tilak and Gandhi on Swaraj
    c. Ambedkar and Lohia on Social Justice
    d. Nehru and Jayaprakash Narayan on Democracy
    e. Pandita Ramabai on Patriarchy

Suggested Readings:

1. Dallmayr, F. (2009) 'Comparative Political Theory: What is it good for?', in Shogimen, T. and Nederman, C. J. (eds.) *Western Political Thought in Dialogue with Asia.* Plymouth, United Kingdom: Lexington,pp. 13-24.

2. Parel, A. J. (2009) 'From Political Thought in India to Indian Political Thought', in Shogiman, T. and Nederman, C. J. (eds.) *Western Political Thought in Dialogue with Asia.* Plymouth, United Kingdom:Lexington, pp. 187-208.

3. Pantham, Th. (1986) 'Introduction: For the Study of Modern Indian Political Thought', in Pantham, Th. & Deutch, K. L. (eds.) *Political Thought in Modern India.* New Delhi: Sage, pp. 9-16.

4. Burns, T. (2003) 'Aristotle', in Boucher, D and Kelly, P. (eds.) *Political Thinkers: From Socrates to the Present.* New York: Oxford University Press, pp. 73-91.

5. Waldron, J. (2003) 'Locke', in Boucher, D. and Kelly, P. (eds.) *Political Thinkers: From Socrates to the Present*, New York: Oxford University Press, pp. 181-197.

6. Boucher, D. (2003) 'Rousseau', in Boucher, D. and Kelly, P. (eds.) *Political Thinkers: From Socrates to the Present*. New York: Oxford University Press, pp. 235-252.

7. Kelly, P. (2003) 'J.S. Mill on Liberty', in Boucher, D. and Kelly, P. (eds.) *Political Thinkers: From Socrates to the Present*. New York: Oxford University Press, pp. 324-359.

8. Wilde, L. (2003) 'Early Marx', in Boucher, D. and Kelly, P. (eds.) *Political Thinkers: From Socrates to the Present.* New York: Oxford University Press, pp. 404-435.

9. Sparks, Ch. and Isaacs, S. (2004) *Political Theorists in Context*. London: Routledge, pp. 237-255.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

10. Mehta, V. R. (1992) *Foundations of Indian Political Thought.* New Delhi: Manohar Publishers, pp. 88-109.

11. Inamdar, N.R. (1986) 'The Political Ideas of Lokmanya Tilak', in Panthan, Th. & Deutsch, K. L. (eds.) *Political Thought in Modern India.* New Delhi: Sage, pp. 110-121.

12. Patham, Th. (1986) 'Beyond Liberal Democracy: Thinking With Democracy', in Panthan, Th.& Deutsch, K.L. (eds.) *Political Thought in Modern India.* New Delhi: Sage, pp. 325-46.

13. Zelliot, E. (1986). 'The Social and Political Thought of B.R. Ambedkar', in Panthan, Th. &Deutsch, K. L.(eds.) *Political Thought in Modern India.* New Delhi: Sage, pp. 161-75.

14. Anand Kumar, 'Understanding Lohia's Political Sociology: Intersectionality of Caste, Class,Gender and Language Issue' *Economic and Political Weekly*. Vol. XLV: 40, October 2008, pp.64-70.

15. Pillai, R.C. (1986) 'The Political thought of Jawaharlal Nehru', in Panthan, T. & Deutsch, K. L.(eds.) *Political Thought in Modern India.* New Delhi: Sage pp. 260-74.

16. Jha, M. (2001) 'Ramabai: Gender and Caste', in Singh, M.P. and Roy, H. (eds.) *Indian Political Thought:Themes and Thinkers,* New Delhi: Pearson.

OR

DSE-1A: Democracy and Governance **Credit 06**

DSE1AT: Democracy and Governance

Course Content:

1. Structure and Process of Governance: Indian Model of Democracy, Parliament, Party Politics and Electoral behaviour, Federalism, The Supreme Court and Judicial Activism, Units of Local Governance (Grassroots Democracy). Political Communication - Nature, Forms and Importance

2. Ideas, Interests and Institutions in Public Policy:

A. Contextual Orientation of Policy Design

B. Institutions of Policy Making

a. Regulatory Institutions – SEBI, TRAI, Competition Commission of India,

b. Lobbying Institutions: Chambers of Commerce and Industries, Trade Unions, Farmers Associations, etc.

3. Contemporary Political Economy of Development in India: Policy Debates over Models of Development in India, Recent trends of Liberalisation of Indian Economy in different sectors, E- governance.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

4. Dynamics of Civil Society: New Social Movements and Various interests, Role of NGO's, Understanding the political significance of Media and Popular Culture.

Suggested Readings:

1. Agarwal B, Environmental Management, Equity and Ecofeminism: Debating India's Experience, Journal of Pesant Studies, Vol. 25, No. 4, pp. 55-95.

2. Atul Kohli (ed.), The Success of India's Democracy, Cambridge University Press, 2001.

3. Corbridge, Stuart and John Harris, Reinventing India: Liberalisation, Hindu Nationalism and Popular Democracy OUP, 2000.

4. J.Dreze and A.Sen, India: Economic Development and Social Opportunity,Clarendon, 1995

5. Saima Saeed, Screening the Public Sphere: Media and Democracy in India,2013

6. Nick Stevenson, Understanding Media Cultures, 2002

7. Fuller, C.J. (ed.) Caste Today, Oxford University Press, 1997

8. Himat Singh, Green Revolution Reconsidered: The Rural World of Punjab, OUP, 2001.

9. Jagdish Bhagwati, India in Transition: Freeing the Economy, 1993.

10. Joseph E. Stiglitz, Globalisation and its Discontents, WW Norton, 2003.

11. Patel, I.G., Glimpses of Indian Economic Policy: An Insider View, OUP, 2002.

12. Rajni Kothari and Clude Alvares, (eds.) Another Revolution Fails: an investigation of how and why India's Operation Flood Project Touted as the World's Largest Dairy Development Program Funded by the EEC went off the Rails, Ajanta, New Delhi, 1985.

13. Smitu Kothari, Social Movements and the Redefinition of Democracy, Boulder, Westview,1993.

14. Qah, John S.T., Curbing Corruption in Asia: A Comparative Study of Six Countries, Eastern University Press, 2003.

15. Vasu Deva, *E-Governance In India : A Reality*, Commonwealth Publishers,2005

16. M.J.Moon, *The Evolution of Electronic Government Among Municipalities: Rheoteric or Reality*, American Society For Public Administration, Public Administration Review, Vol 62, Issue 4, July –August 2002

17. Pankaj Sharma, E-*Governance: The New Age Governance*, APH Publishers,2004

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

18. Pippa Norris, *Digital Divide: Civic Engagement, Information Poverty and the Internet in Democratic Societies*, Cambridge: Cambridge University Press, 2001.

19. Ghanshyam Shah [ed.], Social Movements and The State, Sage Publication, 2002

20. Su H. Lee, Debating New Social Movements: Culture, Identity, and Social Fragmentation ,Rawat Publishers, 2010

21. S. Laurel Weldon ,When Protest Makes Policy : How Social Movements Represent Disadvantaged Groups, Michigan Publishers, 2011

22. Richard Cox, Production, Power and World Order, New York, Columbia University Press,1987

23. Baxi, Upendra and Bhikhu Parekh, (ed.) Crisis and Change in Contemporary India, New Delhi, Sage, 1994.

24. Bidyut Chakrabarty, Public Administration: A Reader, Delhi Oxford University Press, 2003.

25. Elaine Kamarck, Government Innovation Around the World: Occasional Paper Series, John F Kennedy School of Government, 2003

26. Kothari, Rajini, Politics in India, Delhi, Orient Longman, 1970.

27. Mackie, Gerry, Democracy Defended, New York, Cambridge University Press, 2003.

28. Mahajan, Gurpreet (ed.), Democracy, Difference and Social Justice, New Delhi, Oxford University Press, 2000.

29. Menon, Nivedita, (ed.), Gender and Politics in India, New Delhi, Oxford University Press, 2001.

30. Mohanty, Manoranjan, Peoples Rights: Social Movements and the State in the Third World, Sage, New Delhi, 1998.

31. Paul Brass, Politics in India since Independence, Hyderabad, Orient Longman, 1990.

32. Rob Jenkins – Regional Reflections: Comparative Politics across India's States, New Delhi, OUP, 2004.

33. Sury, M.M, India: A Decade of Economic reforms : 1991 –2001, New Delhi, New Century Publication, 2003.

34. Thomas R. Dye., Understating Public Policy, Prentice Hall NJ, 1984.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

35. Y. Dror, Public Policy Making Reexamined, Leonard Hill Books, Bedfordshire, 1974.

36. Basu Rumki et, al(ed) Democracy and good governance: Reinventing the Public service Delivery System in India, New Delhi, Bloomsbury India, 2015

DSE-1B: Administration and Public Policy: Concepts and Theories Credit 06

DSE1BT: Administration and Public Policy: Concepts and Theories

Course Content:

1. Public administration as a discipline: Meaning, scope and significance of the subject, public and private administration, brief evolution and major approaches, and comparative approaches to public administration.

2. Administrative theories: the classical theory, scientific management, the human - relation theory, and rational decision-making.

3. Understanding public policy: concept and theories, relevance of policy making in public administration and process of policy formulation and implementation and evaluation**.**

4. From Development Administration to New Public Management. Elements and politics of development administration, the New Public Management paradigm – a critical perspective in the post globalized era.

Suggested Readings:

1. Wasthi, A.and Maheshwari, S. (2003), *Public Administration.* Agra: Laxmi Narain Agarwal, pp. 3-12.
2. Basu, Rumki, (2014), Public Administration, Concepts and Theories, Delhi Sterling Publishers

3. Henry, N. (2003), Public Administration and Public Affairs. New Delhi: Prentice Hall, pp. 1- 52.

4. Bhattacharya, M. and Chakrabarty, B. (2005) 'Introduction: Public Administration: Theory and Practice', in Bhattacharya, M. and Chakrabarty, B. (eds.) Public *Administration: A Reader*. Delhi: Oxford University Press, pp. 1-50.

5. Henry, N. (2003) Public Administration and Public Affairs. New Delhi: Prentice Hall, pp. 53-74.

6. Mouzelis, N.P. (2005) 'The Ideal Type of Bureaucracy', in Bhattacharya, M. and Chakrabarty, B. (eds.) Public *Administration: A Reader*. Delhi: Oxford University Press, pp. 88-100.

7. Hyderbrand, W. (1980) 'A Marxist Critique of Organization Theory', in Evan, W (ed.) *Frontiers in Organization & Management.* New York: Praeger, pp. 123-150.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

8. Hyderbrand, W. (1977) 'Organizational Contradictions in Public Bureaucracies: Towards a Marxian Theory of Organizations', in Benson, J. K. (ed.) *Organizational Analysis: Critique and Innovation*. Beverly Hills: Sage, pp. 85-109.

9. Bhattacharya, M. (1999) *Restructuring Public Administration: Essays in Rehabilitation.* New Delhi: Jawahar, pp. 29-70, 85-98.

10. Bhattacharya, M. (2001) *New Horizons in Public Administration*. New Delhi: Jawahar, pp. 248-272, 301-323.

11. Dye, T.R. (1975) *Understanding Public Policy.* New Jersey: Prentice Hall, pp. 1-38, 265- 299.

12. Dror, Y. (1983) *Public Policy Making Reexamined.* Oxford: Transaction Publication, pp. 129-216.

13. Bernard, C. (1938) *The Functions of Executive.* Cambridge: Harvard University Press.

14. Esman, M.J. (1986) 'Politics of Development Administration', in Montgomery, J.D. and Siffin, W. (eds.), *Approaches to Development Politics* . New York: McGraw-Hill.

15. Gant, G.F. (1979) *Development Administration: Concepts, Goals, Methods.* Madison: University of Wisconsin Press.

16. Kamenka, E. & Krygier, M. (eds.) (1979) *Bureaucracy*. London: Edward Arnold.
Lee, H.B. (ed.) (1953) *Korea: Time, Change and Administration.* Hawai'i: University of Hawai'i Press.

17. Leftwich, A. (1994) 'Governance, the State and the Politics of Development', *Development and Change*, 25. March, J. and Simon, H. (1958) *Organization.* New York: Wiley.

18. Mooney, J. (1954) *The Principles of Organization.* New York: Harper & Row.

19. Simon, H. (1967) *Administrative Behavior: A Study of Decision Making Process in Administrative Organization.* New York: Macmillan.

20. Wiedner, E. (ed.) (1970) *Development Administration in Asia.* Durham: Duke University Press.

OR

DSE-1B: Understanding Globalization **Credit 06**

DSE1BT: Understanding Globalization

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

Course Content:

1. Globalization

a) What is it?

b) Economic, Political, Technological and Cultural Dimensions

2. Contemporary World Actors

a) United Nations

b) World Trade Organisation (WTO)

c) Group of 77 Countries (G-77)

3. Contemporary World Issues

a) Global Environmental Issues (Global Warming, Bio-diversity, Resource Scarcities)

b) Poverty and Inequality

c) International Terrorism

Suggested Readings:

1. Lechner, F. J. and Boli, J. (eds.) (2004) *The Globalization Reader*. 2nd Edition. Oxford: Blackwell.

2. Held, D., Mc Grew, A. et al. (eds.) (1999) *Global Transformations Reader. Politics, Economics and Culture*, Stanford: Stanford University Press, pp. 1-50.

3. Viotti, P. R. and Kauppi, M. V. (2007) *International Relations and World Politics-Security, Economy, Identity.* Third Edition. Delhi: Pearson Education, pp. 430-450.

4. Baylis, J. and Smith, S. (eds.) (2011) *The Globalization of World Politics: An Introduction to International Relations.* Fourth Edition. Oxford: Oxford University Press, pp. 312-329; 50-385; 468-489.

5. Tickner, J.A. (2008) 'Gender in World Politics', in Baylis, J. and Smith, S. (eds.) *The Globalization of World Politics: An Introduction to International Relation. 4th Edition.*Oxford: Oxford University Press.

6. Taylor, P. and Grom, A.J.R. (eds.) (2000) *The United Nations at the Millennium.* London: Continuum. pp. 1-20.
7. Ravenhill, J. (2008) 'The Study of Global Political Economy', in Ravenhill, John (ed.) *Global Political Economy*. Second Edition. New York: Oxford University Press, pp.18-24.

8. Sauvant, K. (1981) *Group of 77: Evolution, Structure and Organisation*, New York: Oceana Publications.

9. Chasek, P. S., Downie, D. L. and Brown, J. W. (eds.) *Global Environmental Politics.* Fourth Edition. Boulder: Colorado: Westview Press.

10. Roberts, J.M. (1999) *The Penguin History of the 20th Century*. London: Penguin.

11. Smith, M., Little, R. and Shackleton, M. (eds.) (1981) *Perspectives on World Politics.* London: Croom Helm.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

12. White, B. et al. (eds.) (2005) *Issues in World Politics.* Third Edition, New York: Macmillan, pp. 74-92; 191-211.

13. Halliday, F. (2004) 'Terrorism in Historical Perspective', *Open Democracy.* 22 April, available at: http://www.opendemocracy.net/conflict/article_1865.jsp

14. Thomas, C. (2005) 'Poverty, Development, and Hunger', in Baylis, J. and Smith, S. (eds.) *The Globalization of World Politics.* Third Edition. New Delhi: Oxford University Press, pp.645-668.

15. Vanaik, A. (2007) 'Political Terrorism and the US Imperial Project', in *Masks of Empire*. New Delhi: Tulika Books, pp. 103-128.

16. Art, R.J. and Jervis, R. (eds.) (1999) *International Politics: Enduring Concepts and Contemporary Issues.* 5th Edition. New York: Longman, pp. 495-500; pp.508-516.

Skill Enhancement Courses (SEC)

SEC- 1: Legislative Support **Credit 02**

SEC1T: Legislative Support

Course Content:

1. Powers and functions of people's representatives at different tiers of governance
Members of Parliament, State Legislative Assemblies, functionaries of rural and urban local self government from Zila Parishads/Municipal Corporation to Panchayat/Ward.

2. Supporting the legislative process: How a Bill becomes a Law, Role of the Standing Committee in reviewing a Bill, Legislative Consultations, amendments to a Bill, the framing of Rules and Regulations.

3. Supporting the legislative committees
Types of committees, Role of committees in reviewing government finances, policy, programmes, and legislation**.**

4. Reading the budget document:
Overview of Budget Process, Role of Parliament in reviewing the Union Budget, Railway Budget, Examination of Demands for Grants of Ministries, Working of Ministries.

5. Support in media monitoring and communication: Types of media and their significance for legislators. Basics of communication in print and electronic media. **.**

Suggested Readings:

1. Madhavan, M.R. & N.Wahi, Financing of Election Campaigns PRS, Centre for Policy Research, New Delh, 2008: http://www.prsindia.org/uploads/media/conference/Campaign_finance_brief.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

2. Vanka, S. *Primer on MPLADS* Centre for Policy Research, New Delhi, 2008. can be accessed on:http://www.prsindia.org/parliamenttrack/primers/mplads-487/

3. Kalra, H. *Public Engagement with the Legislative Process* PRS, Centre for Policy Research, New Delhi, 2011. can be accessed on: http://www.prsindia.org/administrator/uploads/media/Conference%202011/Public%20Engagement%20with%20the%20Legislative%20Process.pdf

4. Government of India (Lok Sabha Secretariat) *Parliamentary Procedures (Abstract Series)*, 2009. Can be accessed on: http://164.100.47.132/LssNew/abstract/index.aspx

5. Government of India, (Ministry of Parliamentary Affairs) *Legislation, Parliamentary Procedure*, 2009. Can be accessed on: http://mpa.nic.in/Manual/Manual_English/Chapter/chapter-09.htm

6. Government of India, (Ministry of Parliamentary Affairs) *Subordinate Legislation, Parliamentary Procedure*, 2009. Can be accessed on: http://mpa.nic.in/Manual/Manual_English/Chapter/chapter-11.htm

7. Kapur, Devesh and Pratap Banu Mehta, "The Indian Parliament as an Institution of Accountability," *Democracy, Governance and Human Rights*, Programme Paper Number 23, United Nations Research Institute for Social Development, January 2006. Can be accessed on: http://www.unrisd.org/UNRISD/website/document.nsf/240da49ca467a53f80256b4f005ef245/8e6fc72d6b546696c1257123002fcceb/$FILE/KapMeht.pdf

8. Agarwal, O.P. and T.V. Somanathan, "Public Policy Making in India: Issues and Remedies," February, 2005. Can be accessed on: http://www.cprindia.org/admin/paper/Public_Policy_Making_in_India_14205_TVSOMANATHAN.pdf.
9. Debroy, Bibek, "Why we need law reform," *Seminar* January 2001.

10. Mehta, Pratap Bhanu, "India's Unlikely Democracy: The Rise of Judicial Sovereignty**,"** *Journal of Democracy* Vol.18, No.2, pp.70-83.
11. Government links: http://loksabha.nic.in/; http://rajyasabha.nic.in/; http://mpa.nic.in

12. Sanyal,K. *Strengthening Parliamentary Committees* PRS, Centre for Policy Research, New Delhi, 2011. can be accessed on: http://www.prsindia.org/administrator/uploads/media/Conference%202011/Strengthening%20Parliamentary%20Committees.pdf

13. Celestine, A**.** *How to read the Union Budget* PRS, Centre for Policy Research, New Delhi, 2011. can be accessed on: http://www.prsindia.org/parliamenttrack/primers/how to read the unionbudget 1023/

SEC-2: Public Opinion and Survey Research **Credit 02**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

SEC2T: Public Opinion and Survey Research

Course Content:

I. Introduction to the course

Definition and characteristics of public opinion, conceptions and characteristics, debates about its role in a democratic political system, uses for opinion poll.

II. Measuring Public Opinion with Surveys: Representation and sampling

a. What is sampling? Why do we need to sample? Sample design.
b. Sampling error and non-response
c. Types of sampling: Non random sampling (quota, purposive and snowball Sampling); random sampling: simple and stratified

III. Survey Research

a. Interviewing: Interview techniques pitfalls, different types of and forms of Interview
b. Questionnaire: Question wording; fairness and clarity.

IV. Quantitative Data Analysis

a. Introduction to quantitative data analysis
b. Basic concepts: co relational research, causation and prediction, descriptive and Inferential Statistics

V. Interpreting polls

Prediction in polling research: possibilities and pitfalls
Politics of interpreting polling

Student Exercises:

1. Discussion of readings and Indian examples.
2. Groups of students to collect examples of and discuss various sample based studies across many fields: e.g. consumer behaviour, unemployment rates, educational standards, elections, medicinal trials etc.
3. Non-random sampling: The students have to identify one group of people or behavior that is unique or rare and for which snowball sampling might be needed. They have to identify how they might make the initial contact with this group to start snowball rolling.
4. Give the students the electoral list of an area in Delhi (http://ceodelhi.gov.in). The students have to draw a random sample of n number of respondents.
5. For this activity, working with a partner will be helpful. The class should first decide on a topic of interest. Then each pair should construct a five-item self report questionnaire. Of the five items, there should be at least one nominal response, one ordinal response and one interval. After the common questionnaire is constructed putting together the questions from everyone, working in pairs, the questionnaire should be administered on 10 different individuals.
6. Give the students a questionnaire from any public opinion survey and ask them to identify the type of variables.

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

1. R. Erikson and K. Tedin, (2011) *American Public Opinion,* 8th edition, New York: Pearson Longman Publishers,. pp. 40-46.

2. G. Gallup, (1948) *A guide to public opinion polls* Princeton, Princeton University Press, 1948.Pp. 3-13.

3. G. Kalton, (1983) *Introduction to Survey Sampling* Beverly Hills, Sage Publication. Lokniti Team (2009) 'National Election Study 2009: A Methodological Note', *Economic and Political Weekly,* Vol. XLIV (39)

4. Lokniti Team, (2004) 'National Election Study 2004', *Economic and Political Weekly*, Vol. XXXIX (51).

5. 'Asking About Numbers: Why and How', *Political Analysis* (2013), Vol. 21(1): 48-69, (first published online November 21, 2012)

6. H. Asher, (2001) 'Chapters 3 and 5', in *Polling and the Public: What Every Citizen Should Know,* Washington DC: Congressional Quarterly Press.

7. R. Erikson and K. Tedin, (2011) *American Public Opinion,* 8th edition, New York, Pearson Longman Publishers, pp. 40-46.

8. A.Agresti and B. Finlay, (2009) *Statistical methods for the Social Sciences,* 4th edition, Upper saddle river, NJ: Pearson-Prentice Hall,

9. S. Kumar and P. Rai, (2013) 'Chapter 1', in *Measuring Voting Behaviour in India,* New Delhi: Sage.

10. R. Karandikar, C. Pyne and Y. Yadav, (2002) 'Predicting the 1998 Indian Parliamentary Elections', *Electoral Studies,* Vol. 21, pp.69-89.

11. M. McDermott and K. A. Frankovic, (2003) 'Horserace Polling and Survey Methods Effects: An Analysis of the 2000 Campaign', *Public Opinion Quarterly* 67, pp. 244-264.

12. K. Warren, (2001) 'Chapter 2', in *In Defense of Public Opinion Polling,* Boulder: West view Press, pp. 45-80.

13. W. Cochran, (2007) 'Chapter 1', *Sampling Techniques,* John Wiley & Sons.

14. G. Gallup, (1948) *A Guide to Public Opinion Polls.* Princeton: Princeton University Press, pp. 14-20; 73-75.

15. D. Rowntree (2000) *Statistics Without Tears: an Introduction for Non Mathematicians,* Harmonds worth: Penguin.

SEC-3 : Democratic Awareness with Legal Literacy **Credit 02**

SEC3T : Democratic Awareness with Legal Literacy

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

Course Content:

Unit I

- Outline of the Legal system in India
- System of courts/tribunals and their jurisdiction in India - criminal and civil courts,
- writ jurisdiction, specialized courts such as juvenile courts, Mahila courts and tribunals.
- Role of the police and executive in criminal law administration.
- Alternate dispute mechanisms such as lok adalats, non - formal mechanisms.

Unit II

- Brief understanding of the laws applicable in India
- Constitution - fundamental rights, fundamental duties, other constitutional rights and their manner of enforcement, with emphasis on public interest litigation and the expansion of certain rights under Article 21 of the Constitution.

- Laws relating to criminal jurisdiction - provision relating to filing an FIR, arrest, bail search and seizure and some understanding of the questions of evidence and procedure in Cr. P.C. and related laws, important offences under the Indian Penal Code, offences against women, juvenile justice, prevention of atrocities on Scheduled Castes and Scheduled Tribes.

- Concepts like Burden of Proof, Presumption of Innocence, Principles of Natural Justice, Fair comment under Contempt laws.

- Personal laws in India : Pluralism and Democracy

- Laws relating to contract, property and tenancy laws.
- Laws relating to dowry, sexual harassment and violence against women

- Laws relating to consumer rights

- Laws relating to cyber crimes

- Anti-terrorist laws: implications for security and human rights

- **Practical application:** Visit to either a (I) court or (ii) a legal aid centre set up by the Legal Services Authority or an NGO or (iii) a Lok Adalat, and to interview a litigant or person being counseled. Preparation of a case history.

Unit III

Access to courts and enforcement of rights

- Critical Understanding of the Functioning of the Legal System
- Legal Services Authorities Act and right to legal aid, ADR systems

Practical application:

What to do if you are arrested; if you are a consumer with a grievance; if you are a Victim of sexual harassment; domestic violence, child abuse, caste, ethnic and Religious

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

discrimination; filing a public interest litigation. How can you challenge Administrative orders that violate rights, judicial and administrative remedies

Using a hypothetical case of (for example) child abuse or sexual harassment or any other violation of a right, preparation of an FIR or writing a complaint addressed to the appropriate authority.

Suggested Reading:

1. Creating Legal Awareness, edited by Kamala Sankaran and Ujjwal Singh (Delhi: OUP, 2007)

2. Legal literacy: available amongst interdisciplinary courses on Institute of Life Long Learning (Delhi University) Virtual Learning Portal namely vle.du.ac.in Multiple Action Research Group, *Our Laws Vols 1-10*, Delhi.

3. Indian Social Institute, New Delhi, *Legal Literacy Series Booklets*.

4. S.K. Agarwala, *Public Interest Litigation in India*, K.M. Munshi Memorial Lecture, Second Series, Indian Law Institute, Delhi, 1985.
5.
6. S.P. Sathe, *Towards Gender Justice*, Research Centre for Womens' Studies, SNDT Women's University, Bombay, 1993.

7. Asha Bajpai, *Child Rights in India : Law, Policy, and Practice*, Oxford University Press, New Delhi,2003

8. Agnes, Flavia *Law and Gender Equality*, OUP, 1997.

9. Sagade, Jaga, *Law of Maintenance: An Empirical Study*, ILS Law College, Pune 1996.

10. B.L. Wadhera, *Public Interest Litigation - A Handbook*, Universal, Delhi, 2003.

11. Nomita Aggarwal, Women and Law in India, New Century, Delhi, 2002.

12. P.C. Rao and William Sheffiled *Alternate Dispute Resolution: What it is and How it Works*, , Universal Law Books and Publishers, Delhi, 2002

13. V.N. Shukla's *Constitution of India* by Mahendra P. Singh, Eastern Book Co. 10th edition 2001.

14. Parmanand Singh, *'Access to Justice and the Indian Supreme Court'*, 10 & 11 Delhi Law Review 156, 1981-82.

SEC-4: Conflict and Peace Building **Credit 02**

SEC4T: Conflict and Peace Building

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

Course Content:

Unit I. Concepts

a. Understanding Conflict
b. Conflict Management, Conflict Resolution and Conflict Transformation
c. Peace Building

Unit II: Dimensions of Conflict

a. Ideology
b. Economic/Resource Sharing Conflicts
c. Socio- Cultural Conflicts (Ethnic, Religious, Gender- based)

Unit III: Sites of Conflict

a. Local
b. Sub-National
c. International

Unit IV: Conflict Responses: Skills and Techniques

a. Negotiations: Trust Building
b. Mediation: Skill Building; Active Listening
c. Track I, Track II & Multi Track Diplomacy
d. Gandhian Methods

Classroom Exercises/ Activities:

1) Map the ethnic composition of your classroom and examine the prevailing prejudices and stereotyping practices and their manifestations and then suggest a strategy for trust building.

2) Identify a group of immigrants/ refugees from the South Asian region (Afghans, Bangladeshis, Sri Lankans, Tibetans, Rohingya Muslims from Myanmar) and based on your interactions with them, write a report explaining their respective experiences of conflicts are amenable to what kind of solution?

3) Identify musical bands and other such endeavors' in the South Asian region which have used music as a peace building measure for promoting understanding among different communities.

4) A sport is a means or a barrier to promoting inter community understanding. Have a debate in the class arguing for and against this proposition.

5) Conduct a case study of resource allocation of water and electricity by the Government of Delhi. Identify, if any, elements of institutional discrimination has taken place.

6) Follow a conflict from any level (local/sub-national/national) covered in the news for a month and prepare a report on its causes, the parties and the dynamics of the conflict

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

7) Identify protests over sharing of environmental resources and study their modus operandi for seeking redressal (for example, Narmada Bachao Andolan, Protests against the Nuclear Plant in Kondakulm, Movements against POSCO and Vedanta in Orissa)

8) Organize a peace film festival in your college.

9) Follow any track-two initiative between India and any of its neighbours (for example, Neemrana Initiative, The Pakistan India Peoples forum for Peace and Democracy , RIMC Old Boys Network, Women's Initiative for Peace in South Asia, Committee for Sane Nuclear Policy, Peace Pals) and, write a report on its activities and the impact factor.

Suggested Readings:

1. O. Ramsbotham, T. Woodhouse and H. Miall, (2011) 'Understanding Contemporary Conflict', in *Contemporary Conflict Resolution*, (Third Edition), Cambridge: Polity Press, pp. 94-122.

2. W. Zartman, (1995) 'Dynamics and Constraints In Negotiations In Internal Conflicts', in William Zartman (ed.), *Elusive Peace: Negotiating an End to Civil Wars*, Washington: The Brookings Institute, pp. 3-29.

3. P. Wallensteen, (2012) 'Armed Conflicts', in *Understanding Conflict Resolution*, (Third Edition), London: Sage, pp. 13-28.

4. C. Mitchell, (2002) 'Beyond Resolution: What Does Conflict Transformation Actually Transform?', in *Peace and Conflict Studies*, 9:1, May, pp.1-23.

5. S. Ryan, (1990) 'Conflict Management and Conflict Resolution', in *Terrorism and Political Violence*, 2:1, pp. 54-71.

6. J. Lederach, (2003) *The Little Book Of a Conflict Transformation*, London: Good Books.
7. L.Doucet, (1996)*Thinking About Conflict*, Resource Pack For Conflict Transformation: International Alert.

8. M. Lund, (2001) 'A Toolbox for Responding to Conflicts and Building Peace', in L. Reychler and T. Paffenholz, eds., *Peace-Building: A Field Guide*, Boulder: Lynne Rienner, pp. 16-20.

9. L. Schirch, (2004) *The Little Book Of Strategic Peacebuilding*, London: Good Books.

10. R. Rubenstein, (2003) 'Sources', in S. Cheldelin, D. Druckman and L. Fast (eds.) *Conflict: From Analysis to Intervention*, London: Continuum, pp.55-67.

11. P. Le Billon, (2009) 'Economic and Resource Causes of Conflicts', in J. Bercovitch, V. Kremenyuk and I. Zartman (eds.)*The Sage Hand Book of Conflict Resolution*, London: Sage Publications, pp. 210-224.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

12. S. Ayse Kadayifci-Orellana, (2009) 'Ethno-Religious Conflicts: Exploring the Role of Religion in Conflict Resolution', in J. Bercovitch, V. Kremenyuk and I. Zartman (eds.) *The Sage Hand Book of Conflict Resolution*, London: Sage Publications, pp. 264-284.

13. D. Barash and C. Webel, (2009) *Peace and Conflict Studies*, London: Sage Publication, pp. 91- 117.

14. D. Sandole, (2003) 'Typology' in S. Cheldelin, D. Druckman and L. Fast (eds.) *Conflict: From Analysis to Intervention*, London: Continuum, pp.39-54.

15. P. Wallenstein, (2007) *Understanding Conflict Resolution* (2nd ed.), London: Sage Publications.

16. H. Saunders, (1999) *A Public Peace Process: Sustained Dialogue To Transform Racial and Ethnic Conflicts*, Palgrave Macmillan: New York, pp. 1-30.

17. N. Behera, 'Forging New Solidarities: Non-official Dialogues', in M. Mekenkamp, P. Tongeren and H. Van De Veen (eds.), *Searching For Peace In Central And South Asia*, London: Lynne Rienner Publishers, pp. 210-236.

18. J Bercovitch, V. Kremenyuk, and I. Zartman (eds.), (2009) *The Sage Hand Book of Conflict Resolution*, London: Sage Publications.

19. M. Steger , (2001) 'Peacebuilding and Non-Violence: Gandhi's Perspective on Power', in D. Christie, R. Wagner and D. Winter, (eds.), *Peace, Conflict, and Violence: Peace Psychology for the 21st Century Englewood Cliffs*, New Jersey: Prentice-Hall.

20. J. Davies and E. Kaufman (eds.), (2003) *Second Track/Citizens' Diplomacy: Concepts and Techniques for Conflict Transformation*, Rowman & Littlefield: Maryland.

21. C. Webel and J. Galtung (eds.), (2007) *The Handbook of Peace and Conflict Studies*, London: Routledge.

22. Toolkits by United States Institute of Peace

23. S. Mason and M. Siegfried, (2010) *Debriefing Mediators To Learn Their Experiences*, Washington D.C: United States Institute of Peace.

24. I. Zartman and A. De Soto, (2010) *Timing Mediation Initiatives*, Washington D.C: United States Institute of Peace.

25. A. Smith and D. Smock, (2010) *Managing A Mediation Process*, Washington D.C: United States Institute of Peace.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

26. H. Burgess and G. Burgess, (2010) *Conducting Track II*, Washington D.C: United States Institute of Peace. Online Resources Conflict Resolution in Popular Art and Culture:

27. The International Network of Peace Museums, at www.mueseumsforpeace.org/, contains links to visit the websites of many of the world's peace museums. Theatre, peace and conflict at Theatre Without Borders,www.theatrewithoutborders.com/peacebuilding

28. Global Peace Film Festival, www.peacefilmfest.org/
Football for Peace International, www.football4peace.eu/contact.html Dialogue:
http://www.pgexchange.org/images/toolkits/PGX_D_Sustained%20Dialogue.pdf

29. Mediation:http://www.initiativeforpeacebuilding.eu/resources/A_guide_to_Mediation_HDC.pdf
http://www.pgexchange.org/images/toolkits/civicus%20mediation%20tool.pdf
http://www.beyondintractability.org/bi-essay/mediation Facilitation:
http://www.pgexchange.org/images/toolkits/pgx_facilitation_tool.pdf
http://www.beyondintractability.org/bi-essay/facilitation

30. Negotiation: Roger Fisher et al, *Getting to Yes: Negotiating Agreement without Giving In*, New York: Penguin, 1991.
http://peacebuilding.caritas.org/index.php/Introduction_to_Principled_Negotiation
Reconciliation: http://www.peacebuildinginitiative.org/index.cfm?pageId=1975

31. John Paul Lederach, *The Journey Toward Reconciliation*, London: Herald Press, 1999.

32. Charles Lerche, "Peace Building through Reconciliation," *International Journal of Peace Studies*, Vol. 5. No. 2,
2000.http://www.gmu.edu/programs/icar/ijps/vol5_2/lerche.htm Crossword Puzzle:
http://www.cengage.com/cgiwadsworth/
course_products_wp.pl?fid=M20bI&product_isbn_issn=9781133602101
http://www.cengage.com/cgiwadsworth/
course_products_wp.pl?fid=M20bI&product_isbn_issn=9781111344238

Generic Elective (GE)

[Interdisciplinary for other department]

GE-1: Reading Gandhi **Credit: 06**

GE1T: Reading Gandhi

Course Content:

A).Ways to read a text:

a. textual

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

b. contextual

B) Hind Swaraj:

1. Gandhi in his own words: A close reading of Hind Swaraj.
2.Commentaries on Hind Swaraj and Gandhian thought:

C) Gandhi and modern India.

a. Nationalism.
b. Communal unity
c. Women's Question
d. Untouchability.

Suggested Readings:

1. Terence Ball, Reappraising Political Theory, Ch. 1, OUP, 1995

2. "Meaning and Interpretation in the History of Ideas" in Visions of Politics, Quentin Skinner(ed.), Vol. 1, CUP, Cambridge, 2002.

3. "Introduction", M.K.Gandhi, Hind Swaraj and other writings ed. A.J.Parel (1997).

4. B. Parekh, Gandhi (1997), chs. 4 ("Satyagraha") and 5 ("The critique of modernity").

5. D.Hardiman, Gandhi in his time and ours (2003), ch.4 ("An alternative modernity").

6. "Nationalist Movement in India--- A Reader" by Sekhar Bandyopadhyay. OXFORD. 2008.

7. Gandhi's India of my Dreams (compiledR.K.Prabhu):
"The meaning of Swaraj" (no.2); "In defence of Nationalism" (no.3);
"India'scultural heritage" (no.45); "Regeneration of Indian women" (no.54);
Women's education"(no.55);"Communal unity" (no.59);"The curse of ntouchability" (no.61); "Religious tolerance.in India" (no.62);
"The problem of minorities" (no.66).

OR

GE-1: Nationalism in India **Credit 06**

GE1T: Nationalism in India

Course Content:

I. Approaches to the Study of Nationalism in India

Nationalist, Imperialist, Marxist, and Subaltern Interpretations

II. Reformism and Anti-Reformism in the Nineteenth Century

Major Social and Religious Movements in 19th century

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

III. Nationalist Politics and Expansion of its Social Base

a. Phases of Nationalist Movement: Liberal Constitutionalists, Swadeshi and the Radicals; Beginning of Constitutionalism in India
b. Gandhi and Mass Mobilisation: Non-Cooperation Movement, Civil Disobedience Movement, and Quit India Movement
c. Socialist Alternatives: Congress Socialists, Communists

IV. Social Movements

a. The Women's Question: Participation in the National Movement and its Impact
b. The Caste Question: Anti-Brahminical Politics
c. Peasant, Tribals and Workers Movements

V. Partition and Independence

a. Communalism in Indian Politics
b. The Two-Nation Theory, Negotiations over Partition

Suggested Readings:

1. S. Bandopadhyay, (2004) *From Plassey to Partition: A History of Modern India*, New Delhi: Orient Longman, pp. 184-191

2. R. Thapar, (2000) 'Interpretations of Colonial History: Colonial, Nationalist, Post-colonial', in P. DeSouza, (ed.) *Contemporary India: Transitions*, New Delhi: Sage Publications, pp. 25-36.

3. S. Bandopadhyay, (2004) From Plassey to Partition: A History of Modern India, New Delhi: Orient Longman, pp.139-158, 234-276.

4. A.Sen, (2007) 'The idea of Social Reform and its Critique among Hindus of Nineteenth Century India', in S. Bhattacharya, (ed.) *Development of Modern Indian Thought and the Social Sciences*, Vol. X. New Delhi: Oxford University Press.

5. S. Bandopadhyay, (2004) *From Plassey to Partition: A History of Modern India*. New Delhi: Orient Longman, pp. 279-311.

6. S. Sarkar, (1983*) Modern India (1885-1947)*, New Delhi: Macmillan,

7. P. Chatterjee, (1993) 'The Nation and its Pasts', in P. Chatterjee, *The Nation and its Fragments: Colonial and Postcolonial Histories*. New Delhi: Oxford University Press, pp. 76-115.

8. S. Bandopadhyay, (2004) *From Plassey to Partition: A history of Modern India*. New Delhi: Orient Longman, pp. 342-357, 369-381.

9. G. Shah, (2002) *Social Movements and the State*, New Delhi: Sage, pp. 13-31

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

10. A.Jalal, and S. Bose, (1997) *Modern South Asia: History, Culture, and Political Economy*. New Delhi: Oxford University Press, pp. 135-156.

11. A.Nandy, (2005) *Rashtravad banam Deshbhakti* Translated by A. Dubey, New Delhi: Vani Prakashan. pp. 23-33. (The original essay in English is from A. Nandy, (1994) New Delhi: Oxford University Press, pp. 1-8.)

12. B. Chakrabarty and R. Pandey, (2010) *Modern Indian Political Thought*, New Delhi: Sage Publications.

13. P. Chatterjee, (1993) *The Nation and its Fragments: Colonial and Postcolonial Histories*, New Delhi: Oxford University Press.

14. R. Pradhan, (2008) *Raj to Swaraj*, New Delhi: Macmillan (Available in Hindi).

15. S. Islam, (2006) *Bharat Mein Algaovaad aur Dharm*, New Delhi: Vani Prakashan.

OR

GE-1: Understanding Ambedkar **Credit 06**

GE1T: Understanding Ambedkar

Course Content:

I. Introducing Ambedkar

Approach to Study Polity, History, Economy, Religion and Society

II. Caste and Religion

a. Caste, Untouchability and Critique of Hindu Social Order
b. Religion and Conversion

III. Women's Question

a. Rise and Fall of Hindu Women
b. Hindu Code Bill

IV. Political Vision

a. Nation and Nationalism
b. Democracy and Citizenship

V. Constitutionalism

a. Rights and Representations
b. Constitution as an Instrument of Social Transformation

VI. Economy and Class Question

a. Planning and Development
b. Land and Labor

Students Presentations

a. Format for Student Presentations

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

1) Five presentations on any original writing/speeches by B. R Ambedkar can be used by the students for presentations (Preferably other than compulsory writings that has been suggested in the reading list)
2) Six Presentations on the different issues concerned to Ambedkar's works and the irrelevance in contemporary India. (Preferably other than compulsory writings that has been suggested in the reading list)
3) One Presentation on Critical understanding on Ambedkar's Ideas.

b. References for Students' Presentations:

1) Babasaheb Ambedkar, Writings and Speeches, 22 Volumes (Available on www.ambedkar.org)
2) Narendra Jadhav, Ambedkar Spoke, 3 Volumes
3) Any other related audio-visual source

Suggested Readings:

1. G. Omvedt, (2008) 'Phule-Remembering The Kingdom of Bali', Seeking Begumpura Navyana, pp. 159-184.

2. M. Gore, (1993) *The Social Context of an Ideology: Ambedkar's Political and Social Thought*, Delhi: Sage Publication, pp. 73-122 ; 196-225.

3. B. Ambedkar, (1989) 'Annihilation of Caste with a Reply to Mahatma Gandhi', in *Dr. Babasaheb Ambedkar Writings and Speeches: Vol. 1*, Education Deptt., Government of Maharashtra, Mumbai, pp. 23-96.

4. E. Zelliot, (1996) 'From Untouchable to Dalit: Essays on the Ambedkar Movement', in *The Leadership of Babasaheb Ambedkar*, Delhi: Manohar, pp. 53-78.

5. G. Omvedt, *Liberty Equality and Community: Dr. Ambedkar's Vision of New Social Order*, Available at http://www.ambedkar.org/research/LibertyEquality.htm, Accessed: 19.04.2013.

6. *The Untouchables Who were they and why they become Untouchables?*, Available at http://www.ambedkar.org/ambcd/39A.Untouchables%20who%20were%20they_why%20they%20became%20PART%20I.htm, Accessed: 18.04.2013.

7. B. Ambedkar, (1987) 'The Hindu Social Order: Its Essential Principles', in *Dr. Babasaheb Ambedkar Writings and Speeches: Vol. 3*, Education Deptt., Government of Maharashtra, 1989, pp. 95-129.

8. B. Ambedkar, (2003) 'What way Emancipation?', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III*, Education Deptt., Government of Maharashtra, Mumbai, pp-175-201.

9. B. Ambedkar, (1987) 'Philosophy of Hinduism', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3*, Education Deptt., Government of Maharashtra, Mumbai, pp-3-92.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

10. E. Zelliot, (2013) 'Ambedkar's World: The Making of Babasaheb and the Dalit Movement', in *The Religious Conversion Movement-1935-1956,* Delhi, pp. 143-173.

11. S. Rege, (2013) 'Against the Madness of Manu', in *B. R. Ambedkar's Writings on Brahmanical Patriarchy*, Navyana Publication, pp. 13-59 ; 191-232.

12. B. Ambedkar, (2003) 'The Rise and Fall of Hindu Woman: Who was Responsible for It?', in *Dr. Babasaheb Ambedkar Writings and Speeches Vol. 17- II,* Education Deptt., Government of Maharashtra, Mumbai, pp. 109-129.

13. B. Ambedkar, (1987) 'The Women and the Counter-Revolution', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3,* Education Deptt., Government of Maharashtra, Mumbai, pp.427-437.

14. P. Ramabai , (2013), *The High Caste Hindu Woman,* Critical Quest, Delhi.

15. B. Ambedkar, (1991) 'What Gandhi and Congress have done to the Untouchables', in *Dr. Babasaheb Ambedkar Writings and Speeches*, Education Deptt, Government of Maharashtra, Vol.9, pp. 40-102; 181-198; 274-297.

16. B. Ambedkar, (2003) 'Conditions Precedent for the successful working of Democracy', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III,* Education Deptt, Government of Maharashtra, Mumbai, pp. 472-486.

17. G. Aloysius, (2009). *Ambedkar on Nation and Nationalism,* Critical Quest, Delhi.

18. B. R. Ambedkar, (2003), 'I have no Homeland', in *Dr. Babasaheb Ambedkar Writings and Speeches Vol- 17,* Education Deptt., Government of Maharashtra, Mumbai, pp-51-58.

19. B. Ambedkar, (2003), 'Role of Dr. B. R. Ambedkar in Bringing The Untouchables on the Political Horizon of India and Lying A Foundation of Indian Democracy', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-I,* Education Deptt., Government of Maharashtra, Mumbai, pp-63-178.

20. B. Ambedkar, (2003) 'Buddhism paved way for Democracy and Socialistic Pattern of Society', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III,* Education Deptt., Government of Maharashtra, Mumbai, pp. 406-409.

21. B. Ambedkar, (2003) 'Failure of Parliamentary Democracy will Result in Rebellion, Anarchy and Communism', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III,* Education Deptt., Government of Maharashtra, Mumbai, pp. 423-437.
22. B. Ambedkar, (2003) 'Prospects of Democracy in India', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III,* Education Deptt., Government of Maharashtra, Mumbai, pp. 519-523.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

23. B. Ambedkar, (2003) 'People cemented by feeling of one country, One Constitution and One Destiny, Take the Risk of Being Independent', in *Dr. Babasaheb Ambedkar Writings and Speeches Vol. 17-III,* Education Deptt, Government of Maharashtra, Mumbai, pp. 13-59.

24. Ambedkar, Evidence before South Borough committee on Franchise, Available at http://www.ambedkar.org/ambcd/07.%20Evidence%20before%20the%20Southborough%20Committee.htm, Accessed: 19.04.2013.

25. Constituent Assembly Debates, Ambedkar's speech on Draft Constitution on 4th November1948, *CAD Vol. VII,* Lok Sabha Secretariat, Government of India, 3rd Print, pp. 31-41.

26. B. Ambedkar, (2013), *States and Minorities*, Delhi: Critical Quest.

27. A.Gajendran, (2007) 'Representation', in S. Thorat and Aryama (eds.), *Ambedkar in Retrospect: Essays on Economics, Politics and Society*, Delhi: Rawat Publishers, pp. 184-194.

28. B. Ambedkar, (2003), 'Depressed Classes against Second Chamber: Dr. Ambedkar on Joint Parliamentary Committee Report Provision for Better Representation Demanded', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-I,* Education Deptt, Government of Maharashtra, Mumbai, pp. 231-243.

29. B. Ambedkar, (1987) 'Buddha or Karl Marx', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3*, Education Deptt., Government of Maharashtra, Mumbai, pp-442-462.

30. S. Thorat, (2007) 'Economic System, Development and Economic Planning', in S. Thorat and Aryama (eds), *Ambedkar in Retrospect: Essays on Economics, Politics and Society*, Delhi: Rawat Publishers, pp. 25-48.

31. B. Ambedkar, (1991) '*Labor and Parliamentary Democracy and Welfare'*, in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 10,* Education Deptt., Government of Maharashtra, Mumbai, pp. 106-112; 139-143; 243-252

32. B. Mungekar, (2007) 'Labour Policy' in S. Thorat and Aryama (eds), *Ambedkar in Retrospect: Essays on Economics, Politics and Society,* Delhi: Rawat Publishers, pp. 76-92.

33. R. Ram, (2010) 'Dr, Ambedkar, Neo Liberal Market-Economy and Social Democracy in India', in *Human Rights Global Focus,* Vol. V (384), pp. 12-38, Available at www.roundtableindia.co.in, Accessed: 19.04.2013.

34. B. Ambedkar, (2003) 'Trade Union must Enter Politics to Protect their Interests', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 17-III*, Education Deptt, Government of Maharashtra, Mumbai, pp.174-192.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

35. B. Ambedkar, (1991) 'Why Indian Labour determined to War', in *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 10*, Education Deptt, Government of Maharashtra, Mumbai, pp. 36-43.

36. A. Teltumbde and S. Sen (eds), 'Caste Question in India', in *Scripting the Change, Selected Writings of Anuradha Ghandi*, pp. 62- 91.

GE-2: Human Rights, Gender and Environment **Credit 06**

GE2T: Human Rights, Gender and Environment

Course Content:

I : Understanding Social Inequality

- Caste, Gender, Ethnicity and Class as distinct categories and their interconnection.
- Globalisation and its impact on workers, peasants, dalits, adivasis and women.

II : Human Rights

- Human Rights: Various Meanings
- UN Declarations and Covenants
- Human Rights and Citizenship Rights
- Human Rights and the Indian Constitution
- Human Rights, Laws and Institutions in India; the role of the National Human Rights Commission.
- Human Rights of Marginalized Groups: Dalits, Adivasis, Women, Minorities and Unorganized Workers.
- Consumer Rights: The Consumer Protection Act and grievance redressal mechanisms.
- Human Rights Movement in India.

III : Gender

- Analysing Structures of Patriarchy
- Gender, Culture and History
- Economic Development and Women
- The issue of Women's Political Participation and Representation in India
- Laws, Institutions and Women's Rights in India
- Women's Movements in India

IV: Environment

- Environmental and Sustainable Development
- UN Environment Programme: Rio, Johannesburg and after.
- Issues of Industrial Pollution, Global Warming and threats to Bio – diversity
- Environment Policy in India
- Environmental Movement in India

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

1. Agarwal, Anil and Sunita Narain (1991), *Global Warming and Unequal World: A Case of Environmental Colonialism*, Centre for Science and Environment, Delhi.

2. Baxi, Upendra (2002), *The Future of Human Rights*, Oxford University Press, Delhi.

3. Beteille, Andre (2003), *Antinomies of Society: Essays on Ideology and Institutions*, Oxford University Press, Delhi.

4. Geetha, V. (2002) *Gender*, Sree Publications, Kolkata.

5. Ghanshyam Shah, (1991) *Social Movements in India*, Sage Publications, Delhi.

6. Guha, Ramachandra and Madhav Gadgil, (1993) *Environmental History of India*, University of California Press, Berkeley.

7. Haragopal, G. (1997) *The Political Economy of Human Rights*, Himachal Publishing House, Mumbai.

8. Menon, Nivedita (ed) (2000) *Gender and Politics in India*, Oxford University Press, Delhi.

9. Patel, Sujata et al (eds) (2003) *Gender and Caste: Issues in Contemporary Indian Feminism*, Kali for Women, Delhi.

10. Shah, Nandita and Nandita Gandhi (1992) *Issues at Stake: Theory and Practice in the Contemporary Women's Movement in India*, Kali for Women, Delhi.

11. Gonsalves, Colin (2011) Kaliyug: The decline of human rights law in the period of globalization Human Rights Law Network, New Delhi.

12. Sen, Amartya, Development as Freedom (1999) New Delhi, OUP.

OR

GE-2: Contemporary Political Economy **Credit 06**

GE2T: Contemporary Political Economy

Course Content:

I. Approaches to Political Economy

Classical Liberalism, Marxism, Welfarism, Neo-liberalism and Gandhian approach

II. Capitalist Transformation

a. European Feudalism and Transition to Capitalism
b. Globalization: Transnational Corporations, World Trade Organization, Non-governmental Organizations (their role in development)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

III. Issues in Development

(i) Culture: Media and Television
(ii) Big Dams and Environmental Concerns
(iii) Military: Global Arms Industry and Arms Trade
(iv) Knowledge Systems

IV. Globalization and Development Dilemmas

(i) IT revolution and Debates on Sovereignty
(ii) Gender
(iii) Racial and Ethnic Problems
(iv) Migration

Suggested Readings:

1. Arblaster, A. (2006) 'The Rise and Decline of Western Liberalism' in Lal, D. *Reviving the Invisible Hand: The Case for Classical Liberalism in the Twenty first Century.* Princeton: Princeton University Press, pp. 1- 8, 17- 30, and 48- 51.

2. Mandel, E. (1979) *An Introduction to Marxist Economic Theory.* New York: Pathfinder Press, 3rd print, pp. 3-73.

3. Kersbergen, K.V. and Manow, P. (2009) *Religion, Class Coalition and Welfare State.* Cambridge: Cambridge University Press, chapters 1 and 10, pp. 1-38; 266-295

4. Andersen, J. G. (ed.) (2008) 'The Impact of Public Policies' in Caramani, D *Comparative Politics.* Oxford: Oxford University Press, ch 22, pp. 547- 563 .

5. Harvey, D. (2005) A *Brief History of Neo-liberalism.* Oxford: Oxford University Press, pp. 1- 206.

6. Ghosh, B.N. (2007) *Gandhian Political Economy: Principles, Practice and Policy.* Ashgate Publishing Limited, pp. 21- 88.

7. Phukan, M. (1998) *The Rise of the Modern West: Social and Economic History of Early Modern Europe.* Delhi: Macmillan India, (ch.14: Transition from Feudalism to Capitalism), pp. 420- 440.

8. Gilpin, R. (2003) *Global Political Economy: Understanding the International Economic Order.* Hyderabad: Orient Longman, pp. 278- 304.

9. Kennedy, P. (1993) *Preparing for the Twentieth Century.* UK: Vintage, Ch. 3
10. Gelinas, J. B. (2003) *Juggernaut Politics- Understanding Predatory Globalization.* Halifax, Fernwood, Ch.3. Available from: *www.globalpolicy.org*

11. Gilpin, R. (2003) *Global Political Economy: Understanding the International Economic Order. H*yderabad: Orient Longman, Ch. 8, pp. 196- 233.

12. Prasad, K. (2000) *NGOs and Social-economic Development Opportunities.* New Delhi: Deep & Deep, ch. 1, 2, 3, 5.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

13. Fisher, J. (2003) *Non-governments – NGOs and the Political Development in the Third World.* Jaipur: Rawat, ch. 1, 4, 6.81

14. Media and Television Mackay, H. (2004) 'The Globalization of Culture' in Held, D. (ed.) *A Globalizing World? Culture, Economics and Politics*. London: Routledge, pp. 47- 84.

15. Tomlinson, J. (2004) 'Cultural Imperialism' in Lechner, F. J and Boli, J. (eds.) The Globalization Reader. Oxford: Blackwell, pp. 303- 311.

16. Lechner, F. J and Boli, J. (eds.) (2004) *The Globalization Reader.* Oxford: Blackwell, pp. 361- 376 and 398- 404.

17. Held, D. and Mcrew, A. (eds.) (2000) *The Global Transformations Reader*. Cambridge: Polity Press, pp. 374- 386.

18. Singh, S. (1997) *Taming the Waters: The Political Economy of Large Dams in India*. New Delhi: Oxford University Press, pp. 133- 163, 182- 203, 204- 240.

19. Kesselman, M. (2007) *The Politics of Globalization.* Boston: Houghton Mifflin Company, pp. 330- 339.

20. Marglin, S. (1990) 'Towards the Decolonisation of the Mind' in Marglin, S. and Marglin, F. A. (eds.) *Dominating Knowledge: Development, Culture and Resistance*. Oxford: Oxford University Press, pp. 1- 28.

21. L. Lechner, F. J and Boli, J. (eds.) (2004) The Globalization Reader. Oxford: Blackwell, pp. 211- 244.

22. Held, D. and Mcrew, A. (eds.) (2000) The Global Transformations Reader. Cambridge: Polity Press, pp. 105-155.

23. Omahe, K. (2004) 'The End of the Nation State', L. Lechner, F. J and Boli, J. (eds.) The Globalization Reader. Oxford: Blackwell, ch. 29.

24. Glen, J. (2007) *Globalization: North-South Perspectives.* London: Routledge, ch.6.

25. Sen, A. (2006) *Identity and Violence: Illusion and Destiny.* London: Penguin/Allen Lane, ch.7, pp. 130-148.

26. Berkovitch, N. (2004) 'The Emergence and Tranformation of the International Women's Movements' in L. Lechner, F. J and Boli, J. (eds.) *The Globalization Reader*. Oxford: Blackwell, ch.31, pp. 251- 257.

27. Steans, J. (2000) 'The Gender Dimension' in Held, D. and Mcrew, A. (eds.), *The Global Transformations Reader*. Cambridge: Polity Press, ch.35, pp. 366- 373.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

28. Tickner, J. A. (2008) 'Gender in World Politics' in Baylis, J.,Smith, S. & Owens, P. (eds.) *Globalization of World Politics*, 4th edn., New Delhi: Oxford University Press, ch.15.

29. Kesselman, M. and Krieger, J. (2006) *Readings in Comparative Politics: Political Challenges and Changing Agendas*. Boston: Houghton Miffin Company, pp. 243-254 and 266- 276.

30. Arya, S. and Roy, A. (eds.) *Poverty Gender and Migration.* New Delhi: Sage, Ch. 1

31. Kesselman, M. (2007) *The Politics of Globalization.* Boston: Houghton Mifflin Company, pp. 450- 462.

32. Nayyar, D. (ed.) (2002) *Governing Globalization.* Delhi: OUP, pp. 144- 176.

OR

GE-2: United Nations and Global Conflicts **Credit 06**

GE2T: United Nations and Global Conflicts

Course Content:

I. The United Nations

(a) An Historical Overview of the United Nations
(b) Principles and Objectives
(c) Structures and Functions: General Assembly; Security Council, and Economic and SocialCouncil; the International Court of Justice and the specialised agencies (International Labour Organisation [ILO], United Nations Educational, Scientific and Cultural Organisation [UNESCO], World Health Organisation [WHO], and UN programmes and funds: UnitedNations Children's Fund [UNICEF], United Nations Development Programme [UNDP], United Nations Environment Programme [UNEP], United Nations High Commissioner for Refugees [UNHCR])
(d) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect
(e) Millennium Development Goals

II. Major Global Conflicts since the Second World War

(a) Korean War
(b) Vietnam War
(c) Afghanistan Wars
(d) Balkans: Serbia and Bosnia

III. Assessment of the United Nations as an International Organisation: Imperatives of Reforms and the Process of Reforms

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

1. Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 39-62.

2. Goldstein, J. and Pevehouse, J.C. (2006) *International relations*. 6th edn. New Delhi: Pearson, pp. 265-282.

3. Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium.* London: Continuum, pp. 1-20.

4. Gareis, S.B. and Varwick, J. (2005) *The United Nations: an introduction.* Basingstoke: Palgrave, pp. 1-40.

5. Gowan, P. (2010) 'US: UN', in Gowan, P. 'A calculus of power: grand strategy in the twentyfirst century. London: Verso, pp. 47-71.

6. Baylis, J. and Smith, S. (eds.) (2008) *The globalization of world politics. an introduction to international relations*. 4th edn. Oxford: Oxford University Press, pp. 405-422.

7. Thakur, R. (1998) 'Introduction', in Thakur, R. (eds.) *Past imperfect, future uncertain: The UN at Ffifty*. London: Macmillan, pp. 1-14.

8. Basu, Rumki (2014) United Nations: Structure and Functions of an international organization, New Delhi, Sterling Publishers

9. Gareis, S.B. and Varwick, J. (2005) *The United Nations: An introduction.* Basingstoke:Palgrave, pp. 15-21.

10. Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium.* London: Continuum, pp. 21-141.

11. Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp.119-135.

12. Nambiar, S. (1995) 'UN peace-keeping operations', in Kumar, S. (eds.) The United Nations atfifty. New Delhi, UBS, pp. 77-94.

13. Whittaker, D.J. (1997) 'Peacekeeping', in *United Nations in the contemporary world*.London: Routledge, pp. 45-56.

14. White, B. et al. (eds.) (2005) *Issues in world politics*. 3rd edn. New York: Macmillan, pp. 113-132.

15. Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education,pp.264-266.

16. Sangal, P.S. (1986) 'UN, peace, disarmament and development', in Saxena, J.N. et.al. *United Nations for a better world*. New Delhi: Lancers, pp.109-114.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

17. Baxi, U. (1986) 'Crimes against the right to development', in Saxena, J.N. et.al. *United Nations for a better world*. New Delhi: Lancers, pp.240-248.

18. Ghali, B.B. (1995) *An agenda for peace*. New York: UN, pp.5-38.

19. United Nations Department of Public Information. (2008) *The United Nations Today*. NewYork: UN.

20. Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp.116-124.

21. Armstrong, D., Lloyd, L. and Redmond, J. (2004) *International organisations in world politics.* 3rd edn. New York: Palgrave Macmillan, pp. 42-43.

22. Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 64-65 and 172-173.

23. Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp. 528-546.

24. Baylis, J. and Smith, S. (eds.) (2008) *The globalization of world politics. an introduction to international relations*. 4th edn. Oxford: Oxford University Press, pp. 562-564.

25. Achcar, G. (2004) *Eastern cauldron*. New York: Monthly Review Press, pp. 29-45 and 234- 241.

26. Achcar, G. (2003) *The clash of barbarisms: Sept. 11 and the making of the new world disorder*. Kolkata: K.P. Bachi & Co., pp. 76-81.

27. Prashad, V. (2002) *War against the planet*. New Delhi: Leftword, pp. 1-6. Ali, T. (ed.) (2000) *Masters of the Universe*. London: Verso, pp. 203-216.

28. Calvocoressi, P. (2001) *World Politics: 1945-200.* 3rd edn. Harlow: Pearson Education, pp.570-576.

29. Ali, T. (ed.) (2000) *Masters of the Universe*. London: Verso, pp. 230-245 and 271-284.

30. Kaldor, M. and Vashee, B. (eds.) (1997) *New wars.* London: Wider Publications for the UN University, pp. 137-144 and 153-171.

31. Viotti, P.R. and Kauppi, M.V. (2007) *International relations and world politics-security, economy, identity*. 3rd edn. New Delhi: Pearson Education, pp. 470-471.

32. Goldstein, J.S. (2003) *International relations.* 3rd edn. Delhi: Pearson Education, pp 43-51.

33. Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp.24-27.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

34. Roberts, A. and Kingsbury, B. (eds.) (1994) *United Nations, Divided World.* 2nd edn. Oxford: Clarendon Press, pp. 420-436.

35. Taylor, P. and Groom, A.J.R. (eds.) (2000) *The United Nations at the millennium.* London: Continuum, pp. 196-223 and 295-326.

36. Gareis, S.B. and Varwick, J. (2005) *The United Nations: An introduction.* Basingstoke: Palgrave, pp. 214-242.

37. Moore, J.A. Jr. and Pubantz, J. (2008) *The new United Nations.* Delhi: Pearson Education, pp. 91-112.

38. Claude, I. (1984) *Swords into plowshares: the progress and problems of international organisation*. 4th edn. New York: Random House.

39. Dodds, F. (ed.) (1987) *The way forward: beyond the agenda 21*. London: Earthscan.

40. Rajan, M.S., Mani, V.S and Murthy, C.S.R. (eds.) (1987) *The nonaligned and the United Nations*. New Delhi: South Asian Publishers.

41. South Asia Human Rights Documentation Centre. (2006) *Human rights: an overview*. New Delhi: Oxford University Press.

42. Anan, K. (1997) *Renewing the United Nations: A Programme for Survival*. General Assembly Document: A/51/950; 14 July 1997. Available from: http://daccessdds.un.org/doc/UNDOC/GEN/N97/189/79/1MG/n9718979.pdf,Open Element (accessed on 13 October 2011).

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:16:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Political_science_General.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (General)
in

HUMAN RIGHTS EDUCATION

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

VIDYASAGAR UNIVERSITY

B A (General) in HUMAN RIGHTS EDUCATION

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Introduction to Human Rights: Jurisprudence, Norms, Standards and Mechanisms - **Project**	6	4-0-4	15	60	75
		Core-2 (DSC-2A)		Other Discipline (Discipline-2) /TBD	6	5-1-0	15	60	75
		AECC (core)		English-1	6	5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
		Semester - I : Total			**20**				**275**
		SEMESTER-II							
	II	Core-4 (DSC-1B)		Promotion of Human Rights and Humanitarian Law - **Project**	6	4-0-4	15	60	75
		Core-5 (DSC-2B)		Other Discipline(Discipline-2) /TBD	6	5-1-0	15	60	75
		AECC (core)		Mil-1	6	5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
		Semester - II : Total			**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-7 (DSC-1C)		Refugee Law and Specially Disadvantaged Sections of Society in India - **Project**	6	4-0-4	15	60	75
		Core-8 (DSC-2C)		Other Discipline(Discipline-2) /TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC (core)		English-2	6	5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0	10	40	50
		Semester - 3 : Total			**20**				**275**
	IV	SEMESTER-IV							
		Core-10 (DSC-1D)		Emerging Dimensions of Human Rights and Evolution of the Concept of Human Rights and Duties in India - **Project**	6	4-0-4	15	60	75
		Core-11 (DSC-2D)		Other Discipline(Discipline-2) /TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC (core)		MIL-2	6	5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0	10	40	50
		Semester - 4 : Total			**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Human Rights Education)	6	4-0-4	15	60	75
		DSE-2A		Other Discipline(Discipline-2) /TBD	6	4-0-4/ 5-1-0	15	60	75
		GE-1		TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0	10	40	50
		Semester - 5 : Total			**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Human Rights Education)	6	4-0-4	15	60	75
		DSE-2B		Other Discipline(Discipline-2) /TBD	6	4-0-4/ 5-1-0	15	60	75
		GE-2		TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0	10	40	50
		Semester - 6 : Total			**20**				**275**
		Total in all semester:			**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

List of Core & Elective courses

Core Courses (CC)

DSC-1A: Introduction to Human Rights: Jurisprudence, Norms, Standards and Mechanisms
DSC-1B: Promotion of Human Rights and Humanitarian Law
DSC-1C: Refugee Law and Specially Disadvantaged Sections of Society in India
DSC-1D: Emerging Dimensions of Human Rights and Evolution of the Concept of Human Rights and Duties in India

Discipline Specific Electives (DSE)

DSE-1: Human Rights and Duties in India: Normative Framework, Constitution and Statutory Mechanisms
Or
DSE-1: Science & Technology and Human Rights
Or
DSE-1: Women and Human Rights and Duties

DSE-2: Human Rights Movements and Criminal Justice System in India
Or
DSE-2: Children and Human Rights
Or
DSE-2: The Aged and the Disabled, and Human Rights and Duties

Skill Enhancement Courses (SEC)

SEC-1: Development, International Trade and Human Rights
Or
SEC-1: Peoples' Right to Self-Determination
SEC-2: Societal Problems of Human Rights in India
Or
SEC-2: Regional Human Rights Systems
SEC-3: Human Rights Education, Teaching and Training
Or
SEC-3: International Human Rights System
SEC-4: Environment and Human Rights
Or
SEC-4: Working Class and Human Rights

Generic Elective (GE)

[Interdisciplinary for other department]

GE-1: Introduction to Human Rights: Jurisprudence, Norms, Standards and Mechanisms
Or
GE-1: Environment and Human Rights and Duties
Or
GE-1: Promotion of Human Rights and Humanitarian Law

GE-2: Refugee Law and Specially Disadvantaged Sections of Society in India
Or
GE-2: Human Rights in the Modern Era
Or
GE-2: Emerging Dimensions of Human Rights and Evolution of the Concept of Human Rights and Duties in India

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

Core Courses (CC)

DSC-1A (CC-1): Introduction to Human Rights: Jurisprudence, Norms, Standards and Mechanisms **Credit 06**

DSC1AT: Introduction to Human Rights: Jurisprudence, Norms, Standards and Mechanisms
(Theory) **Credits 04**

Course Contents:

A. Human Rights and duties: Jurisprudence

i) Philosophical and historical foundation of human rights and duties
ii) Theories of rights
iii) Concept and classifications of human rights and duties
iv) Human rights and duties
    a) Co-relationship of rights and duties/responsibilities
    b) Tensions between rights inter se, duties inter se, and rights and duties
v) Importance of internalizing human rights and duties:
vi) Urgent need for not only sensitizing others of human rights and duties, but of practicing oneself those values: self-inculcation, endeavour to live up to those ideals - Duty to respect others' rights, respect each other's human dignity. Any two : a) Child's Rights; b) Women's Rights, c) Mob Violence

B. International Human Rights: norms, standards and mechanisms

i) Evolution of human rights and duties on the international plane
ii) The United Nations Charter and the development of human rights Provisions of the Charter, Universal Declaration of Human Rights 1948, International Covenant on Civil and Political Rights 1966 and International Covenant on Economic, Social and Cultural Rights 1966, and other major UN instruments on human rights (Conventions on Racial Discrimination, Women's Rights, Rights of the Child, Torture)

DSC1AP: Project Report (on any chosen topic from DSC-1A **)** **Credit 02**

DSC-1B (CC- 2): Promotion of Human Rights and Humanitarian Law
Credit 06

DSC1BT: Promotion of Human Rights and Humanitarian Law **Credit 04**

(Theory)
Course Contents:

A. United Nations for promotion of Human Rights and Regional Human Rights standards and mechanisms

i) UN bodies involved in promotion of human rights - Economic and Social Council, UN Commission on Human Rights and its sub-commissions on women, minorities, etc., General Assembly, Human Rights Committee and other committees under the various conventions, ILO, UNESCO, WHO, FAO.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

ii) European Convention on the Protection of Human Rights 1950 and institutions
iii) Latin American standards and mechanisms for protection of human rights
iv) African standards and mechanisms for protection of human rights

B. International Humanitarian Law

i) Evolution of IHL since the mid-nineteenth century: IHL conventions 1864, 1899 1907, 1929, and 1949, 1977 Geneva Protocols II & I.
ii) Basic principles: humanity, protection of civilians and civilian objects, humane treatment of prisoners and civilians under custody, prohibition of use of weapons and methods of warfare, causing superfluous injury and unnecessary suffering, prohibition of widespread, long-term and severe damage to natural environment.
iii) Indian Geneva Conventions Act 1949: Indian Red Cross Society
iv) The role of International Committee of Red Cross

DSC1BP: Project Report (on any chosen topic from DSC-1B) **Credit 02**

DSC-1C (CC-3): Refugee Law and Specially Disadvantaged Sections of Society in India Credits 06

DSC1CT: Refugee Law and Specially Disadvantaged Sections of Society in India (Theory) Credits 04

Course Contents:

A. International Refugee Law

i) Problem of refugees and displaced persons through the ages
ii) The United Nations and the refugee problem
iii) Refugee Convention 1951, Protocol 1967, Convention on the Stateless Persons 1951 - The core issues of the 'right' to seek and receive asylum, right of nonrefoulement (non-return)
iv) Role of UN High Commissioner for Refugees

B. Human Rights of specially disadvantaged sections of society in India

i) Scheduled Castes/Scheduled Tribes and Other Backward Classes
ii) Minorities
iii) Women and Children
iv) Disabled Individuals
v) The Elderly, 'Aged', Aging and Human Rights

DSC1CP: Project Report (on any chosen topic from DSC-1C) **Credit 02**

DSC-1D (CC-4): Emerging Dimensions of Human Rights and Evolution of the Concept of Human Rights and Duties in India

Credit 06

DSC1DT: Emerging Dimensions of Human Rights and Evolution of the Concept of Human Rights and Duties in India
(Theory) Credit 04

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

Course Contents:

A. Emerging Dimensions of Human Rights

i) National Sovereignty versus international enforcement' of human rights, International
ii) Politics of human rights and selective application of international sanctions, unilateral use of coercion and implementation of human rights
iii) Human rights, and science and technology
iv) Human rights violations by non-state entities such as corporations, other business entities, terrorists and other armed groups, militant religious groups, professional groups (doctors, lawyers, etc.)
v) New rights: right to a future and rights of future generations, rights to peace (and disarmament), rights to clean environment

B. Evolution of the concept of Human Rights and duties in India

i) Evolution of the composite culture of India, contribution of diverse religions
ii) Concepts of human welfare, rights and duties, totality of the cosmology of universe with human beings as its intrinsic part
iii) Human rights and duties in contemporary India: Law, politics and society
iv) Social movements of the 19th and 20th centuries, independence movement, Gandhi, Nehru, Ambedkar etc.
v) Making of the Constitution

DSC1DP: Project Report (on any chosen topic from DSC-1D) **Credit 02**

Discipline Specific Electives (DSE)

DSE-1: Human Rights and Duties in India: Normative Framework, Constitution and Statutory Mechanisms Credit 06

DSE1T: Human Rights and Duties in India: Normative Framework, Constitution and Statutory Mechanisms Credit 04

(Theory)

Course Contents:

A. Normative framework of Human Rights and duties in India

i) Constitutional perspective: Fundamental Rights, Directive Principles, Fundamental Duties, and their interrelationships
ii) Statutory protection of human rights

B. Enforcement of Human Rights: constitution and statutory mechanisms in India

i) Legislature, executive, and judiciary
ii) National Human Rights Commission, other commissions and committees
iii) Social, economic, political and administrative problems of enforcement

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

DSE1P: Project Report (on any chosen topic from DSE- 1) **Credit 02**

Or

DSE-1: Science & Technology and Human Rights **Credits 06**

DSE1T: Science & Technology and Human Rights **Credits 04**

Course Contents:

Unit-I: Conceptual Legal and Ethical Issues
Concept of Science & Technology as a tool for furtherance of Human and Social Welfare; Debates over 'Development': 'Quality' of Life: Spiritualism versus Materialism. Some ethical and legal issues: Developments in Biotechnology; Life sustaining technologies; Artificial Organs, Kidney dialysis, Life sustaining drugs. New Impacts of Science & Technology: Organ transplantation and sale of human organs, Computer crimes, Pornography online. New torture technologies.

Unit-II: Information Technology and Human Rights
Revolution in Information Technology, Right to Information, Problems of Imposing Reasonable Restrictions, Applicable Legal Norms: Article19,41,45&46 of the Indian Constitution, Information Technology Act 199, Other Indian Laws Relating to Media, Information Technology, Satellite communication, Cinematograph Act, Official Secrets Act 1926.

Unit-III: Right to Food and Health
Science & Technology to improve and diversify food production and storage, and for food security, Fertilizers, Biotechnology to produce improved varieties of Foods, Improvement in storage facilities. Impact of Bio-Technology in agriculture (Positive and Negative): Agriculture as a Commercial Industry. Science & Technology and improvement of individual and community health and hygiene, Experiments on living beings, Community health as a Public Service industry: Shift in character as a commercial industry, Role of multinationals, Pharmaceutical Industries, Changing role of Government.

Unit-IV: Right to Development:
Development (spiritual and material) as both the objective as well as the catalyst for realization of Human Rights, Human Welfare: Indivisibility of civil and political rights, and economic, social and cultural Rights, Science and Technology as a tool of development, Declaration on the Right to Development 1986, Problems in access to technology applicable Legal norms.

DSE1P: Project Report (on any chosen topic from DSE- 1) **Credit 02**

Or

DSE-1: Women and Human Rights and Duties **Credits 06**

DSE1T: Women and Human Rights and Duties

Course Content

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

1. Historical, philosophical and social perspectives

2. Status of women in contemporary Indian society
(i) Poverty, illiteracy, lack of independence, oppressive social customs and gender bias **(ii)** Violence against and abuse of women in public and private domains

3. International norms for protection of women
(i) ILO conventions for protection of female labour **(ii)** UNESCO Convention against Discrimination in Education 1960 **(iii)** UN Convention on Political Rights of Women 1952, Convention on Elimination of All Forms of Discrimination against Women 1979, Convention on Nationality of Married Women 1957, Convention on Consent to Marriage, Minimum Age for Marriage and Registration of Marriages 1962, Convention for the Suppression of the Traffic in Persons and of the Exploitation of the Prostitution of Others 1949, Declaration on the Elimination of Violence against Women 1993, Convention on Political Rights of Women 1952 **(iv)** Declaration on the Participation of Women in Promoting International Peace and Cooperation 1982 **(v)** Documents of the Four World Conferences on Women: Mexico 1975, Copenhagen 1980, Nairobi 1985, Beijing 1995 **(vi)** Protection of women in armed conflicts **(vii)** Other relevant developments

4. The constitution of India and the status of women
(i) Fundamental Rights and Directive Principles under the Constitution **(ii)** Special provisions for the protection of women: Article 15(3), Article 39 (d) & (e), Article 42, Articles 243-D & 243-T

5. Special laws and policies for protection of women
(i) Special Laws: Suppression of Immoral Traffic Act 1956, Indecent Representation of Women (Prohibition) Act 1986, Commission of Sati (Prevention) Act 1982, Medical Termination of Pregnancy Act 1971, Maternity Benefit Act 1961, Equal Remuneration Act 1976, Dowry Prohibition Act 1961, Other laws having a direct bearing on protection of women **(ii)** Gaps between international norms and Indian law, if any **(iii)** Women and public policy: Female health and family welfare, literacy programmes, female labour welfare; Issue of current public debate: political rights of women (reservations and protection of women), personal laws and status of women

6. Institutional mechanisms for protection of women
(i) Constitutional mechanisms: Legislature, Executive and Judiciary (special contribution of judiciary) **(ii)** Statutory mechanism: National Commission for Women, National Human Rights Commission, State Commissions **(iii)** The Non-Governmental Organizations
(iv) The information media **(v)** Role of education

DSE1P: Project Report (on any chosen topic from DSE- 1) **Credit 02**

DSE- 2: Human Rights Movements and Criminal Justice System in India
Credit 06

DSE2T: Human Rights Movements and Criminal Justice System in India
Credit 04

(Theory)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

Course Contents:

A. Human Rights movements in India

i) National freedom movement
ii) Social and political movements
iii) Dalit movements
iv) Women's movements
v) Environmental movements

B. Human Rights and criminal justice system in India

Criminal justice system and protection of Human Rights : treatment of individuals in **i)** Situations of crime **ii)** Human rights of the accused **iii)** Legal aid **iv)** Police, criminal investigation, custodial crimes **v)** Crimes (including custodial crimes) against women and children **vi)** Reform in jails/juvenile homes

DSE2P: Project Report (on any chosen topic from DSE- 2) **Credit 02**

Or

DSE-2: Children and Human Rights **Credits 06**

DSE2T: Children and Human Rights **Credits 04**

Course Contents:

Unit-I: Historical, Philosophical and Social Perspective

Historical, Philosophical and Social Perspective of Child Rights, Status and Contemporary Indian Society: Impact of Poverty and Illiteracy on the Health and Education of Child, Social and Cultural Practices Regarding Girl Child Foeticide and Child Marriage, Child Labour (in Construction, Carpet, Glass, and other Industries in Unorganized Sector) Forced Labor, Sale of Children, Child Abuse (Inside and Outside Homes), Trafficking of Children, Children and Custodial Crimes

Unit-II: Indian Constitutions Status

Fundamental Rights and Directive Principles Under the Indian Constitution, Special Provisions for the Protection for the Child: Article 15 (3) Article 24, Article 39 (e), (f) and Article (45), Legislature, Executive, Judiciary (Special Contribution of Judiciary, Nation Human Rights Commission, National Commission for Child.

Unit-III: Legal Norms and Policies

Child Labour (Prohibition and Regulation) Act, Children (Pleading of Labour) Act 1933, Child Marriage Restraint Act 1929, Pre-Natal Diagnostic Technique (Regulation and Prevention of Misuse) Act 1956, Child Labour (Prohibition and Regulation) Act 1986, Orphanage and Other Charitable Home (Supervision and Control) Act 1960, Juvenile Justice Acts 1986 and 2000.

Unit-IV: International Norms

ILO Convention on Restriction and Prohibition on Child Labour Including ILO Convention on Child Labour (1990) UN Convention on the Rights of the Child (1989), Optional Protocol on the Involvement of Children in Armed Conflict, and Optional

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

Protocol on Sale of Children, Child Prostitution and Child Pornography (2000), Declaration of Social and Legal Principles Relating to the Protection and Welfare of Children with Special Reference to Foster Placement and Adoption.

Unit –V:Institutional mechanism for protection of the child
(i) Constitutional Mechanisms: Legislature, Executive, Judiciary (Special contribution of judiciary) **(ii)** National Human Rights Commission, National Commission for Rights of the Child **(iii)** Non-Governmental Organizations **(iv)** The Information Media **(v)** Role of education

DSE2P: Project Report (on any chosen topic from DSE- 2) **Credit 02**

Or

DSE-2: The Aged and the Disabled, and Human Rights and Duties Credits 06

DSE-2T: The Aged and the Disabled, and Human Rights and Duties Credits 04

Course Content:

1. Conceptual Perspectives
(i) Poverty, illiteracy, breakdown of old social and family institutions; Impact of improvements in health care on mortality **(ii)** Social taboos regarding the disabled; General problem of poverty

2. Historical, philosophical and social perspectives

3. Protection of the aged and the disabled under the Indian legal System
(i) Constitutional Framework: Fundamental Rights, Directive Principles and Fundamental Duties **(ii)** Special Laws and Policies (a) Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act (b) Mental Health Act 1993 (c) Other relevant laws (d) Policies on the Aged and the Disabled

4. Institutional mechanisms for protection of the aged and the Disabled
(i) Constitutional mechanisms: Legislature, Executive, Judiciary **(ii)** Mechanisms under the laws **(iii)** Non-Governmental Organizations **(iv)** The Information Media **(v)** Role of Education

5. International norms for protection of the aged and the disabled
UN General Assembly Declaration on the Rights of the Disabled Persons 1975, Declaration on the Mentally Retarded Persons 1971, Resolution on the Rights of the Disable Persons adopted by the Coordinating Committee of National Institutions for the Promotion and Protection of Human Rights 1993, World Assembly on the Ageing 1982

DSE2P: Project Report (on any chosen topic from DSE- 2) **Credit 02**

Skill Enhancement Courses (SEC)

SEC- 1: Development, International Trade and Human Rights Credit 02

Course Contents:

i) Right to development: Issues of international equity and justice, equitable sharing of sharable resources and common amenities, equitable access to benefits of science and technology

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

ii) Freedom of international trade, most-favoured nation treatment (equality of treatment) versus special treatment of the developing countries, access to international markets, equitable pricing of raw materials

Or

SEC-1 Peoples' Right to Self-Determination **Credits 02**

Course Contents:

Unit -I: Normative and Conceptual Perspectives
Meaning of Self-Determination: Autonomy, Democracy, Governance, Self Determination as a Process; Self-Determination: External and Internal, New Dimensions and Emerging Debates

Unit -II: Origins and Developments of the Concept
Theories of Self-Governance: Kant, Locke, Rousseau, Marx; Views on Pluralism: Melver and Laski; Issues of Legitimacy of State and Forms of Governance; Colonization, Nationalism and Statehood: National Liberation Movements, Marxist Theory of Nationalities, Bolshevik Revolution, Woodrow Wilson's Fourteen Points, Redrawing of Boundaries of Former Empires, League of Nations and Concept of Sacred Trust of Civilization'

Unit-III: The Indian Case
Evolution of Ideas of Nationalism, Autonomy and Self- Government, Independence, Federalism and Demand of Autonomy in India: The Constitutional Framework of India; Union-State Relations. Problems and Challenges: Problems Relating to Formation of New States (Demand of Linguistic States and Autonomy from Centre). The Movements for the Demand of Autonomy and Armed Rebellion (Special References to the State of Punjab and Jammu and Kashmir). Problems of Union-State Relations the Rajamannar and Sarkaria Commissions.

Unit-IV: Self – Determination in International Relations
Emergence of the Principle of Self Determinations at the International level : League of Nations, Minority Treaties, Atlantic Charter 1941, UN Charter (Article 1(2), Articles 55-56, Chapters XI, XII and XIII) Framework and the Role of UN De-Colonization Process, Debate Between Domestic Jurisdiction and the People's Right of Self Determination, Normative Developments: UN Declarations on the Granting of Independence to Colonial Countries and Friendly Relations and Cooperation among States; Various UN Declarations on Economic Self- Determinations

SEC- 2: Societal Problems of Human Rights in India **Credit 02**

Course Contents:

i) Core problems: poverty, illiteracy, unemployment, socio-cultural-religious practices resulting in grave human rights deprivations
ii) Domestic Violence and Intimate Partner's violence
iii) Corruption
iv) Terrorism
v) Labour welfare legislation in India
vi) Problems of bonded labour, exploitation of child labour, female labour and

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

vii) Unorganized labour
viii) Communal and caste conflicts and tensions
ix) Violence against women and children, both inside and outside homes
x) Custodial violence

Or

SEC-2: Regional Human Rights Systems **Credits 02**

Course Contents:

Unit-I: American Human Rights System
American Convention on Human Rights (1969), Inter- American Commission on Human Rights (1959), Inter-American Convention to Prevent and Punish Torture (1985), Inter-American Convention on Forced Disappearance (1994), American Court of Human Rights.

Unit-II: European Human Rights System
European Convention for the Protection of Human Rights and Fundamental Freedoms (1950), European Social Charter (1961 [revised 1966]), European Convention for the Prevention of Torture and Inhuman Degrading Treatment and Punishment (1987), Monitoring and Enforcement Machinery, European Court of Human Rights, European Commission of Rights.

Unit-III: Arab Human Rights System
Universal Islamic Declaration of Human Rights (1981), Arab Charter on Human Rights (1994), Casablanca Declaration of Human Rights (1999), Beirut Declaration (1999).

Unit – IV: African Human Rights System
OAU Charter 1963, Mechanism of Implementation: African Commission and Court of Human and People's Rights, African Charter of Human and People's Rights (1981).

SEC -3: Human Rights Education, Teaching and Training **Credit 02**

Course Contents:
Human Rights Education, Tehran Conference 1968, Vienna Conference 1993,
Role of the Central and State Governments in Promoting Human Rights Education; UNESCO and its role in Human Rights Education for Social Change;
Human Rights Education in India and UN Decade for Human Rights Education (1995 - 2004);
Human Rights and Value Education,
Role of Government and Non- Governmental Organisations;
Human Rights Teaching at School, College and University Levels;
Human Rights Education: The Legal Perspective; Research Priorities in Human Rights; Peace Keeping and Training of International Civil Servants.
Mandela Law (The World as it could be)

Or

SEC-3: International Human Rights System **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

Course Contents:

Unit-I: Concern for Human Rights
Concern for the protection of the Individuals in Anti- Slave Trade Treaties, Rise of Nazism, Fascism, Holocaust and Human Rights Issues in International Relations

Unit-II: International Organisations and Human Rights
League of Nations (mandate system, social and economic welfare), ILO and Labour Rights, United Nations (UN Charter, UDHR**,** International Covenant on Economic, Social and Cultural Rights, International Covenant on Civil and Political Rights (1966), UNESCO Declaration of the Responsibilities of the Present Generations Towards Future Generation 1997.

Unit-III: UN Organs and Human Rights
UN Commission of Human Rights (UNCHR), UN Children Fund (UNICEF), UN High Commission for Refugee (UNHCR), UN Education, Scientific and Cultural Organization (UNESCO).

Unit-IV: Human Rights and International Politics
Human Rights and Cold War: Tehran Conference (1968), Helsinki Declaration (1975), Vienna Conference (1993), Human Rights: Under the New World Order

SEC- 4: Environment and Human Rights **Credit 02**

Course Contents:

i) Environment, Resources and Human Rights
ii) Environmental rights ; social movements for protection of environment and ecology; role of various institutions like pollution Control Board; Indian environmental laws – an assessment; Green Tribunal and role of supreme court; Forest Policies and Acts
iii) Right to Development and its various dimensions ; debate around inclusive growth; movement against big dams- case study of Narmada Bachao movement; Sardar Sarobar Project

Or

SEC-4: Working Class and Human Rights **Credits 02**

Course Contents:

Unit-I: Conceptual Issues
Definition of working class, classification; Status of Working Class: Women, Children, Casual Workers, Bonded Labor, Agricultural Labor, Migrant Workers.

Unit-II: Ideology and Working Class
Working class movement; From Laissez Faire to Welfare State; Privatization to Globalization; Basic Rights and Duties: Their Content and Scope – Association and Assembly, Work with Equality and Dignity, Education and Information, Trade Unionism and its Development, Industrial, Labour Safety.

Unit-III: Labour Welfare Problems

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

Health Hazards: Accidents, Occupational Decease; Social Security; Collective Bargaining; Workers' Participation in Management; Retrenchment, Termination and Displacement; Work Culture and Welfare Measures; Industrial Conflicts and Insecurity; Impact of Technological Developments; Conflicting Rights: Worker's Benefit v. Employer's Inconvenience, The right to strike, Lockout and closure of Industry.

Unit-IV: International and Indian Standards

International Framework: ILO Labor Standards; Debate on Social Clause and WTO; Emerging Rights and Duties; Code of International Industrial Discipline; Role of International Labor Agencies. Indian Framework: Constitutional Protection; Worker's Rights and Duties; Employers' Responsibilities and Duties; Dispute Settlement Mechanisms. Institutional Framework for Promotion of Labour Welfare: National – State machinery, workers organizations; Role of International Labor Organization (ILO).

Generic Elective (GE)
[Interdisciplinary for other department]

GE-1: Introduction to Human Rights: Jurisprudence, Norms, Standards and Mechanisms Credit 06

GE1T: Introduction to Human Rights: Jurisprudence, Norms, Standards and Mechanisms Credit 04

Course Contents:

A. Human Rights and duties: Jurisprudence

i) Philosophical and historical foundation of human rights and duties
ii) Theories of rights
iii) Concept and classifications of human rights and duties
iv) Human rights and duties
    (a) Correlationship of rights and duties/responsibilities
    (b) Tensions between rights inter se, duties inter se, and rights and duties
v) Importance of internalizing human rights and duties:
vi) Urgent need for not only sensitizing others of human rights and duties, but of practicing oneself those values: self-inculcation, endeavour to live up to those ideals - Duty to respect others' rights, respect each other's human dignity.

B. International Human Rights: norms, standards and mechanisms

i) Evolution of human rights and duties on the international plane
ii) The United Nations Charter and the development of human rights Provisions of the Charter, Universal Declaration of Human Rights 1948, International Covenant on Civil and Political Rights 1966 and International Covenant on Economic, Social and Cultural Rights 1966, and other major UN instruments on human rights (Conventions on Racial Discrimination, Women's Rights, Rights of the Child, Torture)

GE1P: Project Report (on any chosen topic from above GE-1**)** **Credit 02**

Or

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

GE-1: Environment and Human Rights and Duties **Credits 06**

GE1T: Environment and Human Rights and Duties **Credits 04**

Course Content

1. **Environment**

(i) Its meaning **(ii)** Concern for Environment: Historical Perspective **(iii)** Pollution and its effects on environment and life on earth

2. Right to clean environment

(i) Its content and scope **(ii)** Right to Environment versus Right to Development **(iii)** Sustainable Development **(iv)** Culprits and Victims **(v)** Implementation and Enforcement of the right **(vi)** Globalization of the Right: the planet earth and global commons

3. Rights and duties: an international perspective (From Stockholm to Rio)

(i) UN Declaration on the Right to Development 1986, International conventions on the protection of the environment, precautionary principle **(ii)** Debate on Social Clause and WTO **(iii)** Main Directions **(iv)** Future Goals

4. National regime of environmental protection

(i) Constitutional Rights and Duties **(ii)** Statutory Rights and Duties **(iii)** Emergence of a common approach

5. Issues of environmental protection in developing countries

(i) Inter-generational Equity **(ii)** Preservation of Natural Resources **(iii)** Indigenous People, Tribals and Forest Dwellers **(iv)** Poverty, Illiteracy and Environment **(v)** City Dwellers and Villagers **(vi)** Working Class **(vii)** Other living species

6. Supplementary Rights and duties

(i) Education **(ii)** Information **(iii)** Public Participation: Environmental Democracy

7. Rights and duties in crisis: environment versus development

(i) Mega Projects **(ii)** Industrial Accidents **(iii)** Impact of emerging problems of Science and Technological Development (a) Genetic Engineering (b) Hazardous Waste Treatment (c) Pollution Control Mechanism (d) Dumping of Waste and Discarded Technology(iv) Governmental Planning: (a) Industrial development (b) Master Plans (c) Inactions and Misactions

8. Supervision and enforcement

(i) Supervisory Mechanisms (a) Commissions (b) Committees (c) International Reporting Delegations under various treaties (d) NGOs **(ii)** Enforcement Agencies (a) Issues of liability, insurance (b) Courts: Process and Remedies (c) Tribunal (d) Arbitration and Conciliation

9. Emerging concepts

(i) Common Concern of Humankind: Common Heritage Principle (**ii**) Public Trust **(iii)** Precautionary Principle **(iv)** Inter-generational Equity **(v)** Sovereign Equality **(vi)** Concern for Unborn, Animals and Plants: Right of Future Generations **(vii)** Code of Environmental Culture and Ethics

10. Threats to Indian environment

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

(i) Forest Denudation **(ii)** Pollution of River Systems **(iii)** Indiscriminate Industrial Explosion **(iv)** Depletion of Rare Species **(v)** Bio-diversity

GE1P: Project Report (on any chosen topic from above GE-1**)** **Credit 02**

Or

GE- 1: Promotion of Human Rights and Humanitarian Law **Credit 06**

GE1T: Promotion of Human Rights and Humanitarian Law **Credit 04**

Course Contents:

A. United Nations for promotion of Human Rights and Regional Human Rights standards and mechanisms

i) UN bodies involved in promotion of human rights - Economic and Social Council, UN Commission on Human Rights and its sub-commissions on women, minorities, etc., General Assembly, Human Rights Committee and other committees under the various conventions, ILO, UNESCO, WHO, FAO.
ii) European Convention on the Protection of Human Rights 1950 and institutions
iii) Latin American standards and mechanisms for protection of human rights
iv) African standards and mechanisms for protection of human rights

B. International Humanitarian Law

i) Evolution of IHL since the mid-nineteenth century: IHL conventions 1864, 1899 1907, 1929, and 1949, 1977 Geneva Protocols II & I.
ii) Basic principles: humanity, protection of civilians and civilian objects, humane treatment of prisoners and civilians under custody, prohibition of use of weapons and methods of warfare, causing superfluous injury and unnecessary suffering, prohibition of widespread, long-term and severe damage to natural environment.
iii) Indian Geneva Conventions Act 1949: Indian Red Cross Society
iv) The role of International Committee of Red Cross

GE1 P: Project Report (on any chosen topic from above GE-1) **Credit 02**

GE-2: Refugee Law and Specially Disadvantaged Sections of Society in India **Credit 04**

GE2T: Refugee Law and Specially Disadvantaged Sections of Society in India

(Theory) **Credits 02**

Course Contents:

A. International Refugee Law

i) Problem of refugees and displaced persons through the ages
ii) The United Nations and the refugee problem

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

iii) Refugee Convention 1951, Protocol 1967, Convention on the Stateless Persons 1951 - The core issues of the 'right' to seek and receive asylum, right of nonrefoulement (non-return)
iv) Role of UN High Commissioner for Refugees

B. Human Rights of specially disadvantaged sections of society in India

i) Scheduled Castes/Scheduled Tribes and Other Backward Classes
ii) Minorities
iii) Women and Children
iv) Disabled Individuals
v) The Elderly, 'Aged', Aging and Human Rights

GE2P: Project Report (on any chosen topic from above GE-2) **Credit 02**

Or

GE-2: Human Rights in the Modern Era **Credits 06**

GE-2T: Human Rights in the Modern Era **Credits 04**

Course Contents:

Unit-I: United Nations and Human Rights

UN Charter: UDHR (1948), International Bill of Rights, International Covenant on Economic, Social and Cultural Rights, International Covenant on Civil and Political Rights 1966, Optional Protocols to Civil and Political Rights.

Unit-II: Conceptual Understanding of Human Duties and Responsibilities

Concept of Duties and Responsibilities; Relationship between Rights and Duties, UNESCO Declaration on the Rights and Responsibilities of the Present Generation towards the Future Generations1997: UN Article 29 of the General Assembly on the Rights and Responsibilities of Individuals. Debate and Emphasis on Social Economic and Cultural Rights of Man (East Vs West: Developing Countries and Developed Countries), NIEO.

Unit-III: Classifications of Human Duties and Responsibilities

Classification of Human Duties and Responsibilities General and Specific; General, Moral; Ethical, Social, Economic, Political and Cultural Universal, Traditional and Modern; Specific, Family, Community and Society, Nation- State, Human Kind and Other Living Being on Earth.

Unit IV: General Problems and Importance of Human Rights

Poverty, Illiteracy: Sustainable Development and the Right Development, Discrimination: Racial, Gender, Religious and Caste. Importance of Sensitization and Internalization of Human Rights and Values.

GE2P: Project Report (on any chosen topic from above GE-2) **Credit 02**

Or

GE-2: Emerging Dimensions of Human Rights and Evolution of the Concept of Human Rights and Duties in India **Credit 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

GE2T: Emerging Dimensions of Human Rights and Evolution of the Concept of Human Rights and Duties in India (Theory) Credit 04

Course Contents:

A. Emerging dimensions of Human Rights

i) National Sovereignty versus 'international enforcement' of human rights,
ii) Politics of human rights and selective application of international sanctions, Unilateral use of coercion and implementation of human rights
iii) Human rights, and science and technology
iv) Human rights violations by non-state entities such as corporations, other business entities, terrorists and other armed groups, militant religious groups, professional groups (doctors, lawyers, etc.).
v) New rights: right to a future and rights of future generations, rights to peace (and disarmament), rights to clean environment

B. Evolution of the concept of Human Rights and duties in India

i) Evolution of the composite culture of India, contribution of diverse religions
ii) Concepts of human welfare, rights and duties, totality of the cosmology of universe with human beings as its intrinsic part
iii) Human rights and duties in contemporary India: Law, politics and society
iv) Social movements of the 19th and 20th centuries, independence movement, Gandhi, Nehru, Ambedkar etc.
v) Making of the Constitution

GE2P: Project Report (on any chosen topic from above GE-2) **Credit 02**

Suggested Readings:

GENERAL AND INTERNATIONAL CONTEXTS

Primary Sources

1. UN Centre for Human Rights, Elimination of all Forms of Intolerance and Discrimination Based on Religion or Belief (New York: UN Publication Division, 1989).
2. UN Centre for Human Rights, Human Rights Machinery (Geneva: World Campaign for Human Rights, 1987).
3. UN Centre for Human Rights, International Human Rights Standards for Law Enforcement (Geneva: World Campaign for Human Rights, 1996).
4. UN Centre for Human Rights, International Humanitarian Law and Human Rights (Geneva: World Campaign for Human Rights, 1992).
5. UN Centre for Human Rights, National Institutions for the Promotion and Protection of Human Rights (Geneva: World Campaign for Human Rights, 1993).
6. UN Centre for Human Rights, Special Issue on Implementation of International Human Rights Instruments (New York, 1990).
7. UN Centre for Human Rights, The International Bill of Human Rights (Geneva: World Campaign for Human Rights, 1996).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

8. UN High Commissioner for Human Rights, An Introduction: Making Human Rights a Reality (New York: UN Publication Division, 1996).
9. UN World Campaign for Human Rights, The African Charter on Human and People's Rights (Geneva: UN Publication Division, 1990).
10. UN, Declaration of the Right to Development (New York: UN Department of Public Information, 1988).
11. UN, Human Rights and Scientific and Technological Developments (New York: UN Department of Public Information, 1982).
12. UN, The Universal Declaration of Human Rights 1948-1998 (New York: UN Department of Public Information, 1998).
13. UN, United Nations Action in the Field of Human Rights (New York: UN Publication Division, 1994).
14. UN, United Nations and Human Rights (New York: UN Publication Division, 1984).
15. UN, World Conference on Human Rights: The Vienna Declaration and Programme of Action (New York: UN, 1995).
16. UNESCO, Human Rights: Major International Instruments: Status as at 31 May 1999 (Paris:UNESCO, 1999).
17. UNESCO, International Dimensions of Humanitarian Law (Paris: UNESCO, 1988).
18. UNESCO, Philosophical Formulations of Human Rights (Paris: UNESCO, 1986).
19. UNESCO, Taking Action for Human Rights in the Twenty-first Century (Paris: UNESCO, 1998).
20. UNESCO, UNESCO and Human Rights (Paris: UNESCO, 1999).
21. UNHRC, Collection of International Instruments and other Legal Texts Concerning Refugees and Displaced Persons (UNHRC, 1995).

Secondary Sources

1. Alston, Phillip, ed., The United Nations and Human Rights: A Critical Appraisal (Oxford: Clarendon Press).
2. ----------, The United Nations and Human Rights (London: Clarendon Press,).
3. Ankumah, Evelyn A., The African Commission on Human and People's Rights: Practice and Procedures (The Hague: Martinus Nijhoff,).
4. An-Na'zm, A. and Francis Deng, ed., Human Rights in Africa: Cross Cultural Perspectives (Washington: Brooking Institution,).
5. Banton, Michael, International Action against Racial Discrimination (Oxford: Clarendon Press,).
6. Bassiouni, M. Cherif, Crimes against Humanity (Dordrecht: Martinus Nijhoff,).
7. Bloed, A. and others, Monitoring Human Rights in Europe (Dordrecht: Martinus Nijhoff,).
8. Buergenthal, T. and D. Shelton, Protecting Human Rights in the Americas (Strasburg:).
9. Buergenthal, T. and R. Norris, Human Rights under the Inter-American System (New York: Dobbs Ferry,).
10. Carey, J., U.N. Protection of Civil and Political Rights (Syracuse: Syracuse University Press,).
11. Cassase, A., ed., Human Rights: Thirty Years after the Universal Declaration .
12. Cassese, J., Human Rights in Changing World (Philadelphia: Temple University Press,.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

13. Davidson, Scot, The Inter-American Court of Human Rights (Aldershot: Dartmouth,).
14. Del Russo, A.L., International Protection of Human Rights (Washington: Lerner Law Books,).
15. Falk, Richard, Human Rights and the State Sovereignty (New York: Halmes and Meiser Publishers,).
16. Ganji, M., International Protection of Human Rights (Geneva: Droz,).
17. Harris, D.S., The European Social Charter (Charlottesville).
18. Hurst, Hannum, Guide to International Human Rights Practice (Philadelphia: University of Pennsylvania Press,).
19. Jacobs, Francis G. and R.C.A. White, The European Convention on Human Rights (Oxford:Clarendon University Press,).
20. Jenks, W., Human Rights and International Labour Standards (London: Stevens,).
21. Kapoor, S.K., Human Rights under International Law and Indian Law (Allahabad: Central Law Agency).
22. Lauterpacht, Hersch, International Law and Human Rights (Hamden: Archon Books,).
23. Leblanc, Lawrence J., The OAS and the Promotion and Protection of Human Rights (The Hague:Martinus Nijhoff,).
24. Lerner, N., Group Rights and Discriminnation (Dordrecht: Martinus Nijhoff,).
25. ----------, The UN Convention on the Elimination of Racial Discrimination (Dordrecht: Martinus Nijhoff,).
26. Macfarlane, L.J., The Theory and Practice of Human Rights (London: Maurice Temple Smith,).
27. Mahmood, Tahir, ed., Human Rights in Islamic Law (New Delhi: Genuine Publications,).
28. Mayer, A.E., Islam and Human Rights: Tradition and Politics (Boulder: Westview Press,).
29. Meron, Theodor, Human Rights Law-Making in the United Nations: A Critique of Instruments and Process (Oxford: Clarendon Press,).
30. Mishra, Pramod, ed., Human Rights: Global Issues (Delhi: Kalpaz Publications,).
31. Mohanti, M., Peoples Rights (New Delhi: Sage Publications,).
32. Nagendra Singh, Enforcement of Human Rights (Calcutta : E L House,).
33. ----------, Enforcement of Human Rights in Peace and War and the Future of Humanity (Dordrecht: Martinus Nijhoff,).
34. Rights in the Third World Countries (Delhi: Kirs Publications,).
35. Paine, T., The Right of Man .
36. Pandey, V.P., International Perspectives on Human Rights (New Delhi: Mohit Publications, 1999).
37. Rai, Rahul, Human Rights: UN Initiatives (Delhi: Authorspress,).
38. Ramcharan, B.G., The Concept and Present Status of International Protection of Human Rights (Doredrecht: Martinus Nijhoff,).
39. ----------, The Right to Life in International Law (Dordrecht: Martinus Nijhoff,).
40. Raphdel, D.D., Political Theory and the Rights of Man (London: Macmillan,).
41. Sachs, Aaron, Eco-Justice: Linking Human Rights and the Environment (Washington D.C.: Worldwatch Institute,).
42. Saksena, K.P., ed., Human Rights in Asia: Problems and Perspectives (New Delhi: HURITER,).
43. ----------, Human Rights: Perspectives and Challenges (New Delhi: Lancers Books,).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

44. Scobb, Harry M. and Laurie Wizeberg, ed., Access to Justice: Struggle for Human Rights in South-East Asia (Washington D.C.: Human Rights Internet,).
45. Singh, N.K., Social Justice and Human Rights in Islam (New Delhi: Gyan Publishing House,).
46. Sinha, Manoj K., Basic Documents on International Human Rights and Refugee Laws (New Delhi:Manak Publications,).
47. ----------, Implementation of Basic Human Rights (New Delhi: Manak Publications,).
48. Szabo, I. and others, Socialist Concept of Human Rights (Budapest,).
49. Tolley, H. Jr., The UN Commission on Human Rights (Colorado: Westview Press,).
50. Tuck, R., Natural Rights Theories: Their Origin and Development Vadkar, Praveen, International Relations, Democracy and Human Rights (New Delhi: Rajat Publications,).
51. Verma, R.S., Human Rights: Burning Issues of the World, Volumes I, II and III (Delhi: Radiant Publishers,).
52. Vijapur, A.P., ed., Essays on International Human Rights (New Delhi: South Asian Publishers,).
53. ----------, ed., The United Nations at Fifty: Studies in Human Rights (New Delhi: South Asian Publishers,).
54. Waldron, Jeremy, Theories of Rights (New York: Oxford University Press,).
55. Welch Jr., Claude E. and Virginia A. Leary, Asian Perspectives on Human Rights (Oxford: Westview Press,).
56. Winston, Morton E., The Philosophy of Human Rights (Belmont: Wadworth,).

NATIONAL/INDIAN CONTEXTS

Primary Sources

1. Asian Human Rights Commission, Asian Human Rights Charter: A People's Charter (Hong Kong,.
2. Human Rights Research and Education Centre, Bibliography on Human Rights Ottawa: HRREC,
3. ILO, Migrant Workers (Geneva: International Labour Office, 1974).
4. ILO, Trade Union Rights and Their Relation to Civil Liberties (Geneva: International Labour Office, 1970).
5. UN Centre for Human Rights, Discrimination against Women (Geneva: World Campaign for Human Rights, 1994).
6. UN Centre for Human Rights, Enforced or Involuntary Disappearances (Geneva: World Campaign for Human Rights, 1991).
7. UN Centre for Human Rights, Harmful Traditional Practices Affecting the Health of Women and hildren (Geneva: World Campaign for Human Rights, 1995).
8. UN Centre for Human Rights, Minority Rights Geneva: World Campaign for Human Rights, 1998).
9. UN Centre for Human Rights, National Human Rights Institutions: A Handbook on the Establishment and Strengthening of National Institutions for the Promotion and Protection of Human Rights (New York: UN Publication Division, 1995).
10. UN Centre for Human Rights, National Institutions for the Promotion and Protection of Human Rights (Geneva: World Campaign for Human Rights, 1993).
11. UN Centre for Human Rights, Outlawing and Ancient Evil: Torture (Geneva: World Campaign for Human Rights, 1985).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

12. UN Centre for Human Rights, Study on the Rights of Persons Belonging to Ethnic, Religious and Linguistic Minorities (New York: UN Publication Division, 1991).
13. UN Centre for Human Rights, The Right to Migratory Workers (Geneva: World Campaign for Human Rights, 1996).
14. UN Centre for Human Rights, The Rights of Indigenous Peoples (Geneva: World Campaign for Human Rights, 1997).
15. UN Centre for Human Rights, The Rights of the Child (Geneva: World Campaign for Human Rights, 1996).
16. UN High Commissioner for Human Rights, Internally Displaced Persons Compilation and Analysis of Legal Norms (Geneva: UN Publication Division, 1998).
17. UN High Commissioner for Human Rights, Protection of the Heritage of Indigenous People (Geneva: UN Publication Division, 1997).
18. UN High Commissioner for Human Rights, Sexual Exploitation of Children (Geneva: UN Publication Division, 1996).
19. UN, Action for Gender Equality and the Advancement of Women (New York: UN Department of Public Information, 2000).
20. UN, Human Rights and Disabled Persons (Geneva: World Campaign for Human Rights, 1993).
21. UN, Human Rights: Questions and Answers (New York: UN Publication Division, 1987).
22. UN, Model National Legislation for the Guidance of Governments in the Enactment of Further Legislation against Racial Discrimination (Geneva: World Campaign for Human Rights, 1996).
23. UN, Study on the Rights of Persons Belonging to Ethnic, Religious and Linguistic Minorities (New York: UN Publication Division, 1991).
24. UNESCO, Access to Human Rights Documentation: Documentation, Bibliographies and Data Base on Human Rights (Paris: UNESCO, 1997).
25. UNESCO, Human Rights of Women (Paris: UNESCO, 1999).
26. UNESCO, Violations of Human Rights: Possible Rights of Recourse and Forms of Resistance (Paris: UNESCO, 1984).
27. UNICEF, The Child and the Law (New Delhi: UNICEF, 1994).

Secondary Sources

1. Agarwal, H.O., Implementation of Human Rights Covenants with Special Reference to India (Allahabad: Kitab Mahal).
2. Alam, Aftab, ed., Human Rights in India: Issues and Challenges (New Delhi: Raj Publications,).
3. Amnesty International, Human Rights in India (New Delhi: Sage Publications,).
4. Bajwa, G.S. and D.K. Bajwa, Human Rights in India: Implementation and Violations (New Delhi: D.K. Publishers).
5. Bava, Noorjahan, ed., Human Rights and Criminal Justice Administration in India (New Delhi: Uppal Publishing House).
6. Baxi, Upendra, Inhuman Wrongs and Human Rights (Delhi: Har Anand Publications).
7. Begum, S.M., ed., Human Rights in India: Issues and Perspectives (New Delhi: APH Publishing Co.).
8. Bhagwati, P.N., Legal Aid as Human Rights (Dharwad: Jagrut Bharut).
9. Bhargava, G.S. and R.M.Pal, ed., Human Rights of Dalits: Societal Violation (New Delhi: Gyan Publishing House).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

10. Borgohain, Bani, Human Rights: Social Justice and Political Change (New Delhi: Kanishka Publishers).
11. Chandra, Shailja, Justice V.R. Krishna Iyer on Fundamental Rights and Directive Principles (New Delhi: Deep and Deep).
12. Chitkara, M.G., Human Rights: Commitment and Betrayal (New Delhi: APH Publishing Co.).
13. Desai, A.R., ed., Violations of Democratic Rights in India (Bombay: Popular Prakashan).
14. Dikshit, R.C., Police: The Human Face (New Delhi: Gyan Publishing House).
15. Diwan, Paras and Peeyushi Diwan, Children and Legal Protection (New Delhi: Deep and Deep).
16. ----------, Human Rights and the Law: Universal and Indian (New Delhi: Deep and Deep).
17. Dube, M.P.and Neeta Bora, ed., Perspectives on Human Rights (New Delhi: Anamika Publishers).
18. Gupta, Uma, Supreme Court and Civil Liberties (New Delhi: Mittal Publications).
19. Hansaria, B.L., Right to Life and Liberty under the Constitution: A Critical Analysis of Article 21 (Bombay: N.M. Tripathi).
20. India, Ministry of Welfare, India Marches Ahead towards Greater Attainment of Human Rights (New Delhi: Govt. of India).
21. Iyer, V.R. Krishna, Dialectics and Dynamics of Human Rights in India .
22. ----------, Human Rights and the Law (Indore: Vedpal Law House).
23. ----------, Human Rights: A Judge's Miscellany (Delhi: B.R. Publishing Corporation).
24. Iyer, K.S., Human Rights: Vibrant Issue .
25. Jai, Janak Raj, Emergency Excesses: A Daylight Robbery of Human Rights (New Delhi: Regency Publication).
26. Jain, Mahavir, Bonded Labour Justice through Judiciary (New Delhi: Manak Publications).
27. Kashyap, Saubhash C., Human Rights and Parliament (Delhi: Metropolitan).
28. Kaushal, Rachna, Women and Human Rights in India (New Delhi: Kaveri Books,).
29. Kaushik, Vijay, Women's Movements and Human Rights (Jaipur: Pointer Publishers).
30. Khan, Mumtaz Ali, Human Rights and the Dalits (New Delhi: D.K. Publishers).
31. Khanna, S.K., Children and the Human Rights (New Delhi: Commonwealth).
32. ----------, Women and the Human Rights (New Delhi: Commonwealth).
33. Kumar, Bindal, Problems of Working Children (New Delhi: APH Publications).
34. Kumar, Naresh, Constitutional Rights of the Prisoners (Delhi: Mittal Publication).
35. Mangari, Rajender, The Protection of Human Rights Act and Relating Laws .
36. Mani, V.S., Human Rights in India: An Overview (New Delhi: Institute for the World Congress on Human Rights).
37. Mathur, K.M., Crime, Human Rights and National Security (New Delhi: Gyan Publishing House).
38. Mayer, A.E., Islam and Human Rights: Tradition and Politics (Boulder: Westview Press).
39. Mehta, P.L., Child Labour and the Law (New Delhi: Deep and Deep).
40. Mishra, Jyotsna, ed., Women and Human Rights (Delhi: Kalpaz Publications).
41. Misra, Shailendra, Police Brutality: An Analysis of Police Behaviour (New Delhi: Vikas).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

42. Mukhopadhyay, S., ed., In the Name of Justice: Women and Law in Society (New Delhi: Manohar).
43. Narasimham, R.K., Human Rights and Social Justice (New Delhi: Commonwealth Publishers]).
44. Nirmal, C.J., Human Rights in India (New Delhi: Oxfor).
45. Pachauri, S.K., Children and Human Rights (Delhi: APH Publications).
46. ----------, Women and Human Rights (New Delhi: APH Publications).
47. Pannikar, K.M., The State and the Citizen (London: Asia Publishing House).
48. Paul, R.C., Situation of Human Rights in India (New Delhi: Commonwealth Publishers).
49. Peters, Tulic and Andrea Wolper, eds., Women's Rights, Human Rights (New York: Routledge).
50. Rodley, N., Treatment of Prisoners under International Law (Oxford).
51. Sahu, Asima, Human Rights Violations and the Law (Jaipur: Pointer Publishers).
52. ----------, Women's Liberation and Human Rights (Jaipur: Pointer Publishers).
53. Saksena, Anu, Human Rights and Child Labour in Indian Industries (New Delhi: Shipra Publications,).
54. Saksena, K.P., ed., Human Rights: Fifty Years of India's Independence (New Delhi: Gyan Publishing House).
55. Sehgal, B.P.Singh, ed., Human Rights in India: Problems and Perspectives (New Delhi: Deep and Deep).
56. Sen, Shanker, Police in Democratic Societies (New Delhi: Gyan Publishing House,).
57. Sharma, B.R., Freedom of Press under the Indian Constitution (New Delhi: Deep and Deep).
58. Sharma, Gokulesh, Human Rights and Social Change (New Delhi: Deep and Deep,).
59. Sharma, H.C., Politics and Human Rights (Jaipur: Books Enclave,).
60. Sharma, Swarn Lata, Gender Discrimination and Human Rights (New Delhi: K.K. Publications).
61. Sheth, D.L. and Gurpreet Mahajan, ed., Minority Identities and the Nation State (New Delhi: Oxford University Press).
62. Singh, Sujan, Legal Aid and Human Right to Equality (New Delhi: Deep and Deep).
63. Steiner, Henry J., Diverse Partners: Non-Governmental Organisations in the Human Rights Movement (Massachusetts: Harvard Law School).
64. Tripathi, S.M., The Human Rights Face of the Supreme Court of India: Public Interest Litigation in the Apex Court (New Delhi: D.K. Publications).
65. Vadaikukchery, James, Human Rights and the Police in India (New Delhi: APH Publishing).
66. Vadkar, Praveen, Concepts, Theories and Practice of Human Rights (New Delhi: Rajat Publications).
67. Verma, R.S. and I.B.S. Thokchom, Law Relating to Custodial Death and Human Rights (Delhi: Verma Publications).
68. Vijapur, A.P. and Kumar Suresh, ed., Perspectives on Human Rights (New Delhi: Manak Publications).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 17:02:45; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Human_rights_General.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B. A (HONOURS)
in

Education

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

VIDYASAGAR UNIVERSITY

BA (Honours) in Education

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: Introduction to Education	6	5-1-0	15	60	75
		Core-2		CT2: History of Indian Education	6	5-1-0	15	60	75
		GE-1		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-1		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: Psychological Foundation of Education	6	5-1-0	15	60	75
		Core-4		CT4: Philosophical Foundation of Education	6	5-1-0	15	60	75
		GE-2		TBD	6	5-1-0/ 4-0-4	15	60	75
		AECC-2		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		CT5: Sociological Foundation of Education	6	5-1-0	15	60	75
		Core-6		CT6: Educational organization, management and Planning	6	5-1-0	15	60	75
		Core-7		CT7: Guidance and Counselling	6	5-1-0	15	60	75
		GE-3		TBD	6	5-10/ 4-0-4	15	60	75
		SEC-1		TBD	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

	Semester-IV								
	IV	Core-8		CT8: Technology in Education	6	5-1-0	15	60	75
		Core-9		CT9: Curriculum Studies	6	5-1-0	15	60	75
		Core-10		CT10: Inclusive Education	6	5-1-0	15	60	75
		GE-4		TBD	6	5-1-0/ 4-0-4	15	60	75
		SEC-2		TBD	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Year	**Semester**	**Course Type**	**Course Code**	**Course Title**	**Credit**	**L-T-P**	**Marks**		
							CA	**ESE**	**TOTAL**
		Semester-V							
3	**V**	Core-11		CT11: Measurement and Evaluation in Education	6	5-1-0	15	60	75
		Core-12		CT12: Statistics in Education	6	5-1-0	15	60	75
		DSE-1		TBD	6	5-1-0	15	60	75
		DSE-2		TBD	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: Psychology of Adjustment	6	5-1-0	15	60	75
		Core-14		CT14: Basic Concept of Educational Research	6	5-1-0	15	60	75
		DSE-3		TBD	6	5-1-0	15	60	75
		DSE-4		TBD	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

List of Core Courses and Electives

Core Courses (CC)

CC–1: Introduction to Education
CC–2: History of Indian Education
CC–3: Psychological Foundation of Education
CC–4: Philosophical Foundation of Education
CC–5: Sociological Foundation of Education
CC–6: Educational Organization, Management and Planning
CC–7: Guidance and Counselling
CC–8: Technology in Education
CC–9: Curriculum Studies
CC–10: Inclusive Education
CC–11: Measurement and Evaluation in Education
CC–12: Statistics in Education
CC–13: Psychology of Adjustment
CC–14: Basic Concept of Educational Research

Discipline Specific Course (DSE)

DSE-1: Peace and Value Education
Or
DSE-1: Life Skill Education
Or
DSE-1: Human Rights Education

Or
DSE-2: Population Education
Or
DSE-2: Teacher Education
Or
DSE-2: Education for Sustainable Development

DSE-3: Open and Distance Learning
Or
DSE-3: Contemporary issues in Education
Or
DSE 3: Educational Thought of Great Educators

DSE-4: Women Education
Or
DSE-4: Music and Fine arts in Education
Or
DSE-4: Project Work

Skill Enhancement Course (SEC)

SEC-1: Communication Skill
Or
SEC-1: Skill for Democratic Citizenship
Or
SEC–1: Yoga Education

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

SEC-2: Computer Application in Education
Or
SEC-2: Special Education
Or
SEC-2: Gender and Society

Generic Electives (GE)

[Interdisciplinary for other Department]

GE-1 : Educational Psychology
Or
GE-1 : Educational Sociology
Or
GE-1 : History of Education in India

GE-2 : Yoga Education
Or
GE-2: Current Issues in Indian Education
Or
GE-2 : Psychology of Mental Health and Hygiene

GE-3 : Education of Children with Special Needs
Or
GE-3: Environmental Education

GE-4: Value Based Education
Or
GE-3: Introduction to Distance Education

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Core Courses (CC)

CC – 1: Introduction to Education **Credits 06**

C1T: Introduction to Education

Unit- I : Concept of Education
Narrow and broader concept of education
Meaning, nature and scope of education. Aims of education – individual, social, vocational and democratic. Aims of modern education with special reference to Delor's Commission.

Unit- II : Factors of Education
Child / learner: influence of heredity and environment on the learner
Teacher: qualities and duties of a good teacher.
Curriculum- concept and types. Co-curricular activities: meaning, values and significance.
Educational institutions: informal, formal and non-formal, their interrelation.

Unit- III : Agencies of Education
Home
School
State
Mass-media- television, radio, cinema and newspaper

Unit- IV : Child Centricism and Play-way in Education
Concept of child centricism in education. Characteristics and significance of child centricism in education. Concept of play and work. Characteristics of play way in Education, Kindergarten, Montessori, Project method.

CC – 2: History of Indian Education **Credits 06**

C2T: History of Indian Education

Unit: 1 : Education in India during ancient and medieval period
Vedic (aim, curriculum, teaching method, teacher-pupil relation)
Brahmanic (")
Buddhistic (")
Islamic (")

Unit: 2 : Education in India during British period (1800-1853).
Sreerampore trio and their contribution in the field of education. Charter Act, Oriental-occidental controversy. Macaulay Minute and Bentinck's resolution. Adam's report

Unit: 3 : Education in India during British period (1854-1946)
Woods Despatch, Hunter Commission. Curzon policy regarding primary, secondary and higher education, National education movement (cause and effect). Basic education (concept and development). Sadler Commission

Unit: 4 : Education in India after independence

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Radhakrishnan Commission (aim, curriculum of higher education, rural university). Mudaliar Commission (aim, structure and curriculum of secondary education). Kothari Commission (aim, structure and curriculum of primary and secondary education). National Policy of Education, 1986, POA 1992.

CC – 3: Psychological Foundation of Education **Credits 06**

C3T: Psychological Foundation of Education

Unit: 1 : Relation between Psychology and Education
Meaning and definition of Psychology. Meaning and definition of Education. Relation between Psychology and education. Nature, scope and significance of educational psychology.

Unit: 2 : Stages and types of human development and their educational significance.
Piaget's cognitive development theory. Erikson's psycho-social development theory. Kohlberg's moral development theory. Vygotsky's social development theory and Bandura's Social Learning Theory

Unit: 3 :Learning: concept and theories
Concept and characteristics of learning. Theories: Connectionism(Trial and error, classical, operant). Insightful learning. Memorization and Forgetting: Process of memorization, causes of forgetting and economical ways of improving memorization

Unit: 4 : Intelligence
Concept of intelligence. Theories of Spearman, Thorndike and Guilford. Types and uses of intelligence tests. Concept of Emotional Intelligence and E.Q

CC-4: Philosophical Foundation of Education **Credits 06**

C4T: Philosophical Foundation of Education

Unit 1 : Concept of educational philosophy
Meaning of philosophy. Etymological meaning of education. Relation between philosophy and education. Importance of philosophy in education

Unit 2 : Indian schools of philosophy
Vedic school – Sankhya. Vedic school – Yoga. Non-vedic School – Buddhism. Non-vedic School - Jainism

Unit 3 : Western schools of philosophy
Idealism
Naturalism
Pragmatism
Realism

Unit 4 : Philosophy for development of humanity

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Education and development of values. Education for national integration. Education for international understanding. Education for promotion of peace and harmony

CC – 5: Sociological Foundation of Education **Credits 06**

C5T: Sociological Foundation of Education

Unit-I : Introductory Concept of Sociology of Education
Meaning and definition of Sociology of Education. Relation between Sociology and Education
Nature of Sociology of Education. Scope of Sociology of Education

Unit-II : Social Groups
Social Groups : meaning and definition. Types of Social groups – Primary, Secondary and Tertiary. Socialization Process: Concept. Role of the family and school in Socialization process

Unit-III : Social Change and Education
Concept of Social Change. Interrelation between Social change and Education
Social stratification and Social Mobility.. Social interaction Process
Unit-IV : Social Communication in Education
Social Communication : Concept. Informal agencies of social communication. Inter relation between Culture, religion and Education.. Inter relation between Technology, Economy and Education.

CC- 6: Educational Organization, Management and Planning **Credits 06**

C6T: Educational Organization, Management and Planning

Unit: 1 ; Organization and Management
Concept of organization. Concept of management. Concept of educational organization
Concept of school organization

Unit: 2 : Educational organization
Meaning of school plant. Elements of school plant (concepts only). Features of library and time-table. Features of school medical services, workshop, computer laboratory.

Unit: 3 : Educational Management
Meaning of educational management. Objectives of educational management. Types of educational management. Significance of educational management

Unit:4 : Educational Planning
Meaning of educational planning. Aims and objectives of educational planning
Steps of educational planning. Types and significance of educational planning

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

CC – 7: Guidance and Counselling **Credits 06**

C7T: Guidance and Counselling

Unit I : **Guidance – Meaning, Functions, Need**

1. Guidance – Meaning, Definitions and Functions
2. Individual Guidance – Meaning, advantages and disadvantages
3. Group Guidance – Meaning and Advantages and disadvantages
4. Need for guidance in secondary schools and requisites of a good school guidance programme.

Unit II : Guidance - Educational, Vocational, Personal

1. Educational Guidance- Meaning, Function at different stages of Education
2. Vocational Guidance- Meaning, Function at different stages of Education
3. Personal Guidance- Meaning, Importance for the Adolescents

Unit III : Counselling – Meaning, Techniques, Types

1. Counselling- Meaning, importance and Scope
2. Techniques of Counselling- Directive, Non-Directive, Eclectic
3. Individual and Group Counselling –Meaning , Importance

Unit IV : Basic data necessary for Guidance

1. Tools for collecting information on pupil: Intelligence Test, Personality Test, Aptitude Test
2. Cumulative Record Card
3. Anecdotal Record Card

CC-8: Technology in Education **Credits 06**

C8T: Technology in Education

Unit 1 : Introductory concept

- Concept of Technology
- Need and scope of educational technology
- System approach- concept and need
- Classification and components of system approach

Unit 2 : Computer in education and communication

- Computer and its role in education
- Basic concept of hardware and software
- Computer network and internet- its role in education
- Communication and classroom interactions- concept, element and process

Unit 3 : Instructional techniques

- Mass instructional technique- characteristics and types
- Personalised instructional techniques- characteristics and types
- Difference in teaching and instruction
- Models of teaching- concept, components and significance

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Unit 4 : ICT & e-learning

- Meaning and concept of ICT, e-learning
- Nature and characteristics of e-learning
- ICT integration in teaching learning, massive open online course (MOOC)
- Different approaches- Project based learning, co-operative learning and collaborative learning

CC – 9: Curriculum Studies **Credits 06**

C9T: Curriculum Studies

Unit 1 : Introductory concept

- Meaning, nature, scope and functions of curriculum
- Bases of curriculum: philosophical, psychological and sociological
- Major approaches to curriculum - behavioural, managerial, system, humanistic
- Types of curriculum - knowledge, experience & activity based

Unit 2 : Content selection

- Determinants of content selection - perspectives of knowledge, culture & need
- Curriculum and institution - instructional objectives
- Revised Bloom's taxonomy
- Bruner's theory of instruction

Unit 3 : Curriculum development

- Principles of curriculum construction
- Learner centred curriculum framework - concept, factors & characteristics
- Curriculum development - need, planning
- NCF, 2005

Unit 4 : Evaluation & reform of curriculum

- Concept & significance of curriculum evaluation
- Approaches to curriculum evaluation - formative & summative
- Models of evaluation - Stufflebeam & Taylor
- Curriculum reform - factors & obstacles

CC – 10: Inclusive Education **Credits 06**

C10T: Inclusive Education

Unit: 1 : Inclusion Overview

- Meaning of Inclusion and Inclusive Society
- Exclusion and Inclusion: Conceptual overview
- Obstacles/barriers in Inclusion
- Elements necessary for creating an inclusive society

Unit: 2 : Differently Abled

- Concept of Impairment, Disability and Handicap

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

- Types of disabilities- Orthopaedic, Visual, Auditory, Cerebral Palsy, Intellectual, Autism, Learning Disability (only definition and their specific problems)
- General causes of disabilities
- Role of school and society in creating a barrier free environment

Unit: 3 : Socially Disabled
- Concept of SC, ST and OBC groups.
- Concept of Gender, and sexuality
- Causes of social exclusion
- Understanding social inclusion: role of education

Unit: 4 : Educational Reforms for Inclusive Society.
- Building an Inclusive school: desired changes in System, Structure, Practice and Culture,
- Education for a multicultural society,
- Education for peaceful co-existence
- Role of Informal agencies (like mass media etc) in building an inclusive society

CC -11: Evaluation and Measurement in Education **Credits 06**

C11T: Evaluation and Measurement in Education

Unit: 1 : Measurement and Evaluation in Education
- Educational Measurement and Evaluation : Concept
- Scope and Need of Educational Measurement and Evaluation
- Relation between Measurement, Assessment and Evaluation.
- Scales of Measurement- Nominal, Ordinal, Interval and Ratio.

Unit: 2 : Evaluation Process
- Evaluation Process: (Formative and Summative)
- Types and steps of evaluation
- Norm-Referenced Test and Criterion Referenced Test.
- Grading and Credit system.

Unit: 3 : Tools and Techniques of Evaluation
1. Concept of Tools and Techniques
2. Testing tools
   i) Educational : Essay type and Objective type, Written , Oral, and Practical
   ii) Psychological: Personality Test- Types, Rorschach Ink Blot Test , Interest Test- Types ,Kuder Richardson interest inventory, Intelligence Test - Types of intelligence tests , Standford – Binet Scale,
3. Non testing tools – Cumulative Record Card, Portfolio
4. Techniques:
   i) Self reporting : Interview , Questionnaire
   ii) Observation.

Unit: 4 : Criteria of a Good Tool and its Construction
- Characteristics of a good tool

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

(i) Objectivity- Concept
(ii) Reliability- Concept, methods of determining reliability
(iii)Validity- Concept and types
(iv) Norms- Meaning & types
(v) Usability -Concept

- Steps for construction & standardization of Achievement test

CC – 12: Statistics in Education **Credits 06**

C12T: Statistics in Education

Unit: 1 : Concept of Statistics and Descriptive Statistics

- Concept of Statistics. Uses of Statistics in Education
- Meaning & measures of Central Tendency- Arithmetic Mean, Median and Mode- their Properties, Calculation and Application.
- Meaning & measures of Variability- Range, Standard Deviation and Quartile Deviation - their Properties, Calculation and Application. Percentile and Percentile Rank - Definition, Calculation, Application, Graphical Determination

Unit: 2 : Normal Distribution and Derived Score

- Concept of Normal Distribution- Properties
- Uses of NPC in Education
- Divergence from Normality- Skewness and Kurtosis.(Concept and Calculation)
- Derived Scores- Z-Score, T Score and Standard Score (Concept, Calculation and Uses).

Unit: 3 : Measure of Relationship

- Bivariate Distribution- Concept and types of Correlation
- Scatter Diagram (only Concept)
- Uses of Correlation
- Computation of Co-efficient of Correlation by Rank Difference method and Product Moment method, Interpretation of Co-efficient of Correlation

Unit:4 : Statistics (Practical)

- Sources of Educational Data (Primary & Secondary data), Types of Data: Qualitative and Quantitative, Continuous and Discrete.
- Students are expected to collect relevant data (Bi-variate educational data) from their college or neighbourhood (minimum sample size must be 50) with the objective of - describing the nature and characteristics of the two distributions, - comparing two distributions and - finding association between two sets of data by applying the following:

Method :

i) Tabulation of data
ii) Determination of central tendencies and variability (standard deviation)
iii) Graphical Representation of Data and its uses- Pie Chart, Bar graph, Histogram, Frequency Polygon, Cumulative frequency graph and Ogive (Using 75% rule)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

iv) Determination of the type of association between two sets of data by drawing scatter diagram

CC – 13: Psychology of Adjustment **Credits 06**

CC – 13: Psychology of Adjustment

Unit: 1 : Adjustment, Maladjustment and Problem Behaviour

- Concept of adjustment, adjustment and adaptability
- Psychodynamic Concept of adjustment, criteria of good adjustment
- Concept of maladjustment. Causes of maladjustment, aggressiveness, delinquency, substance abuse

Unit: 2 : **Multi-axial Classification of Mental Disorders**

- DSM – 5 : Section 1, Section II and Section III
- Brief outline of Schizophrenia, anxiety disorder, depressive disorder and personality disorder
- Psychoanalysis, behavior therapy, cognitive therapy, and humanistic therapy.(Concept only)

Unit: 3 : **Coping Strategies for Stressful Situation**

- Stress and Stressors
- Personal and environmental stress
- Coping strategies for stress

Unit: 4 : **Administration, Scoring and Interpretation of the following Tests**

- KNPI
- KIPI
- Effect of Learning material on memorization

C C- 14: Basic Concept of Educational Research **Credits 06**

C C- 14: Basic Concept of Educational Research

Unit: 1 : Concept of Educational Research

- Definition, meaning and concept of research
- Educational research and its characteristics
- Types of Educational Research
- Problems, difficulties and ethics

Unit: 2 : Basic elements of educational research

- Literature review
- Problem selection
- Objectives, Research question and Hypothesis
- Tools of Data collection –types

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Unit: 3 : Data collection procedure

- Sampling –concept and definition
- Types of sampling- Probability and non-probability
- Data reporting- Descriptive and Inferential (basic statistical procedure that come under each)
- Referencing and Bibliography

Unit: 4 : Practical

- Writing Research proposal (Plan of Work)– steps and review (atleast5) (Within 1000 words)

Discipline Specific Electives (DSE)

DSE – 1: Peace and Value Education **Credits 06**

DSE1T: Peace and Value Education

Course Content :

Unit: 1:Peace Education

- Concept and Scope of Peace Education
- Aims of peace Education
- Role of Teachers in Promoting Peace education
- NCFTE 2009 on Peace Education

Unit: 2 : Peace and Non Violence

- Factors of Violence
- Role of Peace for Non-Violence
- Gandhian principle of Non Violence
- Role of Educational Institutional in Promoting Peace education

Unit: 3 : Value Education

- Meaning , Definition, Concept of Value Education
- Classification of Values and Sources of Values
- Need For Value education in the 21st Century
- Fostering Values – Role of Home, School and Society.

Unit: 4 : Peace, Value and Conflict Resolution

- Bases of conflict
- Role of Value Education in resolving conflict

OR

DSE – 1: Life Skill Education **Credits 06**

DSE1T: Life Skill Education

Course Content :

Unit: 1 : Concept of Life Skills

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

- Meaning and concept of life skills.
- Origin of life skill in education.
- Development of the concept of life skills.
- Definitions and interpretation.

Unit: 2 : Classification of life skills
- Generic Life skills a) Survival skills b) Negotiating skills c) Coping skills
- Problem specific skills
- Skills for area specific development.

Unit:3 : Training and Techniques
- Concept of training and techniques for life skill education
- Types of training
- Stages of life skill education

Unit:4 : Life skills for leadership training
- Definition of leadership training
- Styles of leadership training
- Functions of leadership training
- Training of leadership through personality building and like skills

Or

DSE – 1: Human Rights Education **Credits 06**

DSE T1: Human Rights Education

Course Content:

Unit: 1 : Basic Concept of Human Rights
- Nature and concept of Human Rights
- Human Values – Dignity, liberty, equality, justice, unity in diversity
- Meaning and significance of Human Rights Education

Unit: 2 : United Nations and Human rights
- Brief history of human rights – National and International perspectives
- Universal Declaration of human rights in brief
- United Nations and Human rights – duties and limitations

Unit: 3 : Human Rights – Enforcement Mechanism in India
- Human Rights Act – 1993
- Human Rights Commission – role and objectives
- Judicial organs – Role of Supreme court and High court in brief

Unit:4 : Role of Advocacy Groups
- Role of educational institutions
- Role of press and media
- Role of NGOs.

DSE – 2: Population Education **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

DSE2T: Population Education

Course Content:

Unit: 1 : Concept of Population Education

- Meaning and Objectives of Population Education
- Factors influencing Population --sociological, Economic, Political, Biological and Psychological.
- Concepts Related to Population Education- Birth Rate, Death Rate, Fertility, Infant Mortality, Morbidity and Migration.
- Need for Population Education

Unit : 2 : Population Growth and its Impact

- Quality of life-concept and meaning
- Human Resource Development (concept)
- Population Education programmes in India
- Problems of Population Education and its Suggestive Measures

Unit : 3 : Population Growth and Responsibilities

- Size of Family.
- Role and responsibilities of family members.
- Female Education and Status.
- Growth of Population and Environment

Unit : 4 : Population Education and school

- Scope of population education in schools,
- Teacher role in creating awareness of population problems
- Role of Mass media – (Newspapers, Radio, T.V)
- Role of youth in Population Education

Or

DSE – 2: Teacher Education **Credits 06**

DSE2T: Teacher Education

Course Content:

Unit: 1 : Basic concept of teacher education.

- Concept and meaning of teacher education
- Scope of Teacher Education
- Aims and objectives of Education at Elementary, Secondary and College level.
- Teacher training Vs Teacher education

Unit: 2 : Development of teacher education in India

- Historical perspective of development of teacher education in India
- Recommendations of Kothari Commission
- Recommendations of National Policy on Education regarding teacher education.
- Present System of teacher education in India.

Unit: 3 : Role of the different agencies in teacher education

- University

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

- NCTE
- NCERT
- NUEPA

Unit: 4 : Some Courses for preparation of teacher
- Pre service teacher education
- In service teacher education
- Orientation and Refresher courses

Or

DSE – 2: Education for Sustainable Development **Credits 06**

DSE2T: Education for Sustainable Development

Course Content:

Unit: 1 : Concept of sustainable development
- Meaning and evolution of the concept of sustainable development
- Characteristics and scope of sustainable development
- Need for sustainable development

Unit: 2 : Goals and challenges of sustainable development
- Proposal for UN's sustainable development goals at Rio
- Strength and weaknesses of sustainable development goals
- Challenges of sustainable development

Unit: 3 : Relationship between social, economic and environmental aspects relating to sustainable development
- Social mobility, challenges around equality, equity and fairness to all - affecting sustainable development
- Income inequality (poverty, malnutrition, poor health, habitation) affecting sustainable development
- Threats to bio-diversity, use of natural resources (renewable and non-renewable) for sustainable development

Unit: 4 : Role of education, government and non-government agencies for sustainable development
- Role of education for sustainable development
- Role of government agencies for sustainable development
- Role of NGO's for sustainable development

DSE-3: Open and Distance Learning **Credits 06**

DSE3T: Open and Distance Learning

Course Content:

Unit: 1 : Concept of open and distance education
- Meaning and definition of open and distance education

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

- Objectives and characteristics of open and distance education
- Merits and demerits of open and distance education

Unit: 2 : Strategies of open and distance education
- Mode and strategies of open education
- Mode and strategies of distance education
- Relationship among non-formal, correspondence, distance and open education

Unit: 3 : Status and role of multi-media in open and distance education
- Present status of open education in India
- Present status of distance education in India
- Role of multi-media in open and distance education

Unit: 4 : Agencies, problems and remedies of open and distance education in India
- Agencies of open and distance education
- Problems of open and distance education
- Measures for strengthening open and distance education in India

Or

DSE-3: Contemporary issues in Education **Credits 06**

DSE3T: Contemporary issues in Education

Course Content:

Unit:1 : Universalization of Elementary Education
- Meaning, aims & objectives
- Constitutional provisions
- Role of DPEP, SSA, RTE
- Current status and problems.

Unit: 2 : Universalization of Secondary Education
- Meaning, aims & objectives
- Role of RMSA
- Problems of secondary education
- Current status and problems

Unit: 3 : Higher Education
- Meaning, aims & objectives
- Knowledge commission and higher education
- Role of RUSA
- Current status and problems

Unit: 4 : Current Issues in Education
- Alternative schooling – meaning and its significance
- Autonomous College - – meaning and its significance
- Impact of liberalization, privatization and globalization on education
- RTI- meaning and its significance

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Or

DSE – 3: Educational Thought of Great Educators **Credits 06**

DSE3T: Educational Thought of Great Educators

Course Content:

Unit:1 : Western Educators-I
- Plato
- Rousseau
- Montessori

Unit:2 : Western Educators -II
- Pestalozzi
- Dewey
- Ivan Illich

Unit: 3 : Indian Educators -I
- Vivekananda
- Rabindranath
- Gandhiji

Unit: 4 : Indian Educators -II
- Radhakrisnan
- Begum Rokeya
- Sister Nivedita

DSE – 4: Women Education **Credits 06**

DSE4T: Women Education

Course Content :

Unit: 1: Historical Perspectives of Women Education
- Synoptic view of women education through the ages: Vedic, Brahmanic, Medieval Period
- Contribution of Missionaries
- Role of British Govt.

Unit: 2 : Policy Perspective, Committee and Commission on Women Education
- Constitutional provision, NPE -1968, 1986, 1992, POA-1992
- Radhakrisnan, Mudaliar and Kothari Commission
- Durgabai Deshmukh Committee, Hansraj Mehta Committee and Bhaktabatsalam Committee

Unit: 3 : Role of Indian Thinkers in promoting Women Education
- Rammohan Roy
- Vidyasagar

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Unit: 4 : Major Constraints of Women Education and Women Empowerment

- Social – Psychological
- Political – Economical
- Role of women empowerment in modern society in brief.

Or

DSE-4: Music and Fine arts in Education **Credits 06**

DSE4T: Music and Fine arts in Education

Course Contents:

Unit –I:

- Indian Music & Instrument: Preliminary Ideas of Indian Music,
- Preliminary Knowledge of Instrument,
- Structure of Tabla,
- Harmonium

Unit –II:

- Practice, leading to performance,
- Prayer Song -2,
- Seasonal Song-2,
- Folk Song- 2,
- Integration of songs and music with other curricular areas

Unit –III:

- Fine Arts,
- Arts in Practice,
- Different forms of Visual Arts,

Unit –IV:

- Basic Concept of Colors,
- Shapes & Forms,
- Perspective,
- Balance,
- Rhythm,
- Dimensions

Suggested Readings :

1. Dodd, Nigel and Winifred Hickson (1971/1980). Drama and Music in Education. London: Heinmann.
2. Mishra, A. (2004). Aaj bhi Kharein hai Talaab, Gandhi Peace Foundation, 5th Edition.
3. Narayan, S. (1997). Gandhi views on Education: Buniyadi Shiksha [Basic Education], The Selected Works of Gandhi: The Voice of Truth, Vol. 6, Navajivan Publishing House.
4. NCERT, (2006). Position Paper National Focus Group on Arts, Music, Dance and Theatre, New Delhi: NCERT.
5. Poetry/songs by Kabir, Tagore, Nirala etc; Passages from Tulsi Das etc; Plays: Andha Yug- Dharam Vir Bharati, Tughlaq: Girish Karnad.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

6. Prasad, Devi (1998). Art as the Basis of Education, NBT, New Delhi

Or

DSE-14: Project Work **Credits 06**

Project work to be selected by the Institution/ Department

Skill Enhancement Course (SEC)

SEC-1: Communication Skill **Credits 02**

SEC1T: Communication Skill

Course Content :

Unit: 1 : Introduction to Communication

- Meaning, Nature and types of communication
- Principles of communication
- Process of communication: Sender, encoding, recipient, decoding and feedback
- Barriers of effective communication

Unit: 2 : Listening Skills

- Principles of listening skills
- Types of listeners
- Barriers to listening

Unit: 3 : Speaking Skills

- Verbal and non-verbal communication
- Public speaking: Extempore
- Group discussion

Unit: 4 : Reading and Writing Skills

- Previewing, skimming, and scamming
- Development of skills for correct pronunciation, reading and comprehension
- Sentence formation and punctuation

Or

SEC-1: Skill for Democratic Citizenship **Credits 02**

SEC1T: Skill for Democratic Citizenship

Course Content :

Unit 1: Rights and duties in Indian Constitution

- Democratic rights
- Fundamental Rights
- Duties of citizenship

Unit 2 : Protection of Children

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

- Child protection - concept and need.
- Child Rights – concept, classification and need
- Legal actions –POSCO

Unit 3 : Domestic Harmony
- Domestic violence – definition and types
- Protection of Women from Domestic Violence Act, 2005 – basic features
- Protection of males in DVA 2005

Unit 4 : Role of Education
- Awareness programmes- rallies, debates etc
- Mass media
- Seminars and workshops (Any one may be taken up by the college and recorded by the students on any one of the above topics)

Or

SEC – 1: Yoga Education **Credits 02**

SEC1T: Yoga Education

Course Content :
Unit: 1 : Concept of Yoga
- Meaning and principles of Yoga
- History of Yoga philosophy in brief
- General guideline for performing Yog

Unit: 2 : Yoga as a means of Personal and Social Development
- Yoga as a means of healthy living
- Yoga as a means of social development
- Yoga as a means of spiritual enlightenment

Unit: 3 : Types of Yoga(Concept only)
- Jnana Yoga
- Bhakti Yoga
- Karma Yoga

Unit: 4 : Instrumentals Of Yoga(Concept only)
- Yamas, Niyamas, Asanas
- Dhyana, Samadhi
- Pranayam, Pratyahara, Dharana

SEC-2: Computer Application in Education **Credits 02**

SEC2T: Computer Application in Education

Course Contents:
Unit I:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

MS office:

- MS Word
- MS Power Point
- MS Excel

Unit II:

- Concepts of information and communication technology; Universal access VS Digital Divide - issues and initiatives;
- Challenges of Integration of ICT in School; Aims and objectives of National Policy on Information and Communication Technology (ICT) in School Education in India.

Unit III:

- Components and Objectives of National Mission on Education, through ICT (NMEICT), Spoken Tutorials Gyan Darshan, Gyanvani, Sakshat Portal, e Gyan Kosh; Virtual laboratory and Haptic technology

Unit IV:
Internet

- Introduction to Internet
- E-mail, Search Engines, Info-Savvy Skills; Digital Age Skills, safe surfing mode

Unit V: Educational Resources

- Internet resources for different disciplines like natural sciences, social sciences, Humanities and Mathematics.
- General Introduction to E-learning, Mobile-learning, distance learning, On-line learning,
- Virtual University, Wikipedia, Massive Open Online Courses (MOOCs);
- Social networking

Unit VI: ICT Integrated Education

- On line Admissions
- Digital Lesson Designing
- Evaluation Rubrics
- E-Portfolios of Learners
- Time-Space-Personnel Management
- Learning Resources Management
- Web Based Instruction
- Office Automation
- E-guidance & counseling
- E-modules
- E-learning Resources

Or

SEC-2: Special Education **Credits 02**

SEC2T: Special Education

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Unit –I:

- Education of Children with
- Visual Impairment and
- Hearing Impairment (with special reference to prevalence, etiology, identification, intervention, education and prevention of each category)

Unit –II:

- Education of Children with
- Speech and Language Disorders and
- Learning Disabilities (with special reference to prevalence, etiology, identification, intervention, education and prevention of each category)

Unit –III:

- Education of Children with Multiple Disabilities (with special reference to prevalence, etiology, identification, intervention, education and prevention of each category)

Suggested Readings:

1. Bantwal, A., Nandukar, A. & R. Jalvi. Fundamentals of Hearing Impairment and Audiological management. RCI Manual, [DSE (HI)]. New Delhi: Kanishka Publishers, Distributors.
2. Biswas, P.C. Education of Children with Visual Impairment in Inclusive School. New Delhi: Abhijeet Publications.
3. Guilford, R. & G. Upton (ed.) Special Educational Needs. London: Rutledge.
4. Kirk, Samuel. Educating Exceptional Children, New Delhi: Oxford & IBH Publishing Co.
5. Mani, M.N.G. Techniques of Teaching Blind Children. Sterling Publishers Pvt. Ltd.
6. Sharma, Prem Lata. A Teacher's Handbook on IED – Helping Children with Special Needs New Delhi: NCERT.

Or

SEC – 2: Gender and Society **Credits 02**

SEC 2T: Gender and Society

Course Content:

Unit: 1 : Gender Concepts

- Definition of Gender and difference with sex
- Gender Dynamics: Gender identity; Gender role and gender stereotype
- Social Construction of Gender

Unit: 2 : Gender Socialization

- Childhood, socialization and gender biases in the family and school
- Social Differentiation among women in educational context by caste, tribe, religion and region
- Gender discrimination in the management of the school and education system.

Unit: 3 : Gender roles

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

- Gender Roles and Relationships Matrix
- Gender based division and Valuation of Work
- Exploring Attitudes towards Gender

Unit: 4 : Gender inequality in the schools

- Gender inequality in the structure of knowledge
- Presentation of gender in the development of curriculum and text books.
- Dynamics of gender in the classroom in reference to girl friendly school, co-education and single sex schooling.

Generic Electives (GE)

[Interdisciplinary for other department]

GE – 1: Educational Psychology **Credits 06**

GE1T: Educational Psychology

Course Contents:

Unit –I:

- Educational Psychology: Meaning, Nature and Scope
- Relation between Education and Psychology.
- Methods of Educational Psychology.

Unit –II:

- Growth and Development: Meaning and Concepts.
- Stages of Development of a Child: Infancy, Childhood and Adolescence.
- Aspects of Child Development : Physical, Intellectual, Emotional, Social

Unit –III:

- Personality: Concept and definition.
- Development of Personality.
- Types and Traits Approaches to Personality.
- Individual Differences: Concepts and Types.
- Causes of Individual Differences.

Unit –IV:

- Intelligence: Concept and Definition.
- Theories of intelligence: Two-factor, Group-factors and Structure of Intellect.
- Intelligence Test: Verbal, Non-verbal test and their uses.

Unit –V:

- Learning: Meaning &Nature.
- Factors associated with learning.
- Theories of Learning: Trial & Error, Classical conditioning and Gestalt theory of learning.
- Learning relation to; Attention, Interest, Maturation and Motivation.

Suggested Readings:

1. Bigge, M.L. Psychological Foundations of Education. Harper and Row, New York.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

2. Chauhan, S.S. (1998). Advanced Educational Psychology. Vikash Publishing House, New Delhi.
3. Choube, S.P. &Choube.(1996). Educational Psychology and Experriments. Himalay Publishing House, New Delhi.
4. Mangal S.K (1997). Advance Educational Psychology. Presentice Hall of India, New Delhi.
5. Mathur, S.S. Educational Psychology. BinodPustakMandir, Agra.
6. Woolfolk, A.E. (2011) Educational Psychology. Sterling Kinderslay (India) Pvt. Ltd.

Or

GE – 1: Educational Sociology **Credits 06**

GE1T: Educational Sociology

Course Contents:

Unit –I:

- Education Sociology: Meaning, Nature and Scope.
- Relation between Sociology and Education.
- Education-as a social sub-system.

Unit –II:

- Social Change: Concept and nature.
- Factors and problems of social change in India.
- Social stratification: Meaning and Types.

Unit –III:

- Socialization: Meaning, process and factors of socialization.
- Social Control: Meaning and types of Social control, Agencies of Social Control.

Unit –IV:

- Social Agencies of Education and their educative role:
- Family.
- School.
- State.
- Mass media.

Suggested Readings :

1. Shukla, S&K Kumar Sociological perspective in Education, New Delhi, Chanakya Publications,
2. Bhattacharjee, Srinvas Philosophical & Sociological Foundation of Education, Herald book service
3. Saxena, N.R Philosophical & Sociological Foundation of Education, R. Lal book Depot., Meerut,
4. Sharma , S.N Philosophical & Sociological Foundation of Education, Herald book service, Faridabad,
5. Sodhi, T.S &SuriAruna Philosophical& Sociological foundations of education, H.P Bhargav Book house, Agra,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Or

GE - 1 : History of Education in India **Credits 06**

GE 1T : History of Education in India

Course Contents:

Unit –I:

- Missionary educational activities in India: Characteristics and significance.
- Serampore Mission: Contributions of the Trio to Education.
- Charter Act of 1813.
- Macaulay's Minute.
- Adam's Report and its recommendations.
- Woods Despatch (1854).

Unit –II:

- Indian Education commission -1882.
- Indian University Commission (1902).
- National Education Movement.

Unit –III:

- Sadler Commission -1917
- Hartog Committee Report.
- Wardha Schame.
- The Sargent Plan (1944).

Unit –IV:

- Radhakrishnan Commission-1948, with special reference to rural university.
- Mudaliar Commission (1952-53): Reports and Recommendations.
- Kothari Commission (1964-66): Reports and Recommendations.
- National Education Policy1986 and Revised Educational Policy of 1992.

Suggested References:

1. Basu, A.N. Education in Modern India
2. Banerjee, J.P. Education in India-Past, Present and Future
3. Mukherjee, S.N. Education in India, Today and Tomorrow
4. Mukherjee, S.N. History of Education (Modern Period)
5. Nurullah, S, Naik J.P. History of Education in India
6. Rawat, P.L. History of Indian Education

GE-2 : Yoga Education **Credits 06**

GE-2T : Yoga Education

Course Contents:

Unit –I:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

- Basis of Yoga Meaning and Concept.
- Patanjala Yogasutra.
- Hathayoga Pradipika.

Unit –II:
- Concept of Yoga.
- Streams of Yoga.
- Raja Yoga: Eight Fold Path.
- Anand Mimamsa.

Unit –III:
- Theories of Yoga Practices.
- Asana.
- Pranayama.
- Kriyas.
- Dhyana.

Unit –IV:
- Practical Eight Step Method: Single Group and Double Group Practice.
- Asana.
- Pranayama.
- Relaxation Techniques

Suggested Readings:

1. Gore, M.M. –Anatomy and Physiology of Yogic Practices; New Age Books, New Delhi,
2. Coulter.H.David- Anatomy of Hathayoga; MLBD, New Delhi,
3. Gharote, Manmath M. and Others- Application in Yoga; Lonavla,
4. Saraswati, Swami Satyananda- Asana Pranayama & Mudra Bandha; Bihar School of Yoga, Munger,
5. Tiwari, O.P.- Asana Why and How?; Kaivalyadhama, Lonavla
6. Iyengar, B.K.S. Astadal Yoga Mala, (Vol. I-VIII); Allied Publishers Pvt. Ltd., Lucknow,

Or

GE-2: Current Issues in Indian Education **Credits 06**

GE2T: Current Issues in Indian Education

Course Contents:

Unit –I:
- Development of Education since 1947
- Primary Education.
- Secondary Education.
- Higher Education.
- Technical and Vocational Education.

Unit –II:
- Equalization of educational opportunity.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

- Education for the Backward Classes.
- Development and Problems of Women Education.

Unit –III:

- Development of Non-formal Education in India.
- Adult and Continuing Education.
- Sarbo Siksha Abhijan / Mission.

Unit –IV:

- Functions of following Educational Organizations.
- CABE, UGC, NCERT, SECRT, and DIET.

Suggested Readings:

1. Mukherjee, S.N. - Education in India, Today and Tomorrow, Boroda Acharya Book Depot.
2. Nurullah, S. and Naik, J.P. – History of Education in India; Macmillan Co.,
3. Banerjee, J.P. – Education in India, Past, Present and Future.
4. Mukhopadhyay, M. Parhar Madhu (Ed.) – Educaion in India, Dynamics and Development, Shipra.
5. Agarwal, J.C. – Recent Developments and Trends in Education (with special reference to India), Shipra.
6. Agarwal, J.C. – Modern Indian Education, Shipra.

Or

GE-2 : Psychology of Mental Health and Hygiene **Credits 06**

GE2T : Psychology of Mental Health and Hygiene

Course Contents:

Unit –I:

- Mental Hygiene: Meaning and Concept.
- Mental Health: Meaning and Concept.
- Characteristics of Mental Health.
- Education and Mental Health & Hygiene.

Unit –II:

- Adjustment: Concepts, Need, and Areas of Adjustment.
- Mechanism of Adjustment.
- Role of Family and School in effective Adjustment.

Unit –III:

- Maladjustment: Meaning and Definition.
- Causes of Maladjustment.
- Different forms of Maladjustment.
- Role of Family and School in remedial measures.

Suggested Readings:

1. Carson, R.C. & Butcher, J.N.-Abnormal Psychology and Modern Life.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

2. Coleman, J.C. – Psychology and Effective Behavior.
3. Chauhan, S.S. – Mental Hygiene – A Science of Adjustment.

GE-3 : Education of Children with Special Needs **Credits 06**

GE3T: Education of Children with Special Needs

Course Contents:

Unit –I:

- Education of Children with:

1. Visual Impairment: identification, intervention, education and prevention.
2. Hearing Impairment: identification, intervention, education and prevention.

Unit –II:

- Education of Children with: Speech and Language Disorders: identification, intervention, education and prevention.

Unit –III:

- Education of Children with: Physically Handicraft: identification, intervention, education and prevention.

Unit –IV:

- Education of Children with: Learning Disabilities: identification, intervention, education and prevention.

Suggested Readings:

1. Bantwal, A., Nandukar, A. & R. Jalvi. Fundamentals of Hearing Impairment and Audiological management. RCI Manual, [DSE (HI)]. New Delhi: Kanishka Publishers, Distributors.
2. Biswas, P.C. Education of Children with Visual Impairment in Inclusive School. New Delhi: Abhijeet Publications.
3. Gulliford, R. & G. Upton (ed.) Special Educational Needs. London: Rutledge.
4. Haring, N.G. & R.L. Schiefelbusch (des). Teaching Special Children. New York: MCGraw-Hills Book Co.
5. Jalvi, P., Nandukar, A. & A. Bantwal. Introduction to hearing Impairment. RCI Manual, (DSE (HI)]. New Delhi: Kanishka publishers, Distributors.
6. Mani, M.N.G. Techniques of Teaching Blind Children. Sterling Publishers Pvt. Ltd.
7. Sharma, Prem Lata. A Teacher's Handbook on IED – Helping Children with Special Needs. New Delhi: NCERT.

Or

GE-3: Environmental Education **Credits 06**

GE3T: Environmental Education

Course Contents:

Unit-I: Environmental Education

1. Environmental Education: Concept, Characteristics, Components and Scope
2. Historical Background of Environmental Education

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

Unit-II: Education of Environmental Concepts

1. Concept of Environment and Ecosystem
2. Disasters: Natural and Man Made

Unit III: Environmental Education and Social Issues

1. Education for Sustainable development: From Unsustainable to Sustainable development.
2. Education of Urban Environment: Problems related to energy and water

Unit-IV: Approaches and Methods of Environmental Education

Approaches to Environmental Education: Interdisciplinary and MultidisciplinaryMethods: Discussion, Seminar, And Workshop, Problem solving and Field survey.

Suggested Readings:

1. Environmental Analysis of Water, Soil, Air by Saxena.
2. Environmental Pollution and Bhopal Killing.
3. Environmental Pollution of Cadmium by Rohatgi.
4. Our Planet Our Health – WHO, Oxford Publications, 1992.
5. Perspectives on Environment by I. R. Manners, M.W.M. Micksell
6. Soil and water Conservation Engineering by Schwab, S. D., Frevert, R. K., Edminster, T.W. and Earns K. K. John Wiley and Sons.
7. Water Pollution and Management by C. F. Vershney.

Or

GE – 3: Introduction to Distance Education **Credits 06**

GE3T: Introduction to Distance Education

Course Contents:

Unit- I: Philosophy and Growth of Distance Education

1. Philosophical foundation of Distance Education: Concept, Features, Objectives and Scope.
2. Growth and present status of Distance Education at National and International Level

Unit- II: Designing and Development of Self-Learning Print Materials

1. The Process of Designing and Development of Self-Learning Print Material.
2. Preparation of Print Material: Application of relevant technologies
3. Factors affecting Design of Print Materials

Unit-III: Mechanism for Learner Support Services

1. Learner Support Services: What, Why and How?
2. Institutional Arrangements for Learner Support: Counseling and Tutoring Services, Practice and Media of Counseling, Face-to-Face Sessions, Interaction through Assignments.

Unit-IV: Communication Media for Distance Education

1. Issues and Application of Communication Technology in Distance Education.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

2. Media in Distance Education: Radio, Television, Audio video production, Satellite Technology, and Computer and Internet as an Educational Media.

Suggested Readings:

1. Chib, S.S. Distance Education. Chandigarh: Chadda Publication.
2. IGNOU Growth and Philosophy of Distance Education. (Block 1, 2 &3). IGNOU, New Delhi.
3. Joshi P.K. Modern Distance Education. New Delhi: Anmol Publications.
4. Kaye, & Rumble (Ed) Distance Teaching for Higher and Adult Education, London: Croom Helm.
5. Keegan, D. Foundations of Distance Education, London: Routledge.

GE-4: Value Based Education **Credits 06**

GE4T: Value Based Education

Course Contents:

Unit -I: Value – An Introduction

1. Meaning and Importance of value
2. Classification of value-Indian and western

Unit-II: Sources of Value

1. Religion,
2. Philosophy, and
3. Literature

Unit-III: Values -- Traditional and Contemporary

1. Traditional values- Pu;r;ushartha, Satyam shivam sundaram, ahimsha prem and karma, tyaga and lokasangraha
1. 2.Contemporary values-democracy, socialism, secularism, freedom, discipline, responsibility, human rights

Unit -IV: Value Erosion and Inculcation

1. Value crises in social life, economic life, and political life
2. Value inculcation- need and importance,
3. Approaches to value education- direct and indirect method, curricular and cocurricular and extra curricular

Suggested Readings :

1. Allport, G.W., Vermon, P.E., and Lindzey, G. (1970) *study of values*, Buston: Houghton Mifflin.
2. Centaral Board of Secondary Education (1997), *Value Education: A Handbook for Teachers*, Delhi: Central Board of Secondary Education.
3. Delors, J. (1996), *Learning: The Treasure within*- Report of the International Commission on Education for the Twenty-First Century, Paris: UNESCO.
4. Morris, Charles W. (1956). *Varieties of Human Values*. Chikago: University of Chicago Press.
5. Shukla, R.P.(2005). *Value Education and Human Rights*. Sarup& Sons, New Delhi

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

6. *Value Education.* Manish Prakashan , Plat No. 26, Rohit Nagar Colony, Baranasi Hindu University , Varanasi.

Or

GE-4: Mental Health Education **Credits 06**

GE4T: Mental Health Education

Course Contents:

Unit-I: Mental Health:

1. Concept and Importance of Mental Health,
2. Characteristics of Mentally Healthy Individual,
3. Factors Affecting Mental Health,
4. Educational Implications of Mental Health.

Unit-II: Mental Hygiene:

1. Definition, Meaning and Aims of Mental Hygiene;
2. Origin and Development of Mental Hygiene Movement.

Unit-III: Adjustment:

1. Definition and meaning of Adjustment
2. Criteria of Good Adjustment
3. Defense Mechanism – Definition, meaning and different methods of Defense Mechanism

Unit-IV: Maladjustment

1. Meaning of Maladjustment
2. Causes of Maladjustment
3. Role of education

Suggested Readings:

1. Coleman, J.C. :Abnormal Psychology and Modern Life, D.B. Taraporevala Sonsand Co., Bombay.
2. Hadfield, J.A. :Psychology and Mental Health,
3. Hall, C.S. &Lindzey, G., Theories of Personality, Wiley Publications, New York.

END

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:10:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/Education_Hons.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (General)
in
EDUCATION

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

VIDYASAGAR UNIVERSITY

B A (General) in Education

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I			**SEMESTER-I**			**CA**	**ESE**	**TOTAL**
		Core-1 (DSC-1A)		Principles of Education	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-1 (Core)		English-I	6	5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
				SEMESTER-II					
	II	Core-3 (DSC-1B)		Educational Psychology	6	5-1-0	15	60	75
		Core-4 (DSC-2B)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-2 (Core)		MIL-I	6	5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III			SEMESTER-III			CA	ESE	TOTAL
		Core-5 (DSC-1C)		Educational Sociology	6	5-1-0	15	60	75
		Core-6 (DSC-2C)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-3 (Core)		English-II	6	5-1-0	15	60	75
		SEC-1		SEC-1: Measurement and Evaluation in Education Or SEC-1: Value Education	2	1-1-0	10	40	50
				Semester - 3 : Total	**20**				**275**
				SEMESTER-IV					
	IV	Core-7 (DSC-1D)		History of Education in India	6	5-1-0	15	60	75
		Core-8 (DSC-2D)		Other Discipline(Discipline-2)/TBD	6		15	60	75
		AECC-4 (Core)		MIL-II	6	5-1-0	15	60	75
		SEC-2		SEC-2 : Educational Guidance and Counseling Or SEC-2: Computer Application in Education	2	1-1-0	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	**V**			**SEMESTER-V**			**CA**	**ESE**	**TOTAL**
		DSE-1A		Any one from Discipline -1	6	5-1-0	15	60	75
		DSE-2A		Other Discipline(Discipline-2) / TBD	6	5-1-0	15	60	75
		GE-1		TBD	6		15	60	75
		SEC-3		SEC-3: Yoga Education Or SEC-3: Distance Education	2	1-1-0	10	40	50
				Semester - 5 : Total	**20**				**275**
				SEMESTER-VI					
	VI	DSE-1B		Any one from Discipline -1	6	5-1-0	15	60	75
		DSE-2B		Other Discipline (Discipline -2) / TBD	6	5-1-0	15	60	75
		GE-2		TBD	6		15	60	75
		SEC-4		SEC-4: Education of Children with Special Needs **Or** SEC-4: Mental Health Education	2	1-1-0	10	40	50
				Semester - 6 : Total	**20**				**275**
	Total in all semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

List of Core and Electives

Core Course (CC)

DSC-1A(CC-1): Principles of Education
DSC-2A(CC-2): Educational Psychology
DSC-3A(CC-3): Educational Sociology
DSC-4A(CC-4): History of Education in India

Discipline Specific Electives (DSE)

DSE-1A: Great Educator
Or
DSE-1A : Women Education
Or
DSE-1A: Educational Technology
DSE-1B: Inclusive Education
Or
DSE-1B: Guidance and Counseling
Or
DSE-1B: Project work

Skill Enhancement Course (SEC)

SEC-1: Measurement and Evaluation in Education
Or
SEC-1: Value Education
SEC-2 : Educational Guidance and Counseling
Or
SEC-2: Computer Application in Education
SEC-3: Yoga Education
Or
SEC-3: Distance Education
SEC-4: Education of Children with Special Needs
Or
SEC-4: Mental Health Education

Generic Elective(GE)
[Interdisciplinary for other department]

GE-1 : Mental Health and Hygiene
Or
GE-1: Current Issues in Indian Education
GE-2: Environmental Education
Or
GE-2: Introduction to Distance Education

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

Core Course (CC)

DSC-1A(CC-1): Principles of Education **Credits 06**

DSC1AT: Principles of Education

Course Contents:

Unit –I:

- Education: Meaning, Nature and Scope.
- Functions of Education
- Factors of Education.
- Aims of Education: Individualistic and Socialistic.

Unit –II:

- Meaning of Curriculum.
- Types of curriculum.
- Principles of curriculum construction.
- Co – curricular activities.

Unit –III:

- Child Centric Education: Meaning and Characteristics.
- Aims of modern child centric education.
- Child Centricism in Education: its significance.
- Play and play-way in education: Kindergarten, Montessori, Basic education and Project method.

UNIT –IV:

- Freedom and Discipline: Concepts.
- Needs of discipline.
- Concept of Free discipline.
- Concept of Self-discipline.
- Application of Discipline in Educational Institution.

Suggested Readings:

1. Gutek,Gerald L.(2009).New Perspectives on Philosophy and Education. NewJersy,USA:pearson.
2. V.R. Taneja: Educational Thoughts & Practice. Sterling Publication Pvt. Ltd. New Delhi.
3. Ozman, Howard A.,& Craver, Samuel M. Philosophical Foundation of Education. Boston, USA: Ally &Bacon.
4. Wingo. G. Max. Philosophies of Education New Delhi: Sterling Publishers.

DSC-2A(CC-2): Educational Psychology **Credits 06**

DSC2AT: Educational Psychology

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

Unit –I:

- Educational Psychology: Meaning, Nature and Scope
- Relation between Education and Psychology.
- Methods of Educational Psychology.

Unit –II:

- Growth and Development: Meaning and Concepts.
- Stages of Development of a Child: Infancy, Childhood and Adolescence.
- Aspects of Child Development : Physical, Intellectual, Emotional, Social

Unit –III:

- Personality: Concept and definition.
- Development of Personality.
- Types and Traits Approaches to Personality.
- Individual Differences: Concepts and Types.
- Causes of Individual Differences.

Unit –IV:

- Intelligence: Concept and Definition.
- Theories of intelligence: Two-factor, Group-factors and Structure of Intellect.
- Intelligence Test: Verbal, Non-verbal test and their uses.

Unit –V:

- Learning: Meaning &Nature.
- Factors associated with learning.
- Theories of Learning: Trial & Error, Classical conditioning and Gestalt theory of learning.
- Learning relation to; Attention, Interest, Maturation and Motivation.

Suggested Readings:

1. Bigge, M.L. Psychological Foundations of Education. Harper and Row, New York.
2. Chauhan, S.S. Advanced Educational Psychology. Vikash Publishing House, New Delhi.
3. Choube, S.P. &Choube. Educational Psychology and Experriments. Himalay Publishing House, New Delhi.
4. Mangal S.K . Advance Educational Psychology. Presentice Hall of India, New Delhi.
5. Mathur, S.S. Educational Psychology. BinodPustakMandir, Agra.
6. Woolfolk, A.E. . Educational Psychology. Sterling Kinderslay (India) Pvt. Ltd.

DSC-3A(CC-3): Educational Sociology **Credits 06**

DSC3AT: Educational Sociology

Course Contents:

Unit –I:

- Education Sociology: Meaning, Nature and Scope.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

- Relation between Sociology and Education.
- Education-as a social sub-system.

Unit –II:
- Social Change: Concept and nature.
- Factors and problems of social change in India.
- Social stratification: Meaning and Types.

Unit –III:
- Socialization: Meaning, process and factors of socialization.
- Social Control: Meaning and types of Social control, Agencies of Social Control.

Unit –IV:
- Social Agencies of Education and their educative role:
- Family.
- School.
- State.
- Mass media.

Suggested Readings:

1. Shukla, S&K Kumar Sociological perspective in Education, New Delhi, Chanakya Publications,
2. Bhattacharjee, Srinvas Philosophical & Sociological Foundation of Education, Herald book service
3. Saxena, N.R Philosophical & Sociological Foundation of Education, R. Lal book Depot., Meerut,
4. Sharma , S.N Philosophical & Sociological Foundation of Education, Herald book service, Faridabad,
5. Sodhi, T.S &Suri Aruna Philosophical& Sociological foundations of education, H.P Bhargav Book house, Agra

DSC-4A(CC-4): History of Education in India **Credits 06**

DSC4AT: History of Education in India

Contents:

Unit –I:
- Missionary educational activities in India: Characteristics and significance.
- Serampore Mission: Contributions of the Trio to Education.
- Charter Act of 1813.
- Macaulay's Minute.
- Adam's Report and its recommendations.
- Woods Despatch (1854).

Unit –II:
- Indian Education commission -1882.
- Indian University Commission (1902).
- National Education Movement.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

Unit –III:

- Sadler Commission -1917
- Hartog Committee Report.
- Wardha Schame.
- The Sargent Plan (1944).

Unit –IV:

- Radhakrishnan Commission-1948, with special reference to rural university.
- Mudaliar Commission (1952-53): Reports and Recommendations.
- Kothari Commission (1964-66): Reports and Recommendations.
- National Education Policy1986 and Revised Educational Policy of 1992.

Suggested Readings:

1. Basu, A.N. Education in Modern India
2. Banerjee, J.P. Education in India-Past, Present and Future
3. Mukherjee, S.N. Education in India, Today and Tomorrow
4. Mukherjee, S.N. History of Education (Modern Period)
5. Nurullah, S, Naik J.P. History of Education in India
6. Rawat, P.L. History of Indian Education

Discipline Specific Electives (DSE)

DSE-1A: Great Educators **Credits 06**

DSE1AT: Great Educators

Course Contents:

Unit –I:

- Swami Vivekananda (1863-1902).
- Sri Aurobindo (1872-1950).

Unit –II:

- Rabindranath Tagore (1861-1941).
- Mahatma Gandhi (1869-1948).

Unit –III:

- Jean Jacques Rousseau (1712-1778).
- F.W. August Froebel (1782-1852).

Unit –IV:

- John Dewey (1859-1952).
- Madam Maria Montessori (1870-1952).

Suggested Readings:

1. Mukherjee,K.K, Some Great Educators of the world, Das Gupta & Co.pvt. Ltd, Calcuta
2. Purkait, B.K., Great Educators, New Central Book Agency, London

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

3. Guha, Bibhuranjan, Shikshay Pathikrit (Bengali), Sobha Publisher, Kolkata.
4. Prof.B.C Rai, Theory of Education, Prakasan Kendra, Lakhnow.
5. Vidya Ratna Taneja, Educational Thought and practice, Sterling Publishers Pvt.Ltd.

Or

DSE-1A : Women Education **Credits 06**

DSE1AT : Women Education

Course Contents:
Unit –I:

- Women Education: Meaning and Concept.
- Problems of Women Education.

Unit –II:

- Literacy percentage of women.
- Existing prejudices against women education.
- Needs & Scope of Education for girls.

Unit –III:

- Role of Iswarchandra Vidyasagar, Mahatma Gandhi, and Rabindranath Tagore for Women Education.

Unit –IV:

- Women Education as recommended by different commissions in Independent India.
- Measures taken by the Government for Women Education.
- Role of NGO's for Women Education.

Suggested Readings:

1. Bagal, J.C, Women's Education in Eastern India.
2. Mukherjee, S.N.: Education in India. Today and Tomorrow.
3. Report of the Commission on the Status of Women in India, December 1974. Government of India, Ministry of Education and Social Welfare, Department of Social Welfare, New Delhi.
4. Newson, J.The Education of Girls, Faber and Faber Ltd, London.
5. Mitra, Ashok. The Status of Women, Literacy and Employment, Allied Publishers, New Delhi,

OR

DSE-1A: Educational Technology **Credits 06**

DSE1AT: Educational Technology

Course Contents:
Unit –I:

- Educational Technology: Concept and Meaning.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

- Educational Technology: Nature, Scope, Needs and Limitations.
- Components of Educational Technology-Hardware & Software.

Unit –II:

- System approach: Concept and Characteristics.
- Uses and limitation of system approach.

Unit –III:

- Communication: Meaning, Nature, Types and Process.
- Barriers of Communication.
- Significance of Communication.

Unit –IV:

- Multimedia approach in educational technology.
- Visual, audio and audio-visual types and their uses in education.
- Computer and its role in education.

Suggested Readings:

1. J.Mohanty , Educational Technology
2. K.Sampath, Instruction to educational Technology
3. R.A.Sharma, Technology of Teaching
4. B.F.Skinner, The Technology of Teaching
5. B.C.Das, Educational Technology
6. S.P.Ruhela, Educational Technology
7. Rao and Ravisankar, Educational Technology

DSE-1B: Inclusive Education **Credits 06**

DSE1BT: Inclusive Education

Course Contents

Unit-I: Inclusion in Education

1. Meaning and definition,
2. Principles of Inclusive Education- Access, equity, relevance, participation and empowerment,
3. Changing practices in education of children with disability,
4. Barriers to inclusive education- Attitudinal, Physical, and Instructional

Unit-II: Exceptional Children

1. Exceptional children & their needs: - Definition; types; concept of impairment, disability and handicap;
2. Causes of exceptionality, needs and problems of exceptional children.

Unit-III: Sensory Impairment and Learning Disability

1. Sensory Impairment- Visual & Auditory: definition, causes, characteristics & Education.
2. Learning Disabled- definition, causes, characteristics & Education

Unit-IV: Mentally Retardation

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

1. Mentally Retardation- definition, causes, characteristics & Education
2. Giftedness- definition, causes, characteristics & Education.

Suggesting Readings:

1. Educating Exceptional Children – S.K. Mangal
2. Perspectives in Disability and Rehabilitation(1995)-Pandey,R.S. and Advani, Lal
3. Critical Issues in Special Education – Ysseldyke, Algozzine, Thurlow

OR

DSE-1B: Guidance and Counseling **Credits 06**

DSE1BT: Guidance and Counseling

Course Contents:

Unit - I: Guidance

1. Concept, Nature, Principles, and types— educational, vocational and personal. Individual and Group Guidance.
2. Role of parents, teachers, and counselor in guidance.

Unit- II: Counseling

1. Concept, Nature, Principles, Types — Directive, Non-directive and Eclectic; Individual and Group Counseling,
2. Counseling process, Characteristics of good counseling
3. Differences between guidance, counseling and psychotherapy

Unit-III: Techniques of Collecting Information for Guidance and Counseling

1. Intelligence test, Aptitude test, Interest test, and Personality Test & Interview, CRC, ARC and Case Study

Unit-IV: Adjustment

1. Concept and Definition of Adjustment, Characteristics of good adjustment, common adjustment problems in Childhood and adolescence, Adjustment Mechanism.

Suggested Readings:

1. Crow, L.D.I., Crow, A — An Introduction to Guidance.
2. Bhatia, K.K. — Principles of Guidance and Counselling, Kalyani Publishers,
3. Agarwal, Rashmi — Educational Vocational Guidance and Counselling; Principles, Techniques and Programmes, Shipra Publication,
4. Charles Kiruba & Jyothsna, N.G. — Guidance and Counselling, Neelkamal, Publication Pvt.Ltd.
5. Madhukar, I— Guidance and Counselling, New Delhi, Authors Press.
6. Mc. Daniel, H.B. — Guidance in the Modern School. New York, Rinechart and Winston.
7. Traxler, A.E. and North, R.D. — Techniques of Guidance, New York,
8. Gururani, G.D — Guidance and Counselling, Educational, Vocational and Career Planning, New Delhi, Akansha Publishing House.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

OR

DSE-1B: Project work **Credits 06**

Skill Enhancement Course (SEC)

SEC-1: Measurement and Evaluation in Education **Credits 02**

SEC1T: Measurement and Evaluation in Education

Course Contents:

Unit –I:

- Concept of Measurement and Evaluation.
- Difference between Measurement and Evaluation.
- Needs of Evaluation in Education.

Unit –II:

- Different tools and techniques of Evaluation.
- Teacher Made test and Standardized test.
- Achievement tests and Psychological tests
- Cumulative Record Card.

Unit –III:

- Reliability: Meaning and Method of Determining Reliability by Tests- Retest Method.
- Validity: Meaning and Method of Determining Content Validity.

Unit –IV:

- Tabulation of Educational Data.
- Measurement of Central Tendency: Mean, Median, Mode (Computation and their uses).
- Measures of Dispersion: Range; Quartile Deviation; Standard Deviation. (Computation and their uses)

Unit –V:

- Concept of Correlation.
- Rank Difference method and Product moment method for Computation of correlation, Co-efficient.
- Interpretation of results.

Suggested Readings:

1. Agarwal. J.C. Essentials of Examination System: Evaliation Tests & Measurement. Vikas Publishing House New Delhi
2. Cronbanch, L.J. Essentials of Psychological Testing, New York, Harper and Brothers,
3. Garrett. H.E. Statistics in Psychology and Education, Eastern Book House, Shantipur Guwahati

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

OR

SEC-1: Value Education **Credits 02**

SEC1T: Value Education

Course Contents:

Unit –I:

- Value in Education: Meaning and Concept
- Needs of Value Education

Unit –II:

- Morality: Meaning & Concept.
- Morality and Values in Education.
- Role of Parents to Facilitate Children's Moral Development

Unit –III:

- Social Values.
- Values in Classroom.
- Inculcation of Values among the students

Unit –IV:

- Peace Education: Meanings and Aims.
- Values in Peace Education.
- Values and Human Rights Education

Suggested Readings:

1. The moral child – Damon, W. New York: The free press.
2. Values in Education and Education in value – Halstead, J.Mark. London.
3. The Psychology of moral Development – Kohlberg. New York.
4. Values Education – Bagchi, J.P: University Book House (P) Ltd.
5. Human Rights – a source book – Dev, Arjun et. al. NCERT, New Delhi.
6. Human Development Report – 2002, UNDP – New York and Oxford.

SEC-2 : Educational Guidance and Counseling **Credits 02**

SEC2T : Educational Guidance and Counseling

Course Contents:

Unit –I:

- Educational Guidance: Meaning, Definition, Scope.
- Needs and Importance of Guidance.
- Essentials of good Guidance programme.

Unit –II:

- Different forms of Guidance.
- Educational and Vocational Guidance.
- Organization of Guidance service at different levels of education.
- Tools and techniques of Guidance.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

Unit –III:

- Counseling: meaning, nature, scope.
- Types of counseling.
- Tools and techniques of Counseling.

Unit –IV:

- Difference between Guidance and Counseling.
- Counseling process-relationships & its characteristics.
- Role of parent, teacher & counselor in guidance programme.

Suggested Readings:

1. Basu, N.C. Educational and Vocational Guidance.
2. Chauhan, S.S. – Principles and Techniques of Guidance.
3. NCERT- Guidance and Counseling.

OR

SEC-2: Computer Application in Education **Credits 02**

SEC2T: Computer Application in Education

Course Contents:

Unit I:

MS office:

- MS Word • MS Power Point • MS Excel

Unit II:

- Concepts of information and communication technology; Universal access VS Digital Divide - issues and initiatives;
- Challenges of Integration of ICT in School; Aims and objectives of National Policy on Information and Communication Technology (ICT) in School Education in India.

Unit III:

- Components and Objectives of National Mission on Education, through ICT (NMEICT), Spoken Tutorials Gyan Darshan, Gyanvani, Sakshat Portal, e Gyan Kosh; Virtual laboratory and Haptic technology

Unit IV:

Internet

- Introduction to Internet • E-mail, Search Engines, Info-Savvy Skills; Digital Age Skills, safe surfing mode

Unit V: Educational Resources

- Internet resources for different disciplines like natural sciences, social sciences, Humanities and Mathematics.
- General Introduction to E-learning, Mobile-learning, distance learning, On-line learning,
- Virtual University, Wikipedia, Massive Open Online Courses (MOOCs);

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

- Social networking

Unit VI: ICT Integrated Education

- On line Admissions
- Digital Lesson Designing
- Evaluation Rubrics
- E-Portfolios of Learners
- Time-Space-Personnel Management
- Learning Resources Management
- Web Based Instruction
- Office Automation
- E-guidance & counseling
- E-modules
- E-learning Resources

SEC-3: Yoga Education **Credits 02**

SEC3T : Yoga Education

Course Contents:

Unit –I:

- Basis of Yoga Meaning and Concept.
- Patanjala Yogasutra.
- Hathayoga Pradipika.

Unit –II:

- Concept of Yoga.
- Streams of Yoga.
- Raja Yoga: Eight Fold Path.
- Anand Mimamsa.

Unit –III:

- Theories of Yoga Practices.
- Asana.
- Pranayama.
- Kriyas.
- Dhyana.

Unit –IV:

- Practical Eight Step Method: Single Group and Double Group Practice.
- Asana.
- Pranayama.
- Relaxation Techniques

Suggested Readings:

1. Gore, M.M. –Anatomy and Physiology of Yogic Practices; New Age Books, New Delhi,
2. Coulter.H.David- Anatomy of Hathayoga; MLBD, New Delhi,
3. Gharote, Manmath M. and Others- Application in Yoga; Lonavla,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

4. Saraswati, Swami Satyananda- Asana Pranayama & Mudra Bandha; Bihar School of Yoga, Munger,
5. Tiwari, O.P.- Asana Why and How?; Kaivalyadhama, Lonavla
6. Iyengar, B.K.S. Astadal Yoga Mala, (Vol. I-VIII); Allied Publishers Pvt. Ltd., Lucknow,

OR

SEC-3: Distance Education **Credits 02**

SEC3T: Distance Education

Course Contents:

Unit –I:

- Distance Education; Significance, Meaning and Characteristics.
- Growth and Development of Distance Education.

Unit –II:

- Designing and preparing self-learning materials in Distance Education.
- ICT and their applications in Distance Education

Unit –III:

- Self – support service in Distance Education.
- Technical and vocational Programmes through Distance Education.

Unit –IV:

- Quality assurance in Distance Education.
- Maintaining of standards in Distance Education.
- Role of Distance Education Council.

Suggested Readings:

1. Distance Education: Principles, Potentialities and Perspectives – A.Goel & S.Goel.
2. Distance Education: In the 21st Century – A.Goel & S.L.Goel.
3. Distance Education-V.K.Rao
4. Distance Education in Different Countries- D.B.Rao
5. Handbook of Distance Education – M.G.Moore.
6. International Handbook of Distance Education – T.Evans, M.Haughery & D.Murphy.
7. Distance Learning Concepts and Principles – Madhulika Sharma.
8. Distance Learning Technologies: Issues, Trends and Opportunities – Linda Lau.

SEC-4 : Education of Children with Special Needs **Credits 02**

SEC4T : Education of Children with Special Needs

Course Contents:

Unit –I:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

- Education of Children with:

1. Visual Impairment: identification, intervention, education and prevention.
2. Hearing Impairment: identification, intervention, education and prevention.

Unit –II:

- Education of Children with: Speech and Language Disorders: identification, intervention, education and prevention.

Unit –III:

- Education of Children with: Physically Handicraft: identification, intervention, education and prevention.

Unit –IV:

- Education of Children with: Learning Disabilities: identification, intervention, education and prevention.

Suggested Readings:

1. Bantwal, A., Nandukar, A. & R. Jalvi. Fundamentals of Hearing Impairment and Audiological management. RCI Manual, [DSE (HI)]. New Delhi: Kanishka Publishers, Distributors.
2. Biswas, P.C. Education of Children with Visual Impairment in Inclusive School. New Delhi: Abhijeet Publications.
3. Gulliford, R. & G. Upton (ed.) Special Educational Needs. London: Rutledge.
4. Haring, N.G. & R.L. Schiefelbusch (des). Teaching Special Children. New York: MCGraw-Hills Book Co.
5. Jalvi, P., Nandukar, A. & A. Bantwal. Introduction to hearing Impairment. RCI Manual, (DSE (HI)]. New Delhi: Kanishka publishers, Distributors.
6. Mani, M.N.G. Techniques of Teaching Blind Children. Sterling Publishers Pvt. Ltd.
7. Sharma, Prem Lata. A Teacher's Handbook on IED – Helping Children with Special Needs. New Delhi: NCERT.

OR

SEC-4: Mental Health Education **Credits 02**

SEC4T: Mental Health Education

Course Contents:

Unit-I: Mental Health:

1. Concept and Importance of Mental Health,
2. Characteristics of Mentally Healthy Individual,
3. Factors Affecting Mental Health,
4. Educational Implications of Mental Health.

Unit-II: Mental Hygiene:

1. Definition, Meaning and Aims of Mental Hygiene;
2. Origin and Development of Mental Hygiene Movement.

Unit-III: Adjustment

1. Definition and meaning of Adjustment

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

2. Criteria of Good Adjustment
3. Defense Mechanism – Definition, meaning and different methods of Defense Mechanism

Unit-IV: Maladjustment

1. Meaning of Maladjustment
2. Causes of Maladjustment
3. Role of education

Suggested Readings:

1. Coleman, J.C. :Abnormal Psychology and Modern Life, D.B. Taraporevala Sonsand Co., Bombay.
2. Hadfield, J.A. :Psychology and Mental Health,
3. Hall, C.S. &Lindzey, G., Theories of Personality, Wiley Publications, New York.

Generic Electives (GE)
[Interdisciplinary for other department]

GE-1 : Mental Health and Hygiene **Credits 06**

GE1T : Mental Health and Hygiene

Course Contents:

Unit –I:

- Mental Hygiene: Meaning and Concept.
- Mental Health: Meaning and Concept.
- Characteristics of Mental Health.
- Education and Mental Health & Hygiene.

Unit –II:

- Adjustment: Concepts, Need, and Areas of Adjustment.
- Mechanism of Adjustment.
- Role of Family and School in effective Adjustment.

Unit –III:

- Maladjustment: Meaning and Definition.
- Causes of Maladjustment.
- Different forms of Maladjustment.
- Role of Family and School in remedial measures.

Suggested Readings:

1. Carson, R.C. & Butcher, J.N.-Abnormal Psychology and Modern Life.
2. Coleman, J.C. – Psychology and Effective Behavior.
3. Chauhan, S.S. – Mental Hygiene – A Science of Adjustment.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

OR

GE-1: Current issues in Indian Education **Credits 06**

GE1T: Current issues in Indian Education

Course Contents:

Unit –I:

- Development of Education since 1947
- Primary Education.
- Secondary Education.
- Higher Education.
- Technical and Vocational Education.

Unit –II:

- Equalization of educational opportunity.
- Education for the Backward Classes.
- Development and Problems of Women Education.

Unit –III:

- Development of Non-formal Education in India.
- Adult and Continuing Education.
- Sarbo Siksha Abhijan / Mission.

Unit –IV:

- Functions of following Educational Organizations.
- CABE, UGC, NCERT, SECRT, and DIET.

Suggested Readings:

1. Mukherjee, S.N. - Education in India, Today and Tomorrow, Boroda Acharya Book Depot.
2. Nurullah, S. and Naik, J.P. – History of Education in India; Macmillan Co.,
3. Banerjee, J.P. – Education in India, Past, Present and Future.
4. Mukhopadhyay, M. Parhar Madhu (Ed.) – Educaion in India, Dynamics and Development, Shipra.
5. Agarwal, J.C. – Recent Developments and Trends in Education (with special reference to India), Shipra.
6. Agarwal, J.C. – Modern Indian Education, Shipra.

GE-2: Environmental Education **Credits 06**

GE2T: Environmental Education

Course Contents:

Unit-I: Environmental Education

1. Environmental Education: Concept, Characteristics, Components and Scope
2. Historical Background of Environmental Education

Unit-II: Education of Environmental Concepts

1. Concept of Environment and Ecosystem

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

2. Disasters: Natural and Man Made

Unit III: Environmental Education and Social Issues

1. Education for Sustainable development: From Unsustainable to Sustainable development.
2. Education of Urban Environment: Problems related to energy and water

Unit-IV- Approaches and Methods of Environmental Education

Approaches to Environmental Education: Interdisciplinary and MultidisciplinaryMethods: Discussion, Seminar, And Workshop, Problem solving and Field survey.

Suggested Readings:

1. Environmental Analysis of Water, Soil, Air by Saxena.
2. Environmental Pollution and Bhopal Killing.
3. Environmental Pollution of Cadmium by Rohatgi.
4. Our Planet Our Health – WHO, Oxford Publications, 1992.
5. Perspectives on Environment by I. R. Manners, M.W.M. Micksell
6. Soil and water Conservation Engineering by Schwab, S. D., Frevert, R. K., Edminster, T.
7. W. and Earns K. K. John Wiley and Sons.
8. Water Pollution and Management by C. F. Vershney.

OR

GE-2: Introduction to Distance Education **Credits 06**

GE2T: Introduction to Distance Education

Course Contents:

Unit- I: Philosophy and Growth of Distance Education

1. Philosophical foundation of Distance Education: Concept, Features, Objectives and Scope.
2. Growth and present status of Distance Education at National and International Level

Unit- II: Designing and Development of Self-Learning Print Materials

1. The Process of Designing and Development of Self-Learning Print Material.
2. Preparation of Print Material: Application of relevant technologies
3. Factors affecting Design of Print Materials

Unit-III: Mechanism for Learner Support Services

1. Learner Support Services: What, Why and How?
2. Institutional Arrangements for Learner Support: Counseling and Tutoring Services, Practice and Media of Counseling, Face-to-Face Sessions, Interaction through Assignments.

Unit-IV: Communication Media for Distance Education

1. Issues and Application of Communication Technology in Distance Education.
2. Media in Distance Education: Radio, Television, Audio video production, Satellite Technology, and Computer and Internet as an Educational Media.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

Suggested Readings:

1. Chib, S.S. Distance Education. Chandigarh: Chadda Publication.
2. IGNOU Growth and Philosophy of Distance Education. (Block 1, 2 &3). IGNOU, New Delhi.
3. Joshi P.K. Modern Distance Education. New Delhi: Anmol Publications.
4. Kaye, & Rumble (Ed) Distance Teaching for Higher and Adult Education, London: Croom Helm.
5. Keegan, D. Foundations of Distance Education, London: Routledge.

END

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 17:11:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/education_Gen.pdf

VIDYASAGAR UNIVERSITY
MIDNAPORE -721102

SYLLABUS (DRAFT) for POST- GRADUATE PHILOSOPHY COURSE

With effect from Academic Session 2022-2023

Under Choice Based Credit System
(CBCS)
(Semester Programme)

[w. e. f. 2022-23 session]

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

SEMESTER-I

Paper: PHI-101 (Indian Logic) Marks – 50 (40+10)

Course Outcome: Qualified students can easily differentiate valid knowledge from invalid ones on the basis of their learned reasoning capacity and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Definition and Process of *Anumāna*: Nyāya, Bauddha and Advaita Perspectives
2. Role of *Parāmarśa* in *Anumana* : The *Mimāṁsā – Nyāya* debate
3. Induction in Indian Logic: Role of *Pratyakṣa in Anumāna, Vyābhicārāgraha, Upādhi* and *Upādhinirāśa, Tarka, Sāmānyalakṣaṇa* and *Jnanalaksana Pratyakṣa* in *Vyāptigrahopāya.*
4. Definition of *Vyāpti*: First and Second *Lakṣana* of Siddhānta-Muktāvalî (upto *rūpatvavyāpyajātimattvānprithivĩtvāt)*, with reference to Advāita Vedānta and Bauddha Theory of *Vyāpti*.
5. *Pakṣāta samîkṣā*.
6. Characteristics of Saddhetu and five types of Hetvābhāsa: Nyāya perspective

Suggested texts:

1. Viśvanātha: *Bhāṣā-Pariccheda* with *Siddhānta-Muktāvalī*, ed. by Pandit Panchanan Bhattacharyya, Maha Bodhi Book Agency, Kolkata, 2016
2. Dharmakīrti: *Nyayābindu* with *Dharmottaratīkā*, ed. by Satyajyoti Chakraborty, Sahityashree, Kolkata, 2012
3. Dharmarajādhvarīndra: *Vedānta Paribhāṣā* (*Anumāna Paricchedaḥ*), Ed. & Trans. by Panchanan Bhattacharyya Tarka Saṁkhya Vedantatirtha, Sanskrita Pustak Bhandar, Kolkata, 1377 (Bangabda)

Suggested Readings:

1. Annaṁbhaṭṭa: *Tarkasaṁgraha with Dīpikā*, ed. & trans. by Narayan Chandra Goswami, Sanskrita Pustak Bhandar, Kolkata, 1413 (Bangabda)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

2. Miśra, Keśava: *Tarkabhāṣā*, Ed. & Trans. by Dr. Gangadhar Kar Nyayācārya, Jadavpur University Press (2nd edition), Kolkata, 2013
3. Maharṣi Gautama: *Nyāyadarśana-Vātsyāyanabhāṣya*, Ed. & Trans. by Mahamahopadhyaya Phanibhusan Tarkabagish, Paschim Banga Rajya Pustak Parshad, Kolkata, 2014
4. Maitra, S. K. *Fundamental Questions of Indian Metaphysics and Logic*, Chakraborty & Co., Calcutta, 1956
5. Sen, Debabrata. *Bhāratīya Darśana*, Paschim Banga Rajya Pustak Parshad, Kolkata, 2010
6. Ghosh, Raghunath. *The Justification of Inference (A Navya-Nyāya Approach)*, Bharatiya Vidya Prakashan, 1990
7. Das, Bhupendra Chandra. The Supernormal Means of Knowing (A Navya Nyaya Approach), Bharatiya Vidya Prakashan, 2011

Paper – PHI-102 (Western Logic) Marks – 50 (40+10)

Course Outcome: As the course enhances the reasoning power of the students, one can select the better chance among the present scopes after completion of the course and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. The Method of Conditional Proof, Indirect Proof.
2. Multiply General Proportions, Symbolisation, Revised Quantification Rules, Proving Validity and Invalidity, Logical Truth involving quantifiers.
3. Truth tree and its applications
4. Method of Resolution
5. Shorter Truth Table technique: Reductio-ad-Absurdum

Suggested Texts:

1. Copi, I. M. *Symbolic Logic* (5th Ed.). Chapters 3 and 4. Prentice Hall of India –1998.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

2. Jeffrey, Richard C. *Formal Logic: Its Scope and Limits*. McGraw-Hill Book Company, New York, 1967.
3. Das, Ramaprasad. *Samketik Yuktivigyan,* Vol.1, Vakyakalan, Paschimbanga Rajya Pustak Parsad. Calcutta, 1984.

Paper – PHI-103 (Indian Epistemology) Marks – 50 (40+10)

Course Outcome: After completion of the said course a student can be able to analyze human capacity of reasoning within the classical framework of Indian tradition and this course will help the students to prepare themselves for NET/SET/other examination in educational fields for entry into services.

1. Definition and Types of *pramā* and *apramā*: Nyāya , Bauddha, Advaita Vedānta theories
2. Theory of Perception (Definition, Process And Types): Nyāya, Bauddha, Advaita Vedānta
3. The debate about the ascertainment (*Jñapti*) of validity: Mimāṁsā and Advaita Perspectives
4. Theories about erroneous perception (Khyātivāda): *ātmakhyāti, satkhyāti asatkhyāti, akhyāti, anyathākhyāti, viparītakhyāti, anirvracanīyakhyāti*.

Suggested Texts:

1. Viśvanātha: *Bhāṣā-Pariccheda* with *Siddhānta-Muktāvalī*, ed. by Pandit Panchanan Bhattacharyya, Maha Bodhi Book Agency, Kolkata, 2016
2. Dharmakīrti: *Nyayābindu* with *Dharmottaratīkā*, Ed by Satyajyoti Chakraborty, Sahityashree, Kolkata, 2012
3. Dharmarajādhvarīndra: *Vedānta Paribhāṣā*, Ed. & Trans. by Panchanan Bhattacharyya Tarka Sankhya Vedantatirtha, Sanskrita Pustak Bhandar, Kolkata, 1377 (Bangabda)
4. Śrīmad Bharatītīrtha Vidyaranya Munīśvara: *Vivaraṇa-prameya-saṁgrahaḥ*, Ed. by Pramathanath Tarkabhusan, Basumati Sahitya Mandir, Kolkata, 1778 (Bangabda)

Suggested Readings:

1. Annaṁbhaṭṭa. *Tarka- saṁgraha with Dīpikā*, ed. & trans. by Narayan

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Chandra Goswami, Sanskrit Pustak Bhandar, Kolkata, 1413 (Bangabda)

2. Gaṅgeśa Upādhyāya. *Tattvacintāmani (Pramā-lakṣaṇa)*, ed. & trans. by Biswabandhu Bhattacharya, Ramakrishna Mission Institute of Culture, Kolkata, 2016
3. Sen, Debabrata. *The Concept of Knowledge: Indian Theories*, K.P. Bagchi & Company, Calcutta, 1984
5. Bagchi, Yogendranath. *Prachin Nyāya O Mimāṁsā Sammata Prāmānyavāda*, Sanskrit Pustak Bhandar , Kolkata, 1967
6. Miśra, Vācaspati. *Bhāmatī*, ed. & trans. by Sri Srimohan Bhattacharya, Sanskrit Pustak Bhandar, Calcutta, 1973
7. Bhattacharya, Asutosh Shastri. *Vedāntadarśana - Advaitavāda*, Calcutta University press, Calcutta, 1368 (Bangabda)
8. Sen, Nanilal. *A Critique of the Theories of Viparyaya*, Rabindra Bharati University Press, Kolkata, 1965
9. Saha S.R. *Advaita Theories of Illusion*, Progressive Publishers, Calcutta, 1982
10. Das, Bhupendra Chandra. *The Supernormal Means of Knowing (A Navya-Nyāya Approach)*, Bharatiya Vidya Prakashan, Delhi, 2011
11. Bandyopadhyay, Rupa. *Indian Theories of Illusion*, Maha Bodhi Book Agency, Kolkata, 2020
12. Saha, Biswarup. *Advaita Vedānta Darśane Adhyāsa O Jñānatattva*, Sanskrit Pustak Bhandar, Calcutta, 2001
13. Sinha, J. N. *Indian Epistemology of Perception*, Sinha Pub., Calcutta, 1969
14. Chattopadhyay, Madhumita. *Walking Along the Path of Buddhist Epistemology*, D. K. Print World Ltd., New Delhi

Paper – <u>PHI-104</u> (Western Epistemology) Marks – 50 (40+10)

Course Outcome: This course will enable the students to appreciate the intricacies involved in the notion of knowledge and its cognates such as justification. Discussions on the definitions of knowledge and various puzzles associated with it, discussions on foundationalist and coherentist approaches to justification etc. will help the students to recognise the nuances of the various epistemic puzzles.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

1. Possibility of knowledge – Different skeptical views.
2. Nature and definition of knowledge, Gettier Problem.
3. Knowledge from testimony
4. Justification of knowledge claim – Foundationalism and Coherentism.
5. Pure and empirical cognition
6. Analytic and synthetic judgment, the possibility of synthetic *a priori* judgement.

Suggested Readings:

1. Dancy, Jonathan. *An Introduction to Contemporary Epistemology*. Vol. 27. Oxford: Blackwell, 1985.(Section1,2,4,8,9)
2. Chisholm, Roderick M., et al. *Theory of Knowledge*. Vol. 3. Englewood Cliffs, NJ: Prentice-Hall, 1989.
3. Ayer, Alfred Jules, and Sreten Marić. *The Problem of Knowledge*. Harmondsworth: Penguin books, 1956.
4. Basu, Sandhya. "Strawson and Foundationalism" in *The Philosophy of P.F. Strawson, ICPR,* 1995.
5. Smith, Norman Kemp. *Immanuel Kant's Critique of Pure Reason*. Read Books Ltd, 2011.
6. Audi, Robert. *Epistemology: A Contemporary Introduction to the Theory of Knowledge*. Routledge, 2010.
7. Matilal, Bimal Krishna and Arindam Chakrabarty. *Knowing from Words*, Springer, 1994.

Paper-<u>PHI-105</u> (Indian Classical Philosophical Texts) Marks – 50 (40+10)

Course Outcome: This Course will guide the students in every spheres of their lives through the light of Upanisadic Knowledge and Wisdom and will help the students to prepare themselves for NET/SET/other examinations for entry into services.

Any <u>*one*</u> of the following:

1. *Chāndogya Upaniṣad Bhāṣya* (Selected Portions), ed. & trans. by

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Mahamahopadhyaya Durgacharan Sankhya-Vedantatirtha, Dev Sahitya Kutir Private Limited, Kolkata, 2014

2. *Bṛhadāraṇyaka Upaniṣad* (Selected Portions), ed. & trans. by Mahamahopadhyaya Durgacharan Sankhya Vedantatirtha, Dev Sahitya Kutir Private. Limited, Kolkata, 2011
3. *Śrīmadbhagavadgītā with Śāṅkara-Bhāṣya* (Selected Portions), ed. & trans. by Swami Basudebananda, Udbodhan Karyalaya, Kolkata, 2021.
4. *Srībhāṣya* (Selected Portions), trans. by Sri Yatindra Ramanujacharyya, Sribalaram Dharmasopan, 24 Parganas, 1385 (Bangabda).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

SEMESTER-II

Paper: PHI-201 (Indian Metaphysics) Marks – 50 (40+10)

Course Outcome: After completion of the course one can find out some relative and thoughtful answer regarding the nature and substance of the entire world as well as the universe and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Theories of Causation : *Ākasmikatāvāda, Kṣaṇabhaṅgavāda, Pratītyasamutpādavāda, Ārambhavāda, Vivartavāda, Pariṇāmavāda*
2. The Concept of *Īśvara*; Proofs for and against the existence of *Īśvara*
3. Concept of *Ātman*: Cārvāka, Bauddha, Jaina, Advaita and Nyāya perspectives.
4. Concept of Mind (*Manas*): Nyāya, Vaiśeṣika, Bauddha and AdvaitaVedānta perspectives
5. Theory of space and time

Suggested Texts:

1. Maharṣi Gautama: *Nyāyadarśana-Vātsyāyanabhāṣya*, ed. & trans. by Mahamahopadhyaya Phanibhusan Tarkabagish, Paschim Banga Rajya Pustak Parshad, Kolkata, 2014
2. Prasastapada: *Padārtha-Dharma-Saṁgraha* or *Praśastapādabhāṣyam*, ed. & trans. by Dandiswami Damodaraśrama, Sanskrit Pustak Bhandar, Calcutta, 2010
3. Misra, Vacaspati: *Sāṁkhya-Tattvakaumudī*, ed. by Narayan Chandra Goswami, Sanskrit Pustak Bhandar, Kolkata, 2016
4. Dharmarajadhvarindra: *Vedānta Paribhāṣā*, ed. & trans. by Panchanan Bhattacharyya Tarka-Sankhya-Vedantatirtha, Sanskrita Pustak Bhandar, Kolkata, 1377 (Bangabda)
5. Visvanatha: *Bhāṣā-Pariccheda* with *Siddhānta-Muktāvalī*, ed by Pandit Panchanan Bhattacharyya, Maha Bodhi Book Agency, Kolkata, 2016
6. Annambhaṭṭa: *Tarkasaṁgraha with Dīpikā*, ed. & trans.by Narayan Chandra

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Goswami, Sanskrita Pustak Bhandar, Kolkata, 1413 (Bangabda)

7. Śrīmad Udayanācārya: *Nyāyakusumānjali*, Ed. & Trans. by Shri Srimohan Bhattacharyya, Paschim Banga Rajya Pustak Parshad, Kolkata, 1995

8. Śrīdhara: *Nyāyakandalī* on *Praśastapādabhāṣyam*, Ed. & Trans. by Dandiswami Damodaraśrama, Sanskrit Pustak Bhandar, Calcutta, 2010

Suggested Readings:

9. Bandyopadhyay, Kalikrishna. *Nyāyatattva Parikramā,* Pyapiras, Kolikata, 1986

10. Bhattacharya, Gopinath. 'Creation and Causality'in *Essays in Analytic Philosophy*. Sanskrit Pustak Bhandar, Kolkata, 1989

11. Chakraborty, Satyajyoti (ed.). Mādhavācārya. *Sāyana Mādhavīya Sarvvadarśana Saṁgraha*, Sahityasree, Kolkata, 2014

12. Sen, Debabrata. *Bhāratīya Darśana*, Paschim Banga Rajya Pustak Parshad, Kolkata, 2010

13. Sharma, C.D. *A Critical Survey of Indian Philosophy*, Motilal Banarsidass Publishers Private Limited, Delhi, 2009

14. Mukherjee, Satkari. *The Buddhist Theory of Universal Flux*, Calcutta University press, Calcutta, 1935

15. Murti, T.R.V. *The Central Philosophy of Buddhist Philosophy*, George Allen and Unwin Ltd. London, 1955

16. Bhattacharya, Karuna. *Nyāya-Vaiśeşika Darśana*, Paschim Banga Rajya Pustak Parshad, Kolkata, 2013

17. Mondal, Pradyot Kumar. *Vaiśeṣika Darśana*, Progressive Publishers, Calcutta, 2004

18. Samanta, Sabita. A Critical Survey of Manas in Indian Philosophy, Sanskrit Pustak Bhandar, 2012.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Paper – PHI-202 (Western Metaphysics) Marks – 50 (40 + 10)

Course Outcome: The course will help the students to have an understanding concerning various issues in metaphysics. The course will enable them to be sensitive to the historical as well as contemporary methodological aspects of doing metaphysics and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Definition, nature, and scope of Metaphysics.
2. Substance: The Aristotelian concept and its critics
3. Theories of Universal: Realism and Nominalism.
4. Theories of Causation:
5. Personal identity: Concept of Personhood, Psychological continuity approach, Physical continuity approach

Suggested Readings:

1. Hamlyn, David Walter. *Metaphysics*. Cambridge University Press, 1984.
2. Aristotle. *Metaphysics*. Cambridge, MA: Harvard University Press, 1933.
3. Taylor, Richard. *Metaphysics*, Prentice Hall, New Jersey (1963).
4. Swinburne Richard, Sydney Shoemaker. *Personal Identity*, Wiley Blackwell, 1991.
5. Loux, Michael J., and Thomas M. Crisp. *Metaphysics: A Contemporary Introduction*. Routledge, 2017.
6. Garrett, Brian. *What is this thing Called Metaphysics?* Routledge, 2007.
7. Fowler, Robert, and Robert Louis Fowler, ed. by *The Cambridge Companion to Homer*. Cambridge University Press, 2004.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Paper – PHI-203 (Modern Indian Philosophy) Marks – 50 (40 + 10)

Course Outcome: A student can understand and therefore apply the concepts, such as peace, love, non- violence in the present world which were dealt in ancient texts and this course will help the students to prepare themselves for NET/SET/other examination for entry into services

1. Swami Vivekananda: Practical Vedanta, Universal Religion, Education
2. Rabindranath Tagore: Religion of man, ideas on education, Concept of Nationalism
4. Mahatma Gandhi: Truth, Non-violence, Satyagraha, Swaraj
5. Sri Aurobindo: Evolution, Mind and Supermind, Integral Yoga
6. K.C. Bhattacharya: Swaraj in ideas, Concept of Philosophy, Freedom, Doctrine of Maya
7. Radhakrishnan: Intellect and Intuition, Idealist view of life
8. M.N. Roy: Radical Humanism, Materialism

Suggested Readings:

1. Lal, Basant Kumar. *Contemporary Indian Philosophy*. Motilal Banarsidass Publ., 1978.
2. Mahadevan, Telliyavaram and Ponnambalam Mahadevan, G. V. Saroja. *Contemporary Indian Philosophy*. Sterling 1981.
3. Naravane, Vishwanath S. *Modern Indian Thought*, Sangam Books Ltd.1979.
4. Brajendra, Nath Seal. *The Positive Sciences of the Ancient Hindus*, Matilal Banarsidass, *295PP* 1958.
5. Tagore, Rabindranath. *Sadhana: The Classic of Indian Spirituality*. Harmony, 2012.
6. Vivekananda, Swami. *Practical Vedanta*. Prabhat Prakashan, 2021.
7. Krishnamurti, Jiddu. *Freedom from the Known*. Random House, 2010.
8. Aurobindo, Sri. *The Life Divine*. Lotus Press, 1990.

Paper – PHI-204 (CBCS) (Contemporary Issues in Philosophy) Marks – 50 (40 + 10)

Course Outcome: The student will be able to prepare themselves to be more

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

humanistic for their future life and society from a philosophical angle and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

Philosophy of Love

1. General Concept and utility of Love
2. Rabindranath Tagore
3. Swami Vivekananda

Philosophy of Peace

1. General Concept of Peace, Contemporary relevance of peace
2. Buddha
3. Gandhi
4. Russell on Nuclear Disarmament
5. Perpetual Peace

Suggested Readings:

1. Radhankrishnan, S. *The Philosophy of Rabindranath Tagore* Kessinger Publishing,1918
2. Tagore, Rabindranath. *Sadhana: The Classic of Indian Spirituality*. Harmony, 2012.
3. Mukherjee, Aparna. *The Social Philosophy of Rabindranath Tagore*, Classical Publishing Company, 2004.
4. Tagore, Rabindranath. *My Life in My Words* ed. by Uma Das Gupta, Penguin Books Ltd.,2010
5. *Complete Works of Swami Vivekananda* ,vol-3, Udbodhan Karyalay, Kolkata
6. Swami Vivekananda. *Bani O Rachana*, vol-4, Udbodhan Karyalay, 2013.
7. Saddhatissa, Venerable Hammalawa. *Buddhist Ethics*, Wisdom Publications, 1997.
8. Keown, Damien. *Contemporary Buddhist Ethics*, Routledge, 2000.
9. Ikada, Daisaku. *For the Sake of Peace: Seven Paths to Global*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Harmony, A Buddhist Perspective, Middleway Press, 2002.

10. Kant, Immanuel. *To Perpetual Peace: A Philosophical Sketch*, F. Nicolovius, 1795.
11. Campbell, Smith M. Perpetual Peace (trans.): A Philosophical Essay, Swan Sonnenschein & co., 1795.
12. Gandhi, M. K. *Letters of Mahatma Gandhi,* Rupa Publications, 2019.

Paper – PHI-205 (Western Classics) Marks – 50 (40 + 10)

Course Outcome: This course will aid the students to be more familiar with some of the important philosophical issues in the western Philosophical tradition in historically as well as methodologically informed fashion. It helps them to understand and appreciate the way some of the philosophical issuesare formulated in a particular historical period under theoretical assumptions which might be different from the present time. Such an understanding will help the students to approach philosophical problems with a proper perspective while adopting contemporary philosophical techniques and this course will help the students to prepare themselves for NET/SET/other examination for entry into

Any *one* of the following:

1. Plato, *Republic*, Penguin Classics, 2007.
2. *Aristotle: Nicomachean Ethics*. Translated by David Ross, Oxford University Press, 2009
3. Descartes, René. Translated by Michael Moriarty *Meditations on first philosophy*. Oxford University Press, 2008
4. David, Hume. *Enquiry Concerning Human Understanding*. Charles River Editors, 2018.
5. Wittgenstein, Ludwig. *Tractatus Logico Philosophicus*, Routledge, 1990.
6. Kripke, Saul: *Naming and Necessity* Palgrave Macmillan; 1st ed. 2014
7. Nietzsche , Friedrich *Beyond Good and Evil,* Fingerprint Publishing, 2017
8. Heidegger, Martin: *Being and Time,* Suny Series in Contemporary Continental Philosophy, 2010.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

SEMESTER-III

Paper – PHI-301

(Philosophy of Language: Indian and Western) Marks – 50 (40 + 10)

Course Outcome: The students will understand the structure of language, the importance of sentence meaning, and also the importance of each and every word used to communicate by the language user.

1. Word – Classification of Words
2. Nature of *Śakti*, Means to *Śaktigraha*
3. Locus of *Śakti -Vyāktiśaktivāda, ākṛtiśaktivāda, jātiśaktivāda, jātyākritiviśityaśaktivāda*
4. Conditions for understanding of a sentence – *ākāṁkṣā, yogyatā, āsatti* and *tātparya*
5. Theories of sentence-meaning- *Śaktivāda, abhihitānvayavāda*, and *anvitābhidhānavāda*
6. The Linguistic turn
7. Sense and Reference, Proper names, Definite Descriptions,

   Concepts and Objects.
8. Wittgenstein: Picture Theory of Meaning (*TLP*), Language game (*PI*)
9. J. L. Austin: Speech Act Theory

Suggested Readings:

1. Viśvanātha. *Bhāṣā-Pariccheda* with *Siddhānta-Muktāvalī*, ed by Pandit Panchanan Bhattacharyya, Mahabodhi Book Agency, Kolkata, 2016
2. Shastri, Gaurinath. *A Study in Dialectics of Sphoṭa*, Motilal Banarsidass Publishers Private Limited, Delhi, 1980
3. Majumdar, P.K. :*The Philosophy of Language: An Indian Approach*, Sanskrit Pustak Bhandar, Calcutta, 1977
4. Misra, Prabhat. *Śabdārtha-Darśana-Kaṇikā*, Department of Philosophy, Vidyasagar University, Medinipur, 2013
5. Palit, Piyali. *Basic Principles of Indian Philosophy and Language*,

   Munshiram Manoharlal Publishers Pvt. Ltd., Delhi, 2004
6. Bhattacharya, Bishnupada. *Vākyapadīya*: *Brahmakānda*, Paschimbanga

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Rajya Pustak Parshad, Kolkata, 2007

7. Beaney, Michael (ed.). *The Frege Reader*, Blackwell,1997
8. Martinich, A.P. (ed.): *The Philosophy of Language*, Oxford University Press,1985
9. Frege, Gotlob. "On Sense and Reference", *Philosophical Review* 57 (3): 1948, 209-230.
10. Frege, Gotlob. "On Concept and Object", *Mind* 60 (238):168-180, 1951.
11. Wittgenstein, L. *Tractatus Logico Philosophicus*, Routledge, 1990.
12. Wittgenstein, L. *Philosophical Investigation, trans. by G.E. M Anscombe, Basil Blackwell, 1953.*
13. Searle, J. *Speech Act: An Essay in the Philosophy of Language*, Cambridge University Press, 1969.
14. Ghosh, Jhadeswar. *From Meaning Atomism to Meaning Holism*, Ciderpress, 2022

Paper – PHI-302 (Philosophy of Cognitive Science) Marks – 50 (40 + 10)

1. Foundations of Cognitive Science: the interdisciplinary nature
2. The mind as machine: the computational theory of mind
3. Cognitive anthropology: the cognitive revolution
4. Cognitive psychology: perception
5. Artificial intelligence: scope and limits of AI, robotics
6. Cognitive neuroscience: connectionism, neuroscience of morality

Suggested Readings:

1. Posner, Michael I., ed. *Foundations of Cognitive Science*. Cambridge, MA: MIT press, 1989.
2. Stillings, Neil A., et al. *Cognitive Science: An Introduction*. MIT press, 1995.
3. Ravenscroft, Ian. *Philosophy of Mind: A Beginner's Guide*. Oxford University Press, USA, 2005.
4. Harari, Yuval Noah. *Sapiens: A Brief History of Humankind*, Random House Harper, 2015.
5. Tanney, Julia. "Investigating Cultures: A Critique of Cognitive Anthropology." *Journal of the Royal Anthropological Institute,* Royal Anthropological Institute of Great Britain and Ireland, 1998: 669-688.
6. Andler, Daniel. "Brain, Mind, Man, and Society: Naturalism with a Human

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Face." In D. Andler, M. Okada & I. Watanabe (eds.), *Reasoning and Cognition*, Keio University Centre for Integrated Research on the Mind, 2006.
7. Gabbay, Dov, Paul Thagard, and John Woods. "General Preface." *Philosophy of Psychology and Cognitive Science*. North-Holland, 2007.
8. Smith, E. E., et al. "Atkinson and Hilgard's Introduction to Psychology", Belmont, CA: Wadswoth/Thomson Learning, 2003.
9. Merleau-Ponty, Maurice. *The Primacy of Perception: And Other Essays on Phenomenological Psychology, the Philosophy of Art, History, and Politics*. Northwestern University Press, 1964.
10. Lindsay, Robert K. The Science of the Mind: Owen J. Flanagan, Jr., MIT Press, Cambridge, MA, 1984
11. Dreyfus, Hubert L. *What Computers Still Can't do: A Critique of Artificial Reason*. MIT press, 1992.
12. Bartneck, Christoph, et al. *An Introduction to Ethics in Robotics and AI*. Springer Nature, 2021.
13. Yang, Guang-Zhong, et al. "The Grand Challenges of Science Robotics." *Science Robotics*, 2018.
14. Gardner, Howard. *The Mind's New Science: A History of the Cognitive*. Basic Books, 1985.
15. Kahane, Guy, and Nicholas Shackel. "Methodological Issues in the Neuroscience of Moral Judgement." *Mind & language,* 2010.
16. Levy, Neil. "Neuroethics: A New Way of Doing Ethics." *AJOB Neuroscience*, 2011.

Paper – <u>PHI-303 A</u> (Optional Paper) (Advaita Vedanta) Marks– 50 (40 + 10)

Course Outcome: A student can understand in detail the structure and meaning of the Vedanta especially the Advaita Vedanta Philosophy. As Advaita Vedanta Philosophy offers one of the foundationalist theories of classical Indian philosophy and will help the students to prepare themselves for NET/SET/other examination for entry into services

1. *Adhyāsa Bhāṣya* (*Bhāmati* Commentary)
2. *Catuḥsutri* with Śaṅkara Bhāṣya

Recommended Text:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

1. Miśra Vācaspati: *Bhāmatī*, Ed. & Trans. by Sri Srimohan Bhattacharya, Sanskrit Pustak Bhandar, Calcutta, 1973
2. Śrīśrīmanmaharṣikṛṣñadvaipāyanabādarāyaṇabhagavadvedavyāsa: *Vedāntadarśana* (vol - I), trans. by Swami Biswarupananda, Udbodhan Karyalaya, Kolkata, 2011
3. Śrī Śaṅkarācārya: *Brahma-Sūtra-Bhāsya*, trans. by Swami Gambhirananda, Advaita Ashrama, Kolkata, 2016

Course – PHI-303 B (Optional Paper) (Advanced Logic) Marks – 50 (40 + 10)

Course Outcome: A student can understand the pure logical basis of Philosophy, he can understand how philosophy involves pure mathematics through logic, he also understand how various scientific systems functions within a structured axiomatic basis, also this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

(PM System and Modal Logic)

1. The PM System: Primitive Ideas, The Syntactical Rules, Definition, The Postulates, Rules for Deduction of Theorems, Proof of Theorems, Consistency and Completeness
2. Basic Modal Notions, System K, T, S4 and S5. Three grades of Modal Involvement.

Suggested Texts/ Readings:

1. Whitehead, Alfred North, and Bertrand Russell. *Principia Mathematica* (Selected Portion) Vol. 2. Cambridge University Press, 1997.
2. Hughes, George Edward, and David G. Londey. *The Elements of Formal Logic*. Routledge, 2019.
3. Huges, G.E. and M.J. Cresswell. *An Introduction to Modal Logic*, Methuen, 1968.
4. Huges, G.E. and M.J. Cresswell. *A New Introduction to Modal Logic*,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Routledge, 1996.

5. P.F. Strawson (Ed.): *Philosophical Logic,* Oxford University Press, 1981.

Paper – PHI-304 (CBCS) (Contemporary Issues in Gender Studies)
Marks – 50 (40 + 10)

Course Outcome: After the completion of the said course a student can learn how to dismantle the existing gender discrimination in a society with a secular ideology, also this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Gender justice and transgender issues
2. Family and responsibility, Marriage and Divorce,
3. Women and cyber-crime, Human trafficking.
4. Women's Rights & Domestic Violence

Suggested Texts/ Readings:

1. Trumbach, Randolph. *Sex and the Gender Revolution, Volume 1: Heterosexuality and the Third Gender in Enlightenment London*, University of Chicago Press, 1998.
2. La Follette, Hugh, ed. *Ethics in Practice: An Anthology*. John Wiley & Sons, 2020.
3. Heidenshon, Frances. *Women and Crime*, Macmillan Publishers Ltd. 1996.
4. Coleman, Merilyn, Lawrence Ganong. *Changing Families, Changing Responsibilities, Family Obligations Following Divorce and Remarriage*, Psychology Press, 2015.
5. Almond, Brenda. *Introducing Applied Ethics*, Wiley-Blackwell, 1995.

Paper – PHI-305 A (Optional Paper) (Navya Nyāya Philosophy) Marks – 50 (40 + 10)

Course Outcome: The entire course helps a student to construct valid arguments. It helps to enhance the skill of argumentation, as any sort of philosophical debate requires argumentative discussion.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Recommended Text:

1. Vyāptipañcaka - Siddhāntalakṣaṇa
2. Nyāyakusumānjali (selected portion)

Suggested Readings:

1. Gaṅgeśopādhyāya: *Vyāptipañcaka*, Ed. & Trans. by Rajendranath Ghosh, Paschim Banga Rajya Pustak Parshad, Kolkata, 2011
2. Sailajapati Mukhopadhyay: *Siddhāntalakṣaṇa*, Paschim Banga Rajya Pustak Parshad, Kolkata, 1991
3. Gaṅgeśopādhyāya: *Vyāptipañcaka*, ed. & trans. by Dr. Sri Gangadhar Kar Nyāyācārya, Mahabodhi Book Agency, Kolkata, 2015
4. Śrīmad Udayanācārya: *Nyāyakusumānjali*, ed. & trans. by Shri Srimohan Bhattacharyya, Paschim Banga Rajya Pustak Parshad, Kolkata, 1995

Or

Paper – PHI-305 B (Optional Paper) (Vaiśeṣika Philosophy) Marks – 50 (40 + 10)

Course Outcome: The main aim of Philosophy is to acquire knowledge and to know the ultimate nature of existence, the present course helps a student to know the transcendental and actual entities of world from a particular perspective.

Recommended Text:

1. *Padartha-Dharma-Saṁgraha* (Selected Portions)

Suggested Readings:

1. Praśastapāda: *Padārtha-Dharma-Saṁgraha* or *Praśastapādabhāṣyam*, ed. & trans. by Dandiswami Damodaraśrama, Sanskrit Pustak Bhandar, Calcutta, 2010

OR

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Paper – PHI-305 C (Optional Paper) (Applied Philosophy) Marks – 50 (40 + 10)

Course Outcome: It enhances the critical thinking of the major issues of society and this coursewill help the students to prepare themselves for NET/SET/other examination for entry into services.

1. The Meaning and Basis of Equality, Racism and Equality, Affirmative Action
2. Fundamental rights in Indian constitution and its application: Responsibilities of an Indian citizen.
3. Sexuality and Gender: Violence, Trafficking, Cyber Crime
4. Law for the protection of women and child.
5. Media Ethics : Definition, Concerns, Freedom and Responsibility, Neutrality andObjectivity
6. Business Ethics, Corporate social responsibility (CSR)

Suggested Texts/ Readings:

1. Singer, Peter. *Practical Ethics*. Cambridge University Press, 2011.
2. Foa, Pamela. "What's Wrong with Rape" in *Philosophy and Sex* by Robert, B. Baker, K. J. Winninger, and F. A. Elliston (ed.), Prometheus Books, 1977.
3. Superson, Anita M. "Sexual Harassment." *Journal of Social Philosophy*, 1993.
4. May, Larry, and Robert Strikwerda. "Men in Groups: Collective Responsibility for Rape" *Hypatia, Vol.9, No.2,* Feminism and Peace 1994.
5. La Follette, Hugh, ed. *Ethics in Practice: An Anthology*. John Wiley & Sons, 2020.
6. Mappes, Thomas A., and Jane S. Zembaty. *Social Ethics: Morality and Social Policy.* McGraw Hill 2011.
7. Jacquette, Dale. *Journalistic Ethics: Moral Responsibility in the Media*. Routledge, 2016.
8. Velasquez, Manuel G. *Business Ethics: Concepts & Cases*. Pearson Educación, 2006.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

9. Almond, Brenda. *Introducing Applied Ethics*, Wiley-Blackwell,1995.
10. Coombs, Jerrold R., and Earl Raye Winkler, eds. *Applied Ethics: A Reader*. Blackwell, 1993.
11. Russell, Bertrand. *Marriage and Morals*. Routledge, 2017.
12. Sanyal, Indrani, and Ratna Dutta Sharma, eds. *Refugees, Marriage, Asuras and Varied: An Anthology on Applied Ethics*. Centre of Advanced Study in Philosophy, Jadavpur University in collaboration with Mahabodhi Book Agency, 2015.
13. MacKinnon, Barbara, and Andrew Fiala. *Ethics: Theory and Contemporary Issues*. Cengage Learning, 2014.
14. Vallor, Shannon. *Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting*. Oxford University Press, 2016.

OR

Paper – <u>PHI-305 D</u> (Optional Paper) (Philosophy of Mind) Marks – 50 (40 + 10)

Course Outcome: Philosophy of mind is one of the leading controversial area of philosophy from the last century. The course offered will definitely help the students to know the most mysterious domain of philosophy in depth. It will also help the students to know the recent trends of the area.

1. Introduction: Philosophical and Scientific investigation of the mind
2. The Mind-Body Problem

a) Dualism
b) Materialism
c) Functionalism
d) Representationalism
e) Eliminativism
f) Anomalous Monism and mental causation

Suggested Readings:

1. Rosenthal, David M., ed. *The Nature of Mind*. New York: Oxford University Press, 1991.
2. Guttenplan, Samuel, and Samuel D. Guttenplan, ed. *A Companion to the*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Philosophy of Mind. Oxford: Blackwell, 1994.

3. Chalmers, David. Philosophy of Mind, Oxford University Press, 2002.
4. Ravenscroft, Ian. *Philosophy of Mind: A Beginner's Guide*. Oxford University Press, USA, 2005.
5. Mandik, Pete. *This is Philosophy of Mind: An Introduction*. John Wiley & Sons, 2013.
6. Heil, John. *Philosophy of Mind: A Contemporary Introduction*. Routledge, 2012.
7. Shaffer, Jerome A. *Philosophy of Mind*, Prentice Hall, 1968.

OR

Paper – PHI-305 E (Optional Paper) (Philosophical Issues in Mental Illness)
Marks – 50 (40 + 10)

Course outcome: Mental health is one of the most important topics in the modern society. However, the notions of mental health, as well as mental illness, are often not very clear. This course attempts to offer a philosophical investigation into the notion of mental illness and debates surrounding this concept. This course would enable the students to understand the conceptual issues regarding the notion of mental illness. It will also help them to understand different approaches to investigate mental illness. Thus, the course is multi-prespectival in nature.

1. Historical and thematic preliminaries

2. Ancient philosophers on mental health and mental illness – Plato, Aristotle, stoics, and epicureans

3. Mental illness in *Caraka Saṁhitā*

4. Phenomenological approaches to mental illness
    a. Psychonalysis and mental illness
    b. Analysing ‘Mental’ in mental illness

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

c. Analysing 'Illness' in mental illness

d. Medical model of mental illness

e. Social construction of mental illness

f. Mental illness and power relation

Suggested Readings:

1. Ahonen, Marke. "Ancient Philosophers on Mental Illness." *History of Psychiatry* 30, no.1, 2019.

2. Seeskin, Kenneth. "Plato and the origin of mental health." *International Journal of Law and Psychiatry* 31, no. 6, 2008.

3. Murphy, Dominic. *Psychiatry in the scientific image*. MIT Press, 2012.

4. Englander, Magnus, ed. *Phenomenology and the Social Context of Psychiatry: Social Relations, Psychopathology, and Husserl's Philosophy*. Bloomsbury Publishing, 2018.

5. Boorse, Christopher, "Health as a Theoretical Concept", *Philosophy of Science*, vol. 44(issue 4), 1977.

6. Boorse, Christopher, "A Rebuttal on Health", in *What Is Disease?*, James M. Humber and Robert F. Almeder (eds.), Totowa, NJ: Humana Press, 1997.

7. Tsou, Jonathan Y. *Philosophy of Psychiatry*. Cambridge University Press, 2021.

8. Hacking, Ian, and Jan Hacking. *The Social Construction of What?* Harvard university press, 1999.

9. Foucault, Michel. *Madness and Civilization*. Routledge, 2003.

10. Szasz, Thomas S. "The Myth of Mental Illness." *American psychologist* 15, no. 2 (1960): 113.

11. Graham, George. *The Disordered Mind: An Introduction to Philosophy of Mind and Mental Illness*. Routledge, 2013.

12. Matthews, Eric. *Body-subjects and Disordered Minds: Treating the 'whole' Person in Psychiatry*. OUP, 2007.

13. Irwin, Terence. "Mental Health as Moral Virtue Some Ancient Arguments." in *Oxford Handbook of Philosophy and Psychiatry*. OUP, 2013.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

14. Haldipur, C. V. "Madness in Ancient India: Concept of Insanity in Charaka Samhita (1st century AD)." *Comprehensive Psychiatry,* Vol. 25, no. 3 1984

15. Balodhi, J. P. "Constituting the Outlines of a Philosophy of Ayurveda: Mainly on Mental Health import." *Indian Journal of Psychiatry* 29, no. 2 1987.

16. Bhugra, Dinesh. ‘‘ Psychiatry in Ancient Indian Texts: A Review” *History of Psychiatry* vol.3, no. 10, 1992.

17. Kandel, Eric R. *Psychiatry, Psychoanalysis, and the New Biology of Mind*. American Psychiatric Pub, 2008.

18. Foucault, Michel. *The Birth of the Clinic*. Routledge, 2012.

19. Misra, Pushpa. *The Scientific Status of Psychoanalysis: Evidence and Confirmation*. Routledge, 2018.

20. Cardella, Valentina, and Amelia Gangemi, eds. *Psychopathology and Philosophy of Mind: What Mental Disorders Can Tell Us about Our Minds*? Routledge, 2021.

21. Thornton, Tim. *Mental Illness*: *Elements in Philosophy of Mind*, Cambridge University Press, 2022.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

SEMESTER-IV

Paper – PHI-401 (Ethics: Indian and Western) Marks – 50 (40 + 10)

Course Outcome: Students will be able to apply ethical sense in day to day life, also this coursewill help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Special Feature of Indian Ethics: *Karmavāda*, Classification of *Dharma-Sādhāraṇa dharma* and *Viśeṣa dharma*, *Vidhi* and *Niṣedha*.
2. Ethics of Niṣkāma karma: From 2nd and 3rd chapters of the Bhagavad Gitā
3. Sociocentric Hindu Morality: Duties according to Varṇa and āśrama
4. Basic concept of Western Ethics: Ethics and Morality
5. Metaethics : Cognitivism : Naturalism of Moore ; Noncognitivism: Emotivism ofStevenson, Prescriptivism of Hare.
6. Normative Ethics: Kantian Ethics, Mill's Utilitarianism, Rawl's Theory of Justice

Suggested Texts/ Readings:

1. Jhingran, Saral. *Aspects of Hindu Morality*. Motilal Banarsidass,1989.
2. Basu, Charuchandra. *Dhammapada*. Metcalfe Printing Works Kolkatta, 1323(bangabda).
3. Brahmachari, Silananda. *The Eternal Message of Lord Buddha: A Study of Dhammapada*, Mahabodhi Book Agency 2011.
4. Maitra, Susil Kumar. *The Ethics of the Hindus*, Calcutta University Press, 1925.
5. Sharif, Miyad Muhammad. *A History of Muslim Philosophy*, Otto Harrassowitz Wiesbaden 1963.
6. Feldman, Fred. *Introductory Ethics*, Prentice Hall, 1978.
7. Beauchamp, Tom L. *Philosophical Ethics: An Introduction to Moral Philosophy*, McGraw-Hill, 2000.
8. Cohen, Marshall, ed. *Marx, Justice and History: A Philosophy and Public Affairs Reader*, Vol. 847, Princeton University Press, 2014.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

9. Stevenson, Ch L. *Facts and Values: Studies in Ethical Analysis*, Greenwood Press, 1963.
10. Stevenson, Charles L. *Ethics and Language,* Ams Pr Inc, 1944.
11. Ayer, Alfred Jules. *Language, Truth, and Logic*. Vol. 10. Courier Corporation, 1952.
12. Smart, John Jamieson Carswell, and Bernard Williams. *Utilitarianism: For and Against*. Cambridge University Press, 1973.
13. Sen, Amartya ed. *Utilitarianism and Beyond*. Cambridge University Press, 1982.
14. Philippa, Foot. "Virtues and Vices." *Virtues and Vices and Other Essays in Moral Philosophy*, OUP, 1978
15. Kant, Immanuel. *Groundwork of the Metaphysic of Morals in Focus*. Routledge, 2020.
16. Rawls, John. *A Theory of Justice*, Routledge, Harvard University Press, 1971.
17. Hare, Richard Mervyn, et al. *Moral Thinking: Its Levels, Method, and Point*. Oxford: Clarendon Press; New York: Oxford University Press, 1981.
18. Crisp, Roger, and Michael A. Slote, eds. *Virtue Ethics*. Oxford University Press, 1997.
19. Bandyopadhyay, Tirthanath. "Kant's Principle of Universalizability: Its Nature and Implications."in *Jadavpur Journal of Philosophy,* 2009.
20. Heidegger, Martin. *Being and Time*. Suny Press, 2010.

Paper – <u>PHI-402</u> (Project Writing) Marks – 50 (25 for Project writing + 25 for Viva-voce)

Students will be equally distributed among the faculty members for supervision of project writing and asked to submit a project report on a selected topic within stipulated time for evaluation.

Paper – <u>PHI-403 A</u> (Optional Paper) (Advaita Vedanta) Marks– 50 (40 + 10)

Course Outcome: A student can understand in detail the structure and meaning of the Vedanta especially the Advaita Vedanta Philosophy. As Advaita Vedanta Philosophy offers one of the foundationalist theory of classical Indian philosophy, this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Recommended Text:

Vedānta Paribhāṣā of Dharmarajādhvarīndra:

1. *Pratyakṣa Pariccheda- Pramalakṣaṇa to savikalpaka pratyaksa.*
2. *Viṣaya- Pariccheda* –-Up to theory of world creation
3. *Vedāntadarśana – Tarkapāda* (Sūtra - II.ii.01 to II.ii.10).

Suggested Texts/ Readings:

1. Dharmarajādhvarīndra: *Vedānta Paribhāṣā*, ed. & trans. by Panchanan Bhattacharyya Tarka-Sankhya-Vedantatirtha, Sanskrita Pustak Bhandar, Kolkata, 1377 (Bangabda).
2. Śrīśrīmanmaharṣikṛṣñadvaipāyanabādarāyaṇabhagavadvedavyāsa: *Vedāntadarśana* (vol. II), trans. by Swami Biswarupananda, Udbodhan Karyalaya, Kolkata, 2012.

OR

Paper – PHI-403 B (Optional Paper) (Advanced Logic) Marks – 50 (40 + 10)

Course Outcome: Students will develop a sense of logical language and to use various methods of logic and this course will help the students to prepare themselves for NET/SET/other examinationfor entry into services.

(Advanced Formal Logic, Set Theory and PhilosophicalLogic)

1. Logic of Relation: I.M.Copi – *Symbolic Logic* (5th Edition – Chapter – 5.1, 5.2, 5.3and 5.4 only)

OR

Set Theory: Operations, Relations and Functions from Patrick Suppees, An Introduction to Logic. (Chapter 10, and11)

2. Language of Philosophy of Logic: Proposition, Logic and Ordinary language, Meaning and Reference, Many Valued Logic

OR

Problem of Induction, Hypothesis, Evidence, Patterns of Scientific Explanations / Philosophical Logic: i) P.K.Sen: "Variables and Quantification", ii) C.J. Lajewski: 'Existence and Logic", iii) A.N.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Prior: “The Run about Inference Ticket”.

Suggested Texts/ Readings:

1. Dummett, Michael. *Frege: Philosophy of Language*. Harvard University Press, 1981.
2. Haack, Susan. *Philosophy of Logics*. Cambridge University Press, 1978.
3. Hunter, Geoffrey. "Truth-functional Propositional Logic." *Metalogic*. Palgrave Macmillan, London, 1971. 43-134.
4. Sen, Pranab Kumar. *Logic, Induction, and Ontology: Essays in Philosophical Analysis,* MacMillan, 1980.
5. Lejewski, Czesław. "Logic and Existence." in *The British Journal for the Philosophy of Science* , 1954.
6. Suppes, Patrick. *Introduction to Logic*. Courier Corporation, 1999.

Paper – PHI-404 (Continental Philosophy) Marks – 50(40 + 10)

Course Outcome: The course will help the students to have familiarity with the phenomenal method to be applied in various subjects and also to understand the real essence of existence and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Definition of Phenomenology, Development of Husserl’s Thought, The Natural WorldThesis, Reduction, Intentionality of Consciousness, The Life-world.
2. Special features of Existentialism, The Nature of Being (Sartre and Heidegger), Freedom, Existential Humanism
3. Nature and features of Hermeneutic method of Philosophy.

Suggested Readings:

1. Spiegelberg, Herbert. *The Phenomenological Movement: A Historical Introduction,* Kluwer Academic Publishers, 1994.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

2. Bhadra, Mrinal Kanti. *A Critical Survey of Phenomenology and Existentialism*. Indian Council of Philosophical Research, 1990.

3. Solomon, Robert C. *From Rationalism to Existentialism: The Existentialists and Their Nineteenth-Century Backgrounds*. Rowman & Littlefield, 2001.

4. Roy, Krishna. *Hermeneutics: East and West*. Allied Publishers in collaboration with Jadavpur University, 1993.

5. Heidegger, Martin. *Being and Time*. Suny Press, 2010.

Paper – PHI-405 A (Optional Paper) (Navya Nyāya Philosophy) Marks – 50 (40 + 10)

Course Outcome: The entire course helps a student to construct valid arguments. It helps to enhance the skill of argumentation, as any sort of philosophical debate requires argumentative discussion.

Recommended Text:

3. *Vyāptipañcaka - Siddhāntalakṣaṇa*
4. *Nyāyakusumāñjali* (select portion)

Suggested Readings:

1. Gaṅgeśopādhyāya: *Vyāptipañcaka*, ed. & trans. by Rajendranath Ghosh, Paschim Banga Rajya Pustak Parshad, Kolkata, 2011.

2. Sailajapati Mukhopadhyay: *Siddhāntalakṣaṇa*, Paschim Banga Rajya Pustak Parshad, Kolkata, 1991.

3. Gaṅgeśopādhyāya: *Vyāptipañcaka*, ed. & trans. by Gangadhar Kar Nyāyācārya, Jadavpur University Publication, Kolkata, 2015.

4. Śrīmad Udayanācārya: *Nyāyakusumānjali*, ed. & trans. by Srimohan Bhattacharyya, Paschim Banga Rajya Pustak Parshad, Kolkata, 1995.

OR

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Paper – PHI-405 B (Optional Paper) (Vaiśeṣika Philosophy) Marks – 50 (40 + 10)

Course Outcome: As the main aim of Philosophy is to acquire knowledge and to know the ultimate nature of existence, the present course helps a student to know the transcendental and actual entities of world from a particular perspective.

1. *Padārtha-Dharma-Saṁgraha* (Selected Portions)

Suggested Readings:

1. Prasastapāda: *Padārtha-Dharma-Saṁgraha* or *Praśastapādabhāṣyam*, ed. & trans. by Dandiswami Damodaraśrama, Sanskrit Pustak Bhandar, Calcutta, 2010

Or

Paper – PHI-405 C (Optional Paper) (Applied Philosophy) Marks – 50 (40 + 10)

Course Outcome: It enhances the critical thinking of the major issues of society and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Environmental Ethics: Current Issues and Problems, Climate Ethics, Future Generation, Man-Animal Conflict
2. Bio-ethics: Ethics and Bio-politics, Genetic Engineering, Clinical Research Ethics, Organ Transplantations, Physician-patient relationship

Suggested Readings:

1. Singer, Peter. *Practical Ethics* (3rd Edn.) Cambridge University Press, 2011.
2. Attfield, Robin, ed. *The Ethics of the Environment*. Routledge, 2017.
3. Kuhse, Helga, Udo Sch, and Peter Singer, eds. *Bioethics: An Anthology*. John Wiley & Sons, 2015.
4. Gardiner, Stephen M. and David A. Weisbach. *Debating Climate Ethics*. Oxford University Press, 2016.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

5. LaFollette, Hugh, ed. *Ethics in Practice: An Anthology*. John Wiley & Sons, 2020.

6. Singer, Peter (ed.). *Applied Ethics,* Oxford University Press, USA, 1986.

7. Singer, Peter. *One World: Ethics of Globalisation (2nd Edn.)* Orient Blackswan, 2004.

8. Almond, Brenda. *Introducing Applied Ethics*, Wiley-Blackwell, 1995.

9. Stock, Gregory, and John Campbell (eds). *Engineering the Human Germline: An Exploration of the Science and Ethics of Altering the Genes We Pass to Our Children*. Oxford University Press, 2000.

10. Jecker, Nancy S., et al. *Bioethics*. Jones & Bartlett Publishers, 2011.

11. Paola, Frederick, Robert Walker, and Lois Nixon, eds. *Medical Ethics and Humanities*. Jones & Bartlett Learning, 2010.

12. Chadwick, Ruth. Encyclopedia of Applied Ethics, Academic Press, 1997.

13. Kuhse, Helga, Udo Schüklenk, and Peter Singer, eds. *Bioethics: An Anthology*. John Wiley & Sons, 2015.

Or

Paper – <u>PHI-405 D</u> (Optional Paper) (Philosophy of Mind) Marks – 50 (40 + 10)

Course Outcome: Philosophy of mind is one of the leading controversial area of philosophy from the last century. The course offered will definitely help the students to know the most mysterious domain of philosophy in depth. It will also help the students to know the recent trends of the area.

1. Consciousness:

a) Concepts of consciousness

b) Time and consciousness

c) Consciousness: The Knowledge Argument

d) Is consciousness physical? (Reductionism)

e) The problem of other mind

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

f) Extended mind

2. Folk psychology

Reference books:

1. Blackmore, Susan, and Emily T. Troscianko. *Consciousness: An Introduction*. Routledge, 2018.
2. Davies, Martin Ed, and Glyn W. Humphreys. *Consciousness: Psychological and Philosophical Essays*. Blackwell Publishing, 1993.
3. Block, Ned, Owen Flanagan, and Guven Guzeldere, eds. *The Nature of Consciousness: Philosophical Debates*. MIT press, 1997.
4. Chalmers, David J. *The Conscious Mind: In Search of a Fundamental Theory*. Oxford Paperbacks, 1996.
5. Miller, Steven M. *The Constitution of Phenomenal Consciousness,* John Benjamins Publishing Co., 2015.
6. Carruthers, Peter. *The Nature of the Mind: An Introduction*. Routledge, 2004.
7. Clark, Andy, and David Chalmers. "The Extended Mind." *Analysis*, 1998.
8. Christensen, Scott M., and Dale R. Turner. *Folk Psychology and the Philosophy of Mind*. Psychology Press, 2013.
9. Zahavi, Dan. "Time and Consciousness in the Bernau Manuscripts." *Husserl Studies*, 2004.
10. Tye, Michael. *Ten Problems of Consciousness.* MIT Press, 1997.

OR

Paper – <u>PHI-405 E</u> (Optional Paper) (Philosophical issues in Mental Illness)
Marks – 50 (40 + 10)

Course outcome: Psychiatry is perhaps the dominant approach employed in mitigating mental illness. However, its status as a science is quite controversial due to a variety of reasons. This course helps the students to understand several conceptual as well as methodological issues in psychiatry. This includes the conceptual and methodological issues involved in the classification of the illnesses, the nature of explanation, and the role of values in psychiatry. It also equips the students to understand and to be sensitive to the moral and legal issues regarding mental illness

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

and psychiatry. Thus, this course enables the students to have an understanding regarding the epistemological, ethical, and legal issues involved in the mitigation of the mental illness via psychiatry.

a) Natural kinds in psychiatry

b) Philosophical issues regarding classification of mental illness – DSM, RDoC

c) Explanation in Psychiatry – Causal explanation, Statistical network model of explanation, Evolutionary explanation

d) Cross cultural issues in understanding mental illness

e) Psychiatry as a value laden science

f) Mental illness – Autonomy, Agency, and Moral responsibility

g) Virtue ethics and ethics of care in psychiatry

h) Ethical issues in the practice of psychiatry – Confidentiality and Privacy, Consent, Medical responsibility

i) Legal issues related to mental illness

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

Suggested Texts/ References:

1. Murphy, Dominic. *Psychiatry in the Scientific Image*. MIT Press, 2012.
2. Tsou, Jonathan Y. *Philosophy of Psychiatry*. Cambridge University Press, 2021.
3. Yilmaz, A. Tarik, Mitchell G. Weiss, and Anita Riecher-Rössler, eds. *Cultural Psychiatry: Euro-international Perspectives*. Vol. 169. Karger Medical and Scientific Publishers, 2001.
4. Graham, George. *The Disordered Mind: An Introduction to Philosophy of Mind and Mental Illness*. Routledge, 2013.
5. Bolton, Derek, and Jonathan Hill. *Mind, Meaning, and Mental Disorder: The Nature of Causal Explanation in Psychology and Psychiatry*. Oxford University Press, 1996.
6. Cooper, Rachel. *Psychiatry and Philosophy of Science*. Routledge, 2014.
7. Dyer, Allen R. *Ethics and psychiatry: Toward Professional Definition*. American Psychiatric Association, 1988.
8. Robertson, Michael, and Garry Walter. "Overview of Psychiatric Ethics II: Virtue Ethics and the Ethics of Care." *Australasian Psychiatry* 15, no. 3 (2007): 207-211.
9. Brody, Baruch A., and H. Tristram Engelhardt Jr, eds. *Mental Illness: Law and Public Policy*. Vol. 5. Springer Science & Business Media, 2012.
10. Callard, Felicity, Norman Sartorius, Julio Arboleda-Flórez, Peter Bartlett, Hanfried Helmchen, Heather Stuart, Jose Taborda, and Graham Thornicroft. *Mental Illness, Discrimination and the Law: Fighting for Social Justice*. John Wiley & Sons, 2012.
11. Kok, Lee Peng, Molly Cheang, and Kuan Tsee Chee. *Mental Disorders and the Law*. NUS Press, 1994.
12. Rose, Nikolas. *Our Psychiatric Future*. John Wiley & Sons, 2018.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:49:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Philosophy_2022_23.pdf

VIDYASAGAR UNIVERSITY
MIDNAPORE-721102

The SYLLABUS for
POST- GRADUATE Courses
in

PHILOSOPHY

Under Choice Based Credit System (CBCS)
(Semester Programme)

[w. e. f. 2018-19 session]

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

ABOUT THE PROGRAMME

The entire course for the P.G. syllabus in Philosophy will be taught in two years and four Semesters. Each Semester will carry 250 marks. Total marks to be covered in four Semesters Will be 4 × 250 = 1000 marks.18 courses from home department and 2 courses from other Department/discipline.

14 Core Courses, 4 optional courses and 2 CBCS courses will be taught. 5 courses (250 marks in Total) will be taught in each Semester. For each course 50 marks (40 for written test and 10 for Internal Assessment) will be allotted.

Questions for the written test (40 Marks) will be set accordingly.

5 courses of Semester-I and 4 courses of Semester-II, and 2 courses of Semester-III and 3 courses of

Semester –IV will be allotted for core area. 1 course of Semester II, 2 courses of Semester-III and 2 courses of Semester

IV will be allotted for optional area. One course in Second Semester and one course in Third Semester (50+50) will be taught as elective courses following CBCS.

At present only 4 optional courses will be offered –

AdvaitaVedānta (ADV), Advanced Logic (ADL),

Applied Philosophy (AP) and Philosophy of Cognitive Science (PCS). There will be Restriction in opting these courses.

A student shall have to opt 2 courses of AdvaitaVedānta (Mark 50 + 50) or 2 courses of Advanced Logic (Marks 50 + 50) and 2 courses of Applied Philosophy (Mark 50 + 50) or 2 Courses of Philosophy of Cognitive Science (Marks 50 + 50)

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

PROGRAMME OUTCOME:

The entire programme has been designed in such a way so that a Philosophy Post-graduate student can easily compare between Eastern (especially Indian) and Western thinking from its ancient period to the modern era. It is criticized by many thinkers that philosophical questions are too much generalized, often abstract and provide no simple daily-life example. To answer this sort of criticism it can be said that the programme contains Applied philosophy and Philosophy of Cognitive Science to extend philosophical understanding of a student in daily life-problems and to relate Philosophy with pure science. As a result, after completion of the programme a student generally gets the sense of philosophizing, he can go to the root of any problem. He can research in any field of social science as well as in some field of applied science and theoretical mathematics also. A Philosophy Post-graduate student can very well understand the structure of any argument dealt in day-to-day life, as Indian, Western, Logic, Applied, Cognitive, each of the course use reasoning and logical evaluation as their main instrument. Only a Philosophy student can relate the entire world of existence to his own self. He can understand that each and every sort of problem related to his social life is due to the ambiguous structure of language. He can understand that the meaning, relation and use of each words and sentences within a specific language structure are necessary to solve the last said problem. Also this programme can mould the attitude of the students towards life in accordance with value, ethics and morality.

The entire programme is designed in accordance with the syllabi of NET and SET examinations and the present demand of the Society, so that a qualified student can get his desired job in various higher academic institutions. A philosophy Post-graduate student can gain the ability to change the society from its unstable condition to stability, from value-neutrality to value based, from materialism to value oriented materialism.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Short Structure of the Revised Syllabus

Name of the Course	Subject	Total Number	Teaching Hour	Credit point	Remarks/ Course Objective
	Indian PHI-101Logic	50 (40+10)	50	6	The aim of the course is to develop reasoning capacity of the students in a structured way.
PHI-102	Western Logic	50 (40+10)	50	6	The course will offer a deep knowledge on the development of Quantification Logic along with a sense of TruthTree
PHI-103	Indian Epistemology	50 (40+10)	50	6	The course helps to understand differentsources of knowledge within the Indian Tradition
PHI-104	Western Epistemology	50 (40+10)	50	6	The aim of this course is to introduce various philosophical issues related to knowledge and other epistemic terms. Apart from the concept of knowledge, the course will also grapple epistemic terms such as justification, issues of internalism and externalismetc.
PHI-105	Indian Classic	50 (40+10)	50	6	The objective of the course is to offer a deep knowledge in Indian Philosophical Tradition.
PHI-201	Indian Metaphysics	50 (40+10)	50	6	The aim of thecourseis to create inquisitiveness to search and discover the actual nature of oneself as well as the other

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

PHI-202	Western Metaphysics	50 (40+10)	50	6	The aim of this course is to introduce some of the important discussions in the field of western metaphysics such as the philosophical issues concerning causation, the relationship between mind and body, the issue of personal identity and the idea of person so on.
PHI-203	Modern Indian Philosophy	50 (40+10)	50	6	The aim the course is offer a deep knowledge on the philosophy of Modern IndianThinkers.
PHI-204	CBCS	50 (40+10)	50	4	Philosophy of Love and Philosophy of Peace will be discussed in thiscourse.
PHI-205	Western Classic	50 (40+10)	50	6	One of the Western Classic books will be taught from the selected list to offer a deep knowledge on the subject.
PHI-301	Indian Philosophy of Language	50 (40+10)	50	6	Sabdārthatatta of Nyāya Philosophy will be discussed in this course.
PHI-302	Western Philosophy of Language	50 (40+10)	50	6	The aim of the course is to provide an understanding of the philosophy of language of Frege, Russell, Wittgenstein, Austin, Searle etc. The course will offer an understanding about issues such as 'meaning', 'reference', 'speech acts'etc.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

PHI-303	Advanced Logic (optional)	50 (40+10)	50	6	To create deep knowledge in Advanced Logic i.e. some special areas of Modern Symbolic logic to make the reasoning process more systematic and consistent.
PHI-303	AdvaitaVedanta (optional)	50 (40+10)	50	6	The course aims to teach the student the significant logical structure of Advaita Philosophy by which they establish how each and every piece of object of this entire world follows from only one substance. Also this course helps to lead our life according to Vedāntic path
PHI-304	CBCS	50 (40+10)	50	4	Philosophy of Secular Philosophers and Gender Treatment in our Society focusing on Third Gender will be discussed.
PHI-305	Applied Philosophy (optional)	50 (40+10)	50	6	The course will offer some special debate relating to bio-ethics, business-ethics, equality, death penalty etc.
PHI-305	Philosophy of Cognitive Science (Optional)	50 (40+10)	50	6	PCS will offer a philosophical analysis on artificial language and Neuro- philosophy
PHI-401	Indian Ethics	50 (40+10)	50	6	The objective of the course is to teach the students the main ethical bares of classical India. It also relates traditional ethics with modern Indian perspectives.
PHI-402	Western Ethics	50 (40+10)	50	6	The objective of the course is to teach the students the main ethical tenets of western tradition. It also shows the

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

					modern counterparts of traditional ethics.
PHI-403	Advanced Logic (optional)	50 (40+10)	50	6	To create deep knowledge in Advanced Logic i.e. some special areas of Modern Symbolic logic to make the reasoning process more systematic.
PHI-403	Advaita Vedanta (optional)	50 (40+10)	50	6	The course aims to teach the student the significant logical structure of Advaita Philosophy by which they establish how each and every piece of object of this entire world follows from only one substance. Also this course helps to lead our life according to Vedāntic path.
PHI-404	Continental Philosophy	50 (40+10)	50	6	The Course will offer deep knowledge on Husserl's Phenomenology and Existential Philosophy.
PHI-405	Applied Philosophy (optional)	50 (40+10)	50	6	The course will offer some special debate relating to bio-ethics, business-ethics, equality, death penalty etc.
PHI-405	Philosophy of Cognitive Science (Optional)	50 (40+10)	50	6	PCS will offer a philosophical analysis on artificial language and Neuro- philosophy

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Teachers may introduce new texts or references subject to the approval of B.O.S

SEMESTER-I

Paper: PHI-101 (Indian Logic) Marks – 50 (40+10)

Course Outcome: Qualified students can easily differentiate valid knowledge from invalid ones on the basis of their learned reasoning capacity and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Definition and Process of Anumāna: Nyāya, BauddhaandAdvaitaPerspectives
2. Role of Parāmarśainanumana : The Mimāṁsā – Nyāyadebate
3. Induction in Indian Logic: Role of Pratyaksa in anumāna, Vyābhicārāgraha, Upādhi4andUpādhinirāśa, tarka, sāmānyalakṣaṇa and Jnanalaksanapratyakṣa in Vyāṗtigrahopāya.
4. Definition of Vyāṗti (Siddhāntalakṣaṇa of Siddhānta-Muktāvalī, uptorupatvavyāpyajātimattvānprithivī̃tvāt with reference to AdvāitaVedānta and Bauddha Theories of Vyāpti.
5. Pakṣāta
6. Characteristics of Saddhetu and five types of Hetvābhāsa : Nyāya perspective

Suggested Texts/ Readings:

1. KeśavaMiśra:Tarka-Bhāṣā
2. Viśvanātha :Bhāṣā-Paricceda –Siddhānta-Muktāvalī̃
3. Dharmakī̃rti: Nyayābindu withDharmottaratīkā
4. Annaṁbhaṭṭa: Tarka-saṁgraha with Dīpikā(ed. And trans. by Narayan Chandra Goswami)
5. Gautam, Nyayadarsana-Vātsāyanabhasya: (ed. And trans.by PhanibhusanTarkabagish)
6. Dharmarajādhvarī̃ndra: AnumānaParicchedah: Vedānta-Paribhāṣā, Ed. By Panchanan Shastri
7. Bhupendra Chandra Das: The Supernormal Means of Knowing (A NavyaNyāya Approach)
8. S. K. Maitra: Fundamental Questions of Indian Metaphysics and Logic
9. DebabrataSen:Bhāratī̃yaDarśan
10. RaghunathGhosh: The Justification of Inference

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Paper – PHI-102 (Western Logic) Marks – 50 (40+10)

Course Outcome: As the course enhances the reasoning power of the students, one can select the better chance among the present scopes after completion of the course and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. The Method of Conditional Proof, Indirect Proof.
2. Multiply General Proportions, Symbolisation, Revised Quantification Rules, Proving Validity and Invalidity, Logical Truth involving quantifiers.
3. Truth tree and its applications

Suggested Texts/ Readings:

1. I. M. Copi – Symbolic Logic (5th Ed.). Chapters 3 and 4. Prentice Hall of India –1998.
2. R. Jeffrey – Formal Logic: Its Scope and Limits (1st Ed.) Tata McGraw Hill –1967

Paper – PHI-103 (Indian Epistemology) Marks – 50 (40+10)

Course Outcome: After completion of the said course a student can analyse human capacity of reasoning within the classical framework of Indian tradition and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Definition and Types of pramāandapramā: Nyāya , Bauddha andAdvaitaVedānta Theories
2. Nyāya Perception, Definition, Process and Types, Bauddhadefinion of Perception,Advaita Vedanta definition of Perception
3. Svaprakāśatva and Paraprakśāsatvaofknowledge:Mimāṁsā and Nyāya view
4. The debate about the ascertainment (jñapti) of validity:Mimāṁsāand Advaita Perspectives
5. Theories about erroneous perception (Khyātivāda) :ātmakhyāti, satkhyāti,asatkhyāti,akhyāti,anyathākhyāti, viparītakhyāti, anirvracanīyakhyāti.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Suggested Texts/ Readings:

1. Annaṁbhaṭṭa: Tarka-saṁgraha with Dîpikā (ed. And trans. by NarayanChandra Goswami)
2. Viśvanātha :Bhāṣā-Pariccheda–Siddhānta- Muktāvalĩ (ed. byPancananShastri)
3. Dharmakĩrti:Nyāyabindu withDharmottaratīkā
4. Bhupendra Chandra Das: The Supernormal Means of Knowing (A NavyaNyaya Approach)
5. Biswabandhu Bhattacharya:Pramā-lakṣaṇa
6. Dharmarājādhvarīndra :Vedānta- Paribhāṣā (ed. byPancananShastri)
7. DebabrataSen: The Concept ofKnowledge
8. YogendranathBagchi :PrachinNyāya O MimāṁsāSammataPrāmānyavāda
9. Vivaranaprameya-samgraha: Vidyaranya Muni (ed. byPramathanathTarkabhusan)
10. SrimohanTarkatĩrtha:Bhāmatī
11. AsutoshShastri :Vedāntadarshan -Advaitavāda
12. NanilalSen:A Critique of the theories ofViparyaya
13. S.R. Saha: Indian Theories ofIllusion
14. RupaBandyopadhyay: Indian Theories of Illusion
15. BiswarupSaha :AdvaitaVedāntaDarśaneAdhyāsa OJñānatattva
16. J.N. Sinha: Indian Epistemology ofPerception
17. LopamudraChoudhury:Darshaner Abhidhana
18. MadhumitaChattopadhyay: Buddhist Epistemology: Walking Along the Path of Buddhism

Paper – PHI-104 (Western Epistemology) Marks – 50 (40+10)

Course Outcome: This course will enable the students to appreciate the intricacies involved in the notion of knowledge and its cognates such as justification. Discussions on the definitions of knowledge and various puzzles associated with it, discussions on foundationalist and coherentistapproaches to justification etc. will help the students to recognise the nuances of the various epistemic puzzles and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Nature and definition of Knowledge, Gettier Problem.
2. Possibility of Knowledge – Different skepticalviews.
3. Justification Knowledge claims – Foundationalism and Coherentism.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

4. The difference between pure and empirical cognition, the difference between analytic and synthetic judgement, the possibility of synthetic a priori judgement.

Suggested Readings:

1. J. Dancy: Introduction to Contemporary Epistemology, Blackwell (Section1,2,4,8,9)
2. R.M.Chisholm: Theory of Knowledge, (3rd ed.) PrenticeHall
3. A.J.Ayer: The problem of Knowledge, PenguinBooks
4. B. Russell: Problems ofPhilosophy
5. SandhyaBasu: Justification: Concepts andTheories
6. Critique of Pure Reason Kant : (trans. By N.K.Smith)

Paper-PHI-105 (Indian Classics) Marks – 50 (40+10) Classes 50

Course Outcome: This Course will guide the students in every spheres of their lives through the light of Upanisadic Knowledge and Wisdom and will help the students to prepare themselves for NET/SET/other examinations for entry into services.

1. ChhandogyoUponishadBhashya (ed. by Sri MohanTarkatirtha)
2. Padarthatattvasamgraha with Prasastapadabhasya (ed. bySampurnanandaji)
3. Samkhya-tattva-kaumudi (ed. by Narayan ChandraGoswami)
4. Arthasamgraha of LogakshiBhaskara (ed. byGajendraGadkar)
5. Nyayakusumanjali (ed. by Sri MohanTarkatirtha)
6. Sribhashya (ed. by JatindraRamanujaDas)

SEMESTER-II

Paper: PHI-201 (Indian Metaphysics) Marks – 50 (40+10)

Course Outcome: After completion of the course one can find out some relative and thoughtful answer regarding the nature and substance of the entire world as well as the universe and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Causation:Ākasmikatāvāda, Svabhāvavāda, Anekāntavāda, Kṣaṇabhaṅgavāda, Asatkaryavāda or Ārambhavāda, Satkāryavāda,Visistadvaitavāda,Vivartavāda

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

2. The Concept of Isvara (God): Proofs in favour of and against the existence of Isvara
3. Self (Atman): The debate about the theory of self-Cārvāka,Bauddha, Advaita andNyāya Perspectives.
4. Concept of Mind (manas): in the Nyāya - Vaiśeṣika, BauddhaandAdvaitaVedānta system
5. Theory of Space and Time in Indian Tradition.
6. Universal (Sāmānya): The debate between the Nyāya and theBauddha

Recommended Texts / References

1. Gopinath Bhattacharya: Creation and Causality, Essays in AnalyticPhilosophy.
2. Mādhavāchārya:Sarvadarśanasaṁgraha
3. DebabrataSen:BhāratiyaDarshan
4. C.D. Sharma:A Critical Survey of IndianPhilosophy
5. SatkariMukherjee: The Buddhist Theory of UniversalFlux
6. T.R.V. Murti:The Central Questions of BuddhistPhilosophy
7. Samkara:Srimadbhagavadgita-Bhashya-Upodghata
8. Viśvanāth :Bhāṣāpariccheda -Siddhāntamuktāvalī̃
9. Annaṁbhaṭṭa:Tarkasaṁgraha-Dī̃pika
10. Karuna Bhattacharya:Nyāya-VaiśeṣikaDarśan
11. Pradyot Kumar Mondal:VaiśeṣikaDarśan
12. Vātsāyana :Nyāya-Bhāṣya ofNyayasūtra
13. Udayanacharya:Nyaya-Kusumanjali.
14. Sridhara :NyāyakandalīwithPrasastapadabhashya
15. Shyamapada Mishra (Ed.):PraśastapādaBhāṣya
16. Bhupendra Chandra Das :The Supernormal Means of Knowing (ANavyaNyāya Approach)
17. Prasastapada:Padartha-dharma-samgraha
18. KalikrishnaBandyopadhyay:NyāyatattvaParikramā
19. Vācaspati:Sāṁkhya-Tattvakaumudi
20. Dharmarājādhvarīndra:Vedānta-Paribhāṣā

Suggested Readings:

SrilekhaDutta: Ontology of Negation

Paper – PHI-202 (Western Metaphysics) Marks – 50 (40 + 10)

Course Outcome: The course will help the students to have an understanding concerning various issues in metaphysics. The course will enable them to be sensitive to the historical as well as contemporary methodological aspects of doing metaphysics and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Concepts of Metaphysics – its types and possibilities
2. Substance – The Aristotelian conception, universal and particular, Realism and Nominalism.
3. Theories of Causation / Theories of Mind-Body Problem

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

4. Persistence of Person: Concept of Personhood, Psychological Continuity approach, Physical continuityapproach

Suggested Readings:

1. D.W.Hamlyn: Metaphysics, Cambridge University Press,1984.
2. Aristotle: Metaphysics, BookZeta
3. R. Taylor:Metaphysics
4. F.H.Bradley: Appearance and Reality
5. R. Swinburne: Personal Identity: The Dualist Theory
6. B. Williams: The Problem of Self
7. Shoemaker and Swinburne: Personal Identity

Paper – PHI-203 (Modern Indian Philosophy) Marks – 50 (40 + 10)

Course Outcome: A student can understand and therefore apply the concepts, such as peace, love, non-violence in the present world which were dealt in ancient texts and this course will help the students to prepare themselves for NET/SET/other examination for entry into services

1. Swami Vivekananda: Practical Vedanta, Universal Religion,Education

And/or

Brajendranath Seal:The Scientific thoughts of the Ancient Hindus

2. RabindranathTagore: General Philosophical Standpoint - Reality and God - Doctrine of Nature of Man: Finiteaspect and infinite aspect –Religion of Man - Ways of self-realization– Humanism, Ideas ofEducation

And / Or

J.Krishnamurty: Freedom from the Known, Analysis of Self

3. Mahatma Gandhi:

God and Truth - Nature of World - Nature of Man - Non-Violence - Satyāgraha -

Philosophy of end and means - Swaraj - Ideal state and Sarvodaya

And / Or

Radhakrishnan : Intellect and Intuition, Idealist view of life

4. Sri Aurobindo:

Two negations - Reality as Saccidānanda - Nature of Creation :Involution,Maya or Lila,evolution - Nature of Man –Supermind - Nature of Gnostic Being - Gnostic Being AndJīvanmukta - The Divine Life - Integral Yoga.
And/orK.C.Bhattacharya: Concept of Philosophy, Subject as freedom, The doctrine of Maya

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

1. Basanta Kumar Lal: Contemporary IndianPhilosophy
2. NikhileshBandyopadhyay:BimshaŚatābdirBhāratĩyaDarśan
3. T.M.P. Mahadevan& C.V. Saroja: Contemporary IndianPhilosophy
4. V.S.Narvane: Modern IndianThought
5. BrajendraNathSeal: The Positive Science of the Ancient Hindus, Chapter –VII
6. Rabindranath Tagore: Sadhana and OtherEssays
7. Swami Vivekananda: Practical Vedanta and OtherEssays
8. J. Krishnamurty: Freedom from theKnown
9. Mahatma Gandhi: Selected Writings of MahatmaGandhi
10. Sri Aurobindo: LifeDivine

Paper – PHI-204 (Philosophical Issues) Marks – 50 (40 + 10) (CBCS)

Course Outcome: The student will be able to prepare themselves to be more humanistic for their future life and society from a philosophical angle and this course will help the students to prepare themselves for NET/SET/other examination for entry intoservices.

(Philosophy of Love)

1. RabindranathTagore
2. SwamiVivekananda

(Philosophy of Peace)

3. Buddha
4. Gandhi

Suggested Readings:

1. The Philosphy of Rabindranath Tagore(1918) by S. Radhankrishnan, Kessinger Publishing, FirstPublished-2008
2. Sadhna:The Realization of Life by Rabindranath Tagore, SaiePublication
3. The Social Philosophy of Rabindranath Tagore by Aparna Mukherjee, Classical PublishingCompany.
4. My Life in My Words by Rabendranath Tagore and Uma Das Gupta , Penguin Global (January9,2008)
5. Complete works of Swami Vivekananda ,vol-3, UdbodhanKaryalay,Kolkata
6. Bani O Rachana: Swami Vivekanandar, vol-4, UdbodhanKaryalay,Kolkata

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

7. Buddhist Ethics: VenerableHammalawaSaddhatissa
8. Contemporary Buddhist Ethics, (ed.) DamienKeown
9. For the Sake of Peace: Seven Paths to Global Harmony: A Buddhist Perspective: DaisakuIkada

Paper – PHI-205 (Western Classics) Marks – 50 (40 + 10) Classes 50

Course Outcome: This course will aid the students to be more familiar with some of the important philosophical issues in the western Philosophical tradition in historically as well as methodologically informed fashion. It helps them to understand and appreciate the way some of the philosophical issues are formulated in a particular historical period under theoretical assumptions which might bedifferent from the present time. Such an understanding will help the students to approach philosophical problems with a proper perspective while adopting contemporary philosophical techniques and this course will help the students to prepare themselves for NET/SET/other examination for entry into

1. Plato:Republic
2. Descartes: Meditations on FirstPhilosophy
3. Wittgenstein:TractatusLogicoPhilosophicus
4. Kripke: Naming andNecessity
5. Neitzche: Beyond Good andEvil
6. Heidegger: Being andTime

SEMESTER-III

Paper – PHI-301 (Indian Philosophy of Language) Marks – 50 (40 + 10)

Course Outcome: The students will understand the structure of language, the importance of sentence meaning, and also the importance of each and every word used to communicate by the language user.

1. Word - ClassificationofWords 4
2. Nature ofŚakti-MeanstoŚaktigraha5
3. Locus of Śakti -Vyāktiśaktivāda, ākṛtiśaktivāda, jātiśaktivāda, jātyākritiviśityaśaktivāda10
4. Grammarian theory ofsphoṭa7

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

5. Conditions for understanding of sentence –akāṅkṣā, yogyatā, āsatti andtātparya8
6. Theories of sentence-meaning- Śaktivāda, abhihitānvayavādaandanvitābhidhānavāda8
7. Critical Apprehension of Madhva view of Sabdaas Pramana, Seven types of dosa,8

Suggested Readings:

1. Viśvanāth :Bhāṣāpariccheda -Siddhāntamuktāvalĩ
2. GaurinathShastri : A Study in Dialectics ofSphoţa
3. K.KunjunniRaja : Indian Theories ofMeaning
4. P.K. Majumdar :The Philosophy of Language : An IndianApproach
5. P. Misra :Shabdārtha - Darśan -Kaṇĩka
6. PiyaliPalit: Basic Principles of Indian Philosophy and Language, MunshiramManoharlal and JadavpurUniversity
7. Bishnupada Bhattacharya: Vakyapadiyam: Brahnakanda, RajyaPustakParshad, West Bengal.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Paper – PHI-302 (Western Philosophy of Language) Marks – 50 (40 + 10)

Course Outcome: It equips the students to recognize the significance of analysing language to do philosophy. It will also provide them a training to grapple with philosophical issues in a systematic way with the help of the methodological tools which Philosophy of language offers andthis course will help the students to prepare themselves for NET/SET/other examination for entry intoservices.

1. The Linguistic turn, Issues and Problems, Sense and Reference, Proper names, Definite Descriptions, Concepts andObjects.
2. Wittgenstein: Picture Theory of Meaning (TLP), Philosophy and Language, Language game(PI)
3. Speech ActTheory

Suggested Readings:

1. Michael Beaney (ed.): The Frege Reader, Blackwell,1997
2. A.P. Martinich (ed.): The Philosophy of Language, Oxford University Press,1985
3. GotlobFrege: On Sense andReference, and on Concept and Object(article)
4. L. Wittgenstein: TractatusLogicoPhilosophicus,Pearson
5. L. Wittgenstein: PhilosophicalInvestigation
6. J.Searle: SpeechAct

Paper – PHI-303 (Advaita Vedanta) Marks – 50 (40 + 10) (Optional)

Course Outcome: A student can understand in detail the structure and meaning of the Vedanta especially the Advaita Vedanta Philosophy. As Advaita Vedanta Philosophy offers one of the foundationalist theories of classical Indian philosophy and will help the students to prepare themselves for NET/SET/other examination for entry intoservices

Recommended Text : Brahma-Sūtra-Bhāṣya of Śaṅkarācārya

1. Śaṅkarā'sAdhyāsa-Bhāṣya with Bhāmaṭī-uptoadhyāsalakṣaṇa
2. Śāṅkara- Bhāṣyaof Brahma-Sūtra,Adhyaya 1, Padā1, Sutras 1, 2 and3.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Paper – PHI-303 (Advanced Logic) (PM System and Modal Logic) Marks – 50 (40 + 10)

(Optional)

Course Outcome: A student can understand the pure logical basis of Philosophy, he can understand how philosophy involves pure mathematics through logic, he also understand how various scientific systems functions within a structured axiomatic basis, also this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. The PM System: Primitive Ideas, The Syntactical Rules, Definition, The Postulates, Rules for Deduction of Theorems, Proof of Theorems, Consistency andCompleteness
2. Basic Modal Notions, System T, S4 and S5. Three grades of ModalInvolvement.

Suggested Texts/ Readings:

1. B. Russell, and A.N. Whitehead: PrincipiaMathematica
2. Huges and Londey: The Elements of FormalLogic
3. Huges and Cresswell: An New Introduction to ModalLogic
4. P.F.Strawson: PhilosophicalLogic

Paper – PHI-304 (Socio-Ethical Problems) Marks – 50 (40 + 10) (CBCS)

Course Outcome: After the completion of the said course a student can learn how to dismantle the existing gender discrimination in a society with a secular ideology, also this course will help the students to prepare themselves for NET/SET/other examination for entry intoservices.

1. (Secular Philosophy and Philosophers) 1. from – Six Secular Philosophers – by L.W. Beck (SelectedChapters)
2. Gender Justice with Special Emphasis on ThirdGender

Suggested Texts/ Readings:

1. Third Sex Third Gender –Beyond Sexual Dimorphism in Culture & History by Gilbert Herdt-ZoneBooks.
2. Tritiya – Prakriti: People of the Third Sex – Understanding Homosexuality, Transgender Identity and Intersex Conditions Through Hinduism- by Amara Das Wilhelm,Galva.
3. Sex and Gender Revolution, Volume-1, by Randolph Trumbach, University of Chicago Press.
4. Six Secular Philosophers – by L.W. Beck (SelectedChapters)

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Paper – PHI-305 (Applied Philosophy) Marks – 50 (40 + 10) (Optional)

Course Outcome: It enhances the critical thinking of the major issues of society and this course will help the students to prepare themselves for NET/SET/other examination for entry intoservices.

1. The Meaning and Basis ofEquality, Racism and Equality, AffirmativeAction12
2. Various Forms of ViolenceagainstWomen 13
3. TheDeathPenalty 8
4. MediaEthics : Definition, Concerns, Freedom and Responsibility, Neutrality and Objectivity9
5. BusinessEthics 8

Suggested Texts/ Readings:

1. Peter Singer -Practical Ethics (SecondEdition)
2. M.Nussbaum&J. Glover: Women, Culture & Development(ed.)
3. Pamela Foa - What's Wrong withRape
4. Vincent, C. Punzo -Morality and HumanSexuality
5. Anita M. Superson -SexualHarassment
6. Lary May andRobertStrikwerda -Men in Groups: Collective Responsibilities forRape
7. Hugh La Follette -Ethics in Practice: An Anthology(ed.)
8. ShefaliMoitra :Naitikatā O Nārivād : DarshanikPrekshiterNana
9. Matra
10. Thomas A. Mappes Jane S. Zembaty(ed.) - Social Ethics, Moralityand
11. Social Policy (SecondEdition)
12. Dale Jacquatte - Journalistic Ethics :Moral Responsibility in the Media
    Chap-I – Truth-telling in the PublicInterest
    Chap-II – Journalistic Rights and Responsibilities
13. Manuel G. Velasquewy - Business Ethics - Concepts and Cases,Part-1
14. BrendaAlmond (ed.) -Introducing AppliedEthics
15. James Rachels- Moral Problems (3rdEdition)
16. Winkler, E.R.and Coombs, J.R. - AppliedEthics
17. Ruth Chadwick -AppliedEthics

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Paper – PHI-305 (Philosophy of Cognitive Science) Marks – 50 (40 + 10) (Optional)

Course Outcome: A student can understand how philosophy relates its metaphysical domain to pure Science. At the same time this course helps a student to understand the nature and process of Interdisciplinary study and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Cognitive Science : Some General Notions
2. History and Development of Cognitive Science
3. Cognitive Psychology
4. Consciousness
5. Representational Theory of Mind
6. The Language of Thought Hypotheses

Suggested Texts/ Readings:

1. Stillings Neil et al., *Cognitive Science – An Introduction*, Cambridge, Mass: MIT Press, 1987
2. Howard Gardner, *The Mind's New Science: A History of the Cognitive Revolution*, Basic Books, USA,1987.
3. Jerry A. Fodor, *Representations: Philosophical Essays on the Foundations of Cognitive Science*, The Harvester Press, Sussex,1981.
4. Crane T., *The Mechanical Mind*, Penguin Books,1995
5. Crane T., *Elements of Mind*, Penguin Books,1995
6. Becthel H. and Graham G. eds., *A Companion to Cognitive Science*, Blackwell, Oxford, 1998.
7. Paul M. Churchland, *Matter and Consciousness: A Contemporary Introduction toPhilosophy of Mind*, Cambridge, Mass: MIT Press,1998
8. Kim Sterelny, *The Representational Theory of Mind: An Introduction*, Oxford: Basil Blackwell,1990.
9. Clark, A., *Mindware: An Introduction to the Philosophy of Cognitive Science*, Oxford: Oxford University Press,2001.
10. Jerry A. Fodor, *Psychosemantics*, MIT Press, Cambridge, MA,1988
11. Jerry A. Fodor, *Language of Thought*, MIT Press, Cambridge, MA,1987
12. Edward E Smith, Stephen M Kosslyn, *Cognitive Psychology: Mind & Brain* PHI,2007
13. Eysenck, Michael W, *Fundamentals of Cognition*, Psychology Press,2012
14. Alan Goldman, *Readings in Philosophy and Cognitive Science* ,Cambridge, MA: MIT Press,1993

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

SEMESTER-IV

Paper – PHI-401 (Indian Ethics) Marks – 50 (40 + 10)

Course Outcome: Students will be able to apply ethical sense in day to day life, also this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Special Features of Indian Ethics:Karmavada, Classification of Dharma- Sādharaṇa dharma and Viśeṣa dharma, VidhiandNisedha
2. Some thical concepts: Ṛta, Ṛṇa, Yama and Niyama, Triratna andPancamahāvrata, Brahmavihara, Lokasaṁgraha
3. Buddhist Ethics: From the Dhammapada, Yamakavagga, Appamadavagga, Papavagga,, andDandavagga
4. Ethics of Nişkāma karma: From 2nd and 3rd chapters of the Bhagavad Gita
5. Sociocentric Hindu Morality: Duties according to Varṇa and āśrama; Sex-morality and the treatment of Women, Social responsibilities of the Individual
6. Epics and Ethics : Moral Dilemma , Different views

Suggested Texts/ Readings:

1. SaralJhingram: Aspects of HinduMorality
2. RatnaDuttasharma and IndraniSanyal: Sruti ODharmaniti
3. BhagavadgītāwithSridharaswami'sSubodhinitīkā
4. CharuchandraBasu:Dhammapada
5. ShilalankarMahathera:DhammapadaAtthakathāYamakaVarga
6. DhammakirtiMahathera: Dhammapada – Atthakathā AppamadaVarga
7. Sukomal Roy Chowdhury: Dhammapada – AtthakathāArhant, Sahasas, Papaand DandaVaggas.
8. Sri SilanandaBrahmachari: The Eternal Message of Lord Buddha (A study on Dhammapada) Dhammapada, Published byHaraphPrakashani
9. S. K. Maitra, Ethics of theHindus
10. SaralJhingram, Aspects of HinduMorality
11. J. N. Sinha, Indian Philosophy, Vol.I
12. Vyasabhasya ofYogasutra
13. Chatterjee (ed),BharatīyaDharmanīti
14. Humphreys, Buddhist Way ofLife
15. M. M. Sharif, A History of Muslim Philosophy, Vol. I&jII

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

16. D. M. Donaldson, Studies in MuslimEthics
17. IndraniSanyal: Through the Lens of DharmaEthics

Paper – PHI-402 (Western Ethics) Marks – 50 (40 + 10)

Course Outcome: The Course may foster morals, values and ethics including appreciation for moral deliberation, empathy, knowledge reasoning and interpersonal skills in students mind and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. VirtueEthics
2. Metaethics :Cognitivism : Naturalism of Moore ; Noncognitivism: Emotivism Of Stevenson, PrescriptivismofHare.
3. Utilitarianism : For andAgainst
4. Kantian Ethics : ForandAgainst
5. Theory of Justice : Theoryof Rawls

Suggested Texts/ Readings:

1. Fred Feldman :Introductory Ethics
2. Tom.L.Beauchamp :PhilosophicalEthics
3. Marshall Cohen. ThomasNagel& Thomas Scanon (ed.):Justice [Marx, Justice and History]
4. Suggested Readings:
5. C.L. Stevenson - Facts and Values :Studies in EthicalAnalysis
6. C.L. Stevenson- EthicsandLanguage
7. A.J. Ayer- Language, Truth and Logic
8. J.J.C Smart & Bernard Williams-UtilitarianismForandAgainst
9. AmartyaSen -Utilitarianism andBeyond
10. Philippa Foot -Virtue and Vices
11. Immanuel Kant -Groundwork of Metaphysic ofMorals
12. Rawls -A Theory ofJustice-
13. R.M. Hare -Moral Thinking - Its Levels, MethodandPoint
14. Roger Crisp & Michael Slote (ed.) -VirtueEthics
15. TirthanathBandyopadhyay -KantianEthics
16. Harper & Row MatinHeideggar -Being andTime

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Paper – PHI-403 (Advaita Vedanta) Marks – 50 (40 + 10)

Course Outcome: A student can understand in detail the structure and meaning of the Vedanta especially the Advaita Vedanta Philosophy. As Advaita Vedanta Philosophy offers one of the foundationalist theory of classical Indian philosophy, this course will help the students to prepare themselves for NET/SET/other examination for entry intoservices.

Recommended Text: Vedāntā – Paribhāṣā of Dharmarajādhvarĩndra

1. PratyakṣaParicchedа- upto the division ofNirvikalpaka andSavikalpakaPratyakṣa
2. Viṣaya- Paricchedа - (upto the Theory of World -Creation)
3. Prayojana–Paricchedа

Paper – PHI-403 (Advanced Logic) (Advanced Formal Logic, Set Theory and Philosophical Logic)

Course Outcome: Students will develop a sense of logical language and to use various methods of logic and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Logic of Relation: I.M.Copi – Symbolic Logic (5^{th} Edition – Chapter – 5.1, 5.2, 5.3and 5.4 only)
2. Language of Philosophy of Logic: Proposition, Logic and Ordinary language, Meaning and Reference, Many valued Logic

OR

3. Set Theory: Operations, Relations and Functions from Patrick Suppees, AnIntroduction to Logic. (Chapter 10, and11)
4. Problem of Induction, Hypothesis, Evidence, Patterns of Scientific Explanations / Philosophical Logic: i) P.K.Sen – Variables ans Quantification, ii) C.J. Lajewski: Existence and Logic, iii) A.N. Prior: The Run About InferenceTicket.

Suggested Texts/ Readings:

1. P.F. Strawson: PhilosophicalLogic.
2. M. Dummett: Frege – Philosophy ofLanguage
3. Susan Haack: Philosophy ofLogic
4. G. Hunter: Metalogic, Macmillan, London,1971.
5. P.K.Sen: Jadavpur Studies inPhilosophy
6. C.J. Lagewski: Existence andLogic
7. P.Suppees: An IntroduntiontoLogic

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Paper – PHI-404 (Continental Philosophy, Phenomenology and Existentialism)Marks – 50 (40 + 10)

Course Outcome: The course will help the students to have familiarity with the phenomenal method to be applied in various subjects and also to understand the real essence of existence and this course will help the students to prepare themselves for NET/SET/other examination for entry intoservices.

1. Definition of Phenomenology, Development of Husserl's Thought, The Natural World Thesis, Reduction, Intentionality of Consciousness, TheLife-world.
2. Special featuresof Existentialism, The Nature of Being – Sartre, and Heidegger, Freedom, ExistentialHumanism
3. Nature and features of Hermeneutic method ofPhilosophy.

Suggested Readings:

1. Herbert Spielgelberg: The Phenomenological Movement, Vol-1 &2,MartinusNighoff
2. Edmeund Husserl: Ideas – 1, Book – 1,MartinusNighoff
3. M.K.Bhadra: A Critical Survey of Phenomenology and Existentialism, ICPR –Allied
4. R. Solomon: From Rationalism toExistentialism
5. Krishna Roy: Hermeneutics: East and West, AlliedPublishers
6. Martin Heidegger: Being and Time

Paper – PHI-405 (Applied Philosophy) Marks – 50 (40 + 10) (Optional)

Course Outcome: It enhances the critical thinking of the major issues of society and this course will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Euthanasia
2. Genetic Engineering andEthics
3. Organdonation
4. Environmental Ethics : Some CentralDebates
5. Climateethics
6. Futuregeneration

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Suggested Texts/ Readings:

1. Peter Singer - Practical Ethics (3rdedn.)
2. RobinAttfield - Environmental Ethics(2003)
3. H. Kuhse and Peter Singer :Bio-ethics :AnAnthology
4. S.M. Gardiner et al (eds.) Climate Ethics :EssentialReadings
5. SuggestedReadings
6. Hugh La Follete - Ethics inPractice
7. Hanks - ClimateEthics
8. James Garvey - The EthicsofClimate
9. P. Singer - Appliedethics
10. P. Singer - OneWorld
11. Brenda Almond - Introducing AppliedEthics
12. G. Stock and J. Campbell–EngineeringtheHumaGermline
13. N.S. Jecker, A.R. Jonson and R.A. Pearlman -Bioethics
14. F.A. Paola, R. Walker and L. La CivitaNixon - Medical Ethics andHumanities
15. Applied Ethics - RuthChadwick
16. H. Kuhse and P. Singer (ed.) - Bio-ethics : AnAnthology
17. IndraniSanyal and Ratna Dutta Sharma: Refugees, Asvra, Marriage and Varried: An Anthology in Applied Ethics, Vol:1.

Paper – PHI-405 (Philosophy of Cognitive Science) Marks – 50 (40 + 10) (Optional)

Course Outcome: Students will get chances to familiar themselves with the theory based computing system and will help the students to prepare themselves for NET/SET/other examination for entry into services.

1. Computer HardwareandSoftware
2. Computational TheoryofMind
3. Neurophilosophy
4. Philosophy ofartificialIntelligence
5. Connectionism andNeural Networks
6. FundamentalsofPROLOG

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

Suggested Texts/ Readings:

1. Stillings Neil et al., *Cognitive Science – An Introduction*, Cambridge, Mass: MIT Press, 1987
2. William Bechtel et al, *Philosophy and the Neurosciences: A Reader*, WileyBlackwell,2001
3. Churchland Patricia, *Neurophilosophy*, MIT Press, Cambridge M.A1986
4. Boden M.A. ed., *The Philosophy of Artificial Intelligence*, Oxford University Press,1990.
5. E. Rumelhart, "The Architecture of Mind: A Connectionist Approach," in ed. John Haugeland, Mind Design II (Cambridge, MA:MIT Press, 1997),205-232.
6. Paul Smolensky, "Connectionist Modeling: Neural Computation/Mental Connections," in ed. John Haugeland, Mind Design II (Cambridge, MA:MIT Press, 1997),233-250.
7. Jerry A. Fodor and Zenon W. Pylyshyn, "Connection and Cognitive Architecture: A Critical Analysis," in ed. John Haugeland, Mind Design II (Cambridge, MA:MIT Press, 1997),309-350.
8. Andy Clark, "Connectionist Minds," in eds. Cynthia Macdonald and Graham Macdonald, Connectionism, - Blackwell Publishers, 1995),339-356.
9. I. Bratko. *Prolog Programming for Artificial Intelligence*. Addison-Wesley, Reading, Massachusetts,1986.
10. W. F. Clocksinand C. S. Melish. *Programming in Prolog*. Springer-Verlag, New York, Third, Revised and Extended edition, 1987.
11. L. Sterling and E. Shapiro. *The Art of Prolog*. MIT Press, Cambridge, Massachusetts, 1986.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 12:56:27; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Philosophy_Syllabus_POCO_2018_19.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-year B.A (Honours)

Philosophy

Revised Syllabus under CBCS
(w. e. f. 2022-2023)

Vidyasagar University
Midnapore 721102
West Bengal

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S1.pdf

Vidyasagar University

Curriculum for B.A (Honours) in Philosophy

[Revised Syllabus w.e.f. 2022-23]

SEMESTER-I

Course Structure

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC1		**C1T: Indian Philosophy-I**	Core Course-1	5	1	0	6	75
CC2		**C2T: History of Western Philosophy -I**	Core Course-2	5	1	0	6	75
GE1		**TBD** ***(from other Discipline***)	Generic Elective-1	5-1-0/ 4-0-4			6	75
AECC		**English**	AECC (Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T=**Tutorial, **P=**Practical, **CC-** Core Course, **TBD -** To be decided, **AECC-** Ability Enhancement Compulsory Course

Generic Elective (GE) (Interdisciplinary) from other Department [Paper will be of 6 credits]

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S1.pdf

Semester-I

Core Course (CC)

CC-1: Indian Philosophy – I **Credit 06**

C1T: Indian Philosophy – I **Credit 06**

Course Contents:

A. Introduction: The Vedas and the Upanishads, Āstika and Nāstika Schools.

B. Cārvāka System - Epistemology, Metaphysics, Ethics.

C. Jaina System - Basic concepts of Jaina Philosophy, Anekāntavāda, Syādvāda and Saptabhaṅginaya.

D. Bauddha System: Four Noble Truths, Theory of Dependent Origination (Pratītyasamutpāda vāda), Definition of Reality (Arthakriyākāritva), Doctrine of Momentariness, (Kṣanabhangavāda), Theory of no-soul (Nairātmyavāda), Four Schools of Buddhism (Basic tenets).

E. Nyāya System: Pramā and Aprama, Different kinds of Pramāṇa, Pratyakṣa (Definition), Sannikarṣa, Classification of Pratyakṣa : Nirvikalpaka, Savikalpaka, Laukika, Alaukika

F. Anumāna (Definition), vyāpti, parāmarśa, Classification of Anumāna: pūrvavat, śesavat, smānyatodṛsta, kevalānvayī, kevalavyātirekī, anvayavyātirekī, svārthānumāna, parārthānumāna, Upamāna (definition), Śabda (definition),

G. Vaiśeṣika System: Seven Padārthas, dravya, guṇa, karma, sāmānya, viśeṣa, samavāya, abhāva, Atomism.

Suggested Readings:

English:

1. Outlines of Indian Philosophy: M. Hiriyanna
2. A Critical Survey of Indian Philosophy: C.D. Sharma
3. An Introduction to Indian Philosophy: D. M. Dutta & S.C. Chatterjee
4. Classical Indian Philosophy: J.N. Mohanty
5. History of Indian Philosophy: S.N. Dasgupta
6. Indian Philosophy (Vol. I & II): S. Radhakrishnan
7. Indian Philosophy (Vol. I & II): J.N. Sinha
8. Studies on the Carvaka/Lokayata: Ramakrishna Bhattacharya
9. The Central Philosophy of Buddhism: T.R.V. Murti
10. Yogacara Idealism: A.K.Chatterjee
11. An Introduction to Maddhyamika Philosophy: Jaydev Singh
12. Reflections on Indian Philosophy: K.P. Sinha

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S1.pdf

13. Philosophy of Jainism: K.P. Sinha
14. Nyaya Theory of Knowledge: S.C. Chatterjee
15. Six Ways of Knowing: D.M. Dutta
16. Nyaya-Vaisesika Metaphysics: Sadananda Bhaduri
17. The Doctrine of Maya: A.K. Roychoudhuri
18. Self and Falsity in Advaita Vedanta: A.K. Roychoudhuri
19. The Word and the world: Bimal Krishna Matilal
20. Logic, Language and Reality: Bimal Krishna Matilal

Bengali:

21. Bharatiya Darshan: Debabrata Sen
22. Bharatiya Darshan: Nirodbaran Chakraborty
23. Sayan Madhaviya Sarva Darshan Samgraha: Satyajyoti Chakraborti
24. Lokayata Darshan: Debiprasad Chatoopadhyay
25. Carvakacarca: Ramakrisna Bhattacharya
26. Carvaka Darshan: Panchanan Sastri
27. Carvaka Darshan: Amit Kumar Bhattacharya
28. Bauddha Dharma O Darshan: Swami Vidyaranya
29. Bauddha Darshan: Panchanan Sastri
30. Gautama Buddher Darshan o Dharma: Sukomol Choudhury
31. Bauddha Darshan: Amit Kumar Bhattacharya
32. Ksanabhangavada: Bidhubhusan Bhattacharya
33. Jainadarshaner Digdarshan: Satindra Chandra Bhattacharya
34. Nyaya Darshan: Phanibhushan Tarkavagisha
35. Nyaya Paricaya: Phanibhushan Tarkavagisha
36. Nyaya-Vaisesika Darshan: Karuna Bhattacharya
37. Nyaya Tattva Parikrama: Kalikrishna Bandyopadhyaya
38. Samkhya Darshan: Bhupendranath Bhattacharya
39. Samkhya Darshaner Vivarana: Bidhubhushan Bhattacharya
40. Samkhyamata Samiksa: Yogendranath Bagchi
41. Samkhya Tattva Kaumudi: Narayan Chandra Goswami
42. Samkhya-Patanjal Darshan: Kanakprabha Bandyopadhyaya
43. Patanjal Darshan: Purnachandra Vedantachanchu
44. Puva Mimasa Darshan: Sukhamaya Bhattacharya
45. Vedanta Darshan: Roma Choudhury
46. Vedanta Darshan: Advaitavada: Ashutosh Sastri
47. Mayavada: Pramatha Nath Tarkabhushan
48. Vedanta Darshan: Swami Vidyaranya

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S1.pdf

CC-2: History of Western Philosophy – I **Credit 06**

C2T: History of Western Philosophy – I **Credit 06**

Course Contents:

a) Pre Socratic Philosophy
b) Socratic Method of philosophizing.
c) Plato: Theory of Knowledge, Theory of Forms.
d) Aristotle: Critique of Plato's theory of Forms, Doctrine of four causes, Form and Matter
e) St. Thomas Aquinas: Faith and Reason, Essence and Existence.
f) Descartes: Cartesian method of doubt, Cogito ergo sum, Criterion of truth, Types of Ideas, Proofs for Existence of External World.
g) Spinoza: Method of Spinoza, Theory of Knowledge - three orders of knowing, Doctrine of Substance, Attributes and Modes, Pantheism, Freedom of will.
h) Leibniz: Theory of Substance- the Monadology, Truths of reason, Truth of Facts. Some Metaphysical Principles: Laws of identity of indiscernible, Law of sufficient reason, Law of continuity, The Doctrine of Pre-established Harmony.

Suggested Readings:

English:

1. The Greek Philosophers from Thales to Aristotle: W. K. C. Guthrie
2. A Critical History of Greek Philosophy: W.T. Stace
3. Encyclopedia of Philosophy: P. Edwards (ed.)
4. A History of Philosophy: F. Copleston, vols. I, II, IV, V, VI
5. History of Western Philosophy: B. Russell
6. History of Modern Philosophy: R. Falckenberg
7. A Critical History of Modern Philosophy: Y.H. Masih
8. A History of Philosophy: F. Thilly
9. A History of Modern Philosophy: W.K. Wright
10. A Critical History of Western Philosophy: D.J. O'Connor
11. A History of Philosophy from Descartes to Wittgenstein: R. Scruton
12. The Fundamental Questions of Philosophy: A.C. Ewing
13. A Brief History of Western Philosophy: A. Kenny
14. The Works of Descartes: Haldane & Ross (eds.)
15. Descartes: The Project of Pure Enquiry: B. Williams
16. Descartes: A. Kenny
17. Spinoza: Leon Roth
18. Leibniz: An Introduction to His Philosophy: N. Rescher
19. The Rationalists: J. Cottingham

Bengali:

20. Paschatya Darshaner Itihas: Tarak Candra Roy (pratham o dwitiya khanda)
21. Paschatya Darshaner Itihas: Kalyan Chandra Gupta
22. Paschatya Darshaner Itihas: Susanta Chakraborty
23. Paschatya Darshaner Itihas: Samarendra Bhattacharya (pratham o dwitiya khanda)
24. Paschatya Darshaner Itihas(Plato o Aristotle): N.B. Chakraborty
25. Paschatya Darshaner Itihas(Plato o Aristotle): Debabrata Sen
26. Paschatya Darshaner Itihas(Adhunik Yuga-Yuktivada (Descartes), Spinoza,Leibniz:): Chandrodaya Bhattacharya

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S1.pdf

Generic Elective (GE)

GE-1 [Interdisciplinary for other department]

GE-1: Ethics: Indian and Western **Credit 06**

GE-1T: Ethics: Indian and Western **Credit 06**

Course Contents:

A. Four Purusarthās – dharma, artha, kāma and mokṣa and their interrelation. Karma (Sakāma & Niṣkāma), Cārvāka Ethics.
B. Buddhist Ethics: The Four Noble Truths and the Eight-Fold Path.
C. Moral and Non-Moral Actions, Object of Moral Judgment.
D. Teleological Ethics: Utilitarianism (Bentham and Mill). Deontological Ethics: Kant's Moral Theory. Virtue Ethics.
E. Theories of Punishment.

Suggested Readings:

English:

1. The Fundamentals of Hinduism-A Philosophical Study: S.C. Chatterjee
2. An Introduction to Ethics: W. Lillie

Bengali:

3. Nitividya: Shibapada Chakrabarty
4. Nitividyar Tattvakatha: Somnath Chakrabarty
5. Nitisastra: Dikshit Gupta

Or

GE-1: Western Logic **Credits 06**

GE1T: Western Logic **Credits 06**

Course Contents:

a) Introductory topics: Difference between deduction and induction, Sentence, proposition, argument, truth and validity.
b) Aristotelian classification of categorical propositions, distribution of terms. Existential Import.
c) Boolean interpretation of categorical propositions. Immediate inference: square of opposition, conversion, obversion and contraposition.
d) Categorical syllogism: Figure, mood, rules and testing validity, Venn Diagram method: testing validity and fallacies.
e) Symbolic Logic: Use of symbols, Truth-functions: Negation, Conjunction, disjunction, implication, equivalence.
f) Tautology, Contradiction, Contingent statement forms. Construction of truth-table, using truth-tables for testing the validity of arguments and statement forms.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S1.pdf

Suggested Readings:

English:

1. Introduction to Logic (13thedn): I. M. Copi and C. Cohen

Bengali:

2. Paschatya Darshan O Yuktivijnan: Ramaprasad Das
3. Paschatya Darsan O Yuktivijnan: Samir Kumar Chakrabarty

*****

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S1.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-year B.A (Honours)

Philosophy

Revised Syllabus under CBCS
(w. e. f. 2022-2023)

Vidyasagar University
Midnapore 721102
West Bengal

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S2.pdf

Vidyasagar University

Curriculum for B.A (Honours) in Philosophy

[Revised Syllabus w.e.f. 2022-23]

SEMESTER-II

Course Structure

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC3		**C3T: Indian Philosophy - II**	Core Course-1	5	1	0	6	75
CC4		**C2T: History of Western Philosophy - II**	Core Course-2	5	1	0	6	75
GE2		***TBD (by other Discipline)*** **GE2T:** Gender Studies **Or** **GE2T:** Psychology and Philosophy of Mind	Generic Elective-2	5-1-0/ 4-0-4			6	75
AECC		**ENVS**	AECC-2 (Elective)				4	100
Semester Total							**22**	**325**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC-** Core Course, **TBD -** To be decided, **AECC-** Ability Enhancement Compulsory Course, **ENVS -** Environmental Studies

Generic Elective (GE) (Interdisciplinary) from other Department [Paper will be of 6 credits]

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S2.pdf

Semester-II

Core Course (CC)

CC-3: Indian Philosophy – II **Credit 06**

C3T: Indian Philosophy – II **Credit 06**

Course Contents:

1. **Sāmkhya** - Satkāryavāda, Nature of Prakṛti, its constituents and proofs for its existence. Nature of Puruṣa and proofs for its existence, Plurality of Puruṣas, theory of evolution.
2. **Yoga** - Citta, Cittavṛtti, Cittabhūmi. Eight fold path of Yoga, God.
3. **Mīmāmsā (Prābhakara and Bhātta)**: Basic concepts of Veda, dharma, Yoga, apurva, method of Veda pramanya vicara, Arthāpatti and Anupalabdhi as sources of knowledge
4. **Advaita Vedānta** - Sankara's view of Brahman, Saguṇa and Nirguṇa Brahman, Three grades of Sattā: prātibhāsika, vyavahārika and pāramārthika, Jīva, Jagat and Māyā.
5. **Viśistādvaita** - Rāmānuja's view of Brahman, Jīva, Jagat. Refutation of the doctrine of Māyā.

Suggested Readings:

English:

1. Outlines of Indian Philosophy: M. Hiriyanna
2. A Critical Survey of Indian Philosophy: C.D. Sharma
3. An Introduction to Indian Philosophy: D. M. Dutta & S.C. Chatterjee
4. Classical Indian Philosophy: J.N. Mohanty
5. History of Indian Philosophy: S.N. Dasgupta
6. Indian Philosophy (Vol. I & II): S. Radhakrishnan
7. Indian Philosophy (Vol. I & II): J.N. Sinha
8. Six Ways of Knowing: D.M. Dutta
9. The Doctrine of Maya: A.K. Roychoudhuri
10. Self and Falsity in Advaita Vedanta: A.K. Roychoudhuri
11. The Word and the world: Bimal Krishna Matilal
12. Logic, Language and Reality: Bimal Krishna Matilal
13. Arthasamgraha: Lougakshibhaskar: Gajendra Gadkar

Bengali:

1. Bharatiya Darshan: Debabrata Sen
2. Bharatiya Darshan: Nirodbaran Chakraborty
3. Sayan Madhaviya Sarva Darshan Samgraha: Satyajyoti Chakraborti
4. Lokayata Darshan: Debiprasad Chatoopadhyay
5. Carvakacarca: Ramakrisna Bhattacharya
6. Carvaka Darshan: Panchanan Sastri

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S2.pdf

7. Carvaka Darshan: Amit Kumar Bhattacharya
8. Bauddha Dharma o Darshan: Swami Vidyaranya
9. Bauddha Darshan: Panchanan Sastri
10. Gautama Buddher Darshan o Dharma: Sukomol Choudhury
11. Bauddha Darshan: Amit Kumar Bhattacharya
12. Ksanabhangavada: Bidhubhusan Bhattacharya
13. Jainadarshaner Digdarshan: Satindra Chandra Bhattacharya
14. Nyaya Darshan: Phanibhushan Tarkavagisha
15. Nyaya Paricaya: Phanibhushan Tarkavagisha
16. Nyaya-Vaisesika Darshan: Karuna Bhattacharya
17. Nyaya Tattva Parikrama: Kalikrishna Bandyopadhyaya
18. Samkhya Darshan: Bhupendranath Bhattacharya
19. Samkhya Darshaner Vivarana: Bidhubhushan Bhattacharya
20. Samkhyamata Samiksa: Yogendranath Bagchi
21. Samkhya Tattva Kaumudi: Narayan Chandra Goswami
22. Samkhya-Patanjal Darshan: Kanakprabha Bandyopadhyaya
23. Patanjal Darshan: Purnachandra Vedantachanchu
24. Puva Mimasa Darshan: Sukhamaya Bhattacharya
25. Vedanta Darshan: Roma Choudhury
26. Vedanta Darshan: Advaitavada: Ashutosh Sastri
27. Mayavada: Pramatha Nath Tarkabhushan
28. Vedanta Darshan: Swami Vidyaranya

CC-4: History of Western Philosophy – II **Credit 06**

C4T: History of Western Philosophy – II **Credit 06**

Course Contents:

1. **Locke:** Refutation of innate ideas, the origin and formation of ideas, simple and complex ideas, substance, modes and relations, nature of knowledge and its degrees, limits of knowledge, primary and secondary qualities, representative realism.
2. **Berkeley:** Refutation of abstract ideas. Criticism of Locke's distinction between primary and secondary qualities, Idealism, esse-est-percipi, role of God.
3. **Hume:** Impression and ideas, association of ideas, distinction between judgements concerning relations of ideas and judgments concerning matters of fact, theory of causality, theory of self and personal identity, scepticism.
4. **Kant:** Conception of critical Philosophy, distinction between a priori and a posteriori judgements, distinction between analytic and synthetic judgements. Synthetic a priori judgements, Copernican Revolution in Philosophy, Space & time
5. **Hegel:** Idealism, Dialectic method

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S2.pdf

Suggested Readings:

English:

1. Encyclopedia of Philosophy: P. Edwards (ed.)
2. A History of Philosophy: F. Coppleston, vols. I, II, IV, V, VI
3. History of Western Philosophy: B. Russell
4. History of Modern Philosophy: R. Falckenberg
5. A Critical History of Modern Philosophy: Y.H. Masih
6. A History of Philosophy: F. Thilly
7. A History of Modern Philosophy: W.K. Wright
8. A Critical History of Western Philosophy: D.J. O'Connor
9. A History of Philosophy from Descartes to Wittgenstein: R. Scruton
10. The Fundamental Questions of Philosophy: A.C. Ewing
11. A Brief History of Western Philosophy: A. Kenny
12. The Rationalists: J. Cottingham
13. An Essay Concerning Human Understanding: J. Locke
14. John Locke: R. Aron
15. Berkeley: G. Pitcher
16. The Works of George Berkeley: T.E. Jessop & A.R. Luce(eds.) 8 vols
17. An Enquiry Concerning Human Understanding-D. Hume: J. N. Mohanty (ed)
18. A Treatise on Human Nature: D. Hume
19. Locke, Berkeley, Hume: J. Bennett
20. Locke, Berkeley, and Hume: C.R. Morris
21. A Critique of Pure Reason-Immanuel Kant: N.K. Smith(tr. & ed.)
22. Kant's Metaphysics of Experience: H.J. Paton vols I & II
23. The Philosophy of Kant: J. Kemp
24. Kant: Paul Guyer
25. A Handbook to Kant's Critique of Pure Reason: Rasvihari Das
26. Kant: S. Körner
27. Kant: Allen W. Wood
28. Lectures on Kant's Critique of Pure Reason: J.N. Mohanty

Bengali:

1. Paschatya Darshaner Itihas: Tarak Candra Roy (pratham o dwitiya khanda)
2. Paschatya Darshaner Itihas: Kalyan Chandra Gupta
3. Paschatya Darshaner Itihas: Susanta Chakraborty
4. Paschatya Darshaner Itihas:Ikshanvada(Locke, Berkeley,Hume): Chandrodaya Bhattacharya
5. Paschatya Darshaner Itihas:(Locke, Berkeley,Hume): N.B. Chakraborty
6. Hume-er Enquiry-Ekti Upasthapana: Ramaprasad Das
7. Kanter Darshan-Tattva o Prayog: Prahlad Kumar Sarkar (ed.)
8. Kanter Darshan:Rasvihari Das
9. Kanter Shuddha Prajnar Bichar: Mrinal Kanti Bhadra
10. Bishuddha Prajnar Bichar: Gopal Chandra Khan

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S2.pdf

Generic Elective (GE)

GE-2 [Interdisciplinary for other department]

GE-2: Gender Studies **Credit 06**

GE-2T: Gender Studies **Credit 06**

Course Contents:

A. Scope and rationale of Gender Studies.
B. Gender as social construction vis-à-vis sex.
C. Levels of misogyny: Sexism, Patriarchy and Phallogocentrism; Androcentrism.
D. Feminism and its different stands: Liberal, Marxist, Radical, Socialist and Post colonial.
E. Third Gender issues.
F. Masculinism.

Suggested Readings:

1. Feminist Thought: Androcentrism, Communication and Objectivity: Shefali Moitra, Munshiram Monoharlal Publishers Pvt. Ltd.,2002, New Delhi
2. Understanding Gender: Kamla Bhasin, Women Unlimited,2001,New Delhi
3. Handbook of Feminist Theory : Lisa Disch And Mary Hawkesworth, Oxford University Press,2016
4. Practical Ethics: Peter Singer
5. Applied Ethics: Peter Singer
6. Redefining Ethics As Care: Bidisha Mukherjee, Papyrus, Kolkata 2008
7. The Ethics Of Care : Virginia Held
8. The Core Of Care Ethics : S. Collins, P. Macmillan Publishers, 2015
9. In a Different Voice : Gilligan, C., Harvard University Press, 1982
10. Naitikata O Narivada : Shefali Moitra
11. Nitividya: Samarendra Bhattacharya

Or

GE-2: Psychology and Philosophy of Mind **Credits 06**

GE2T: Psychology and Philosophy of Mind **Credits 06**

Course Contents:

a. Philosophy of Mind: Introduction
b. Mind-Body Problem, different solutions: Dualism, Behaviourism and Identity theory.
c. Psychology: Introduction
d. Methods of Psychology: Introspection, Extrospection, Experimental Methods
e. Sensation and Perception: Relation and Difference between sensation and perception. Gestalt theory of perception. Illusion and Hallucination

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S2.pdf

f. Consciousness: What is consciousness? and Problems of consciousness.
g. Levels of Mind – Conscious, Sub-conscious, Unconscious, Proofs for the existence of Unconscious, Freud's Theory of Dream.
h. Learning: the trial and error theory, Pavlov's Conditioned Response theory, Gestalt theory
i. Intelligence: Measurement of Intelligence, I.Q., Test of Intelligence

Suggested Readings:

English:

1. A Textbook of Psychology: Paresh Nath Bhattacharya
2. Introduction to Psychology: G.T. Morgan, R. A. King Jr.
3. A Modern Introduction to Psychology: Rex Knight & M. Knight
4. A Manual of Psychology: G.F. Stout
5. Psychology: Woodworth & Marquis
6. Science and Human Behaviour: B.F. Skinner
7. About Behaviorism: B.F. Skinner
8. General Psychology: G.D. Boaz
9. General Psychology: G. Murphy
10. Psychology: W. James
11. A Textbook of Psychology: E.B. Titchener
12. Principles of Psychology: W. James
13. Introduction to Psychology: N.L. Muna
14. A Materialist Theory of Mind: D.M. Armstrong
15. Philosophy of Mind: J. Heil
16. Philosophy of Mind: J. Shaffer
17. An Introduction to Philosophy of Mind: C.J. Lowe
18. Ten Problems of Consciousness: Michael Tye

Bengali:

1. Monovidya: Priti Bhushan Chattopadhyay
2. Monovidya: Pareshnath Bhattacharya
3. Monovidya: Ira Sengupta
4. Monovidya: Samarendra Bhattacharya
5. Monosamikksha: M. N. Mitra o Pushpa Mishra
6. Monodarshan-Sarirvada o Tar Vikalap: M. N. Mitra o P. Sarkar (Sampadito)
7. Monovijana Prasanga: Saradindu Bandyopadhyay
8. Adhunik Monovijana: Ira Sengupta
9. Shikshashrayi Monovidya: Sushil Roy
10. Monodarshan: Arabinda Basu o Nibedita Chakraborty

*****

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_Honours/BAHons_Philosophy_S2.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B. A (HONOURS)
in

Philosophy

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

VIDYASAGAR UNIVERSITY

BA (Honours) in Philosophy

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		C1T: Indian Philosophy -I	6	5-1-0	15	60	75
		Core-2		C2T: History of Western Philosophy - I	6	5-1-0	15	60	75
		GE-1		TBD	6	5-1-0	15	60	75
		AECC-1 **(Elective)**		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		C3T: Indian Philosophy - II	6	5-1-0	15	60	75
		Core-4		C4T: History of Western Philosophy - II	6	5-1-0	15	60	75
		GE-2		TBD	6	5-1-0	15	60	75
		AECC-2 **(Elective)**		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		C5T: Philosophy of Mind	6	5-1-0	15	60	75
		Core-6		C6T: Social and Political Philosophy	6	5-1-0	15	60	75
		Core-7		C7T: Philosophy of Religion	6	5-1-0	15	60	75
		GE-3		TBD	6	5-1-0	15	60	75
		SEC-1		**SEC-1:**Computer Application **Or SEC-1:** Philosophy of Human Rights	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		C8T: Western Logic - I	6	5-1-0	15	60	75
		Core-9		C9T: Western logic - II	6	5-1-0	15	60	75
		Core-10		C10T:Epistemiology and metaphysics (Western)	6	5-1-0	15	60	75
		GE-4		TBD	6	5-1-0	15	60	75
		SEC-2		**SEC -2:** Value Education **Or SEC -2:** Man and Environment	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		C11T: Nayaya Logic and Epistemiology	6	5-1-0	15	60	75
		Core-12		C12T: Ethics(Indian)	6	5-1-0	15	60	75
		DSE-1		TBD	6	5-1-0	15	60	75
		DSE-2		TBD	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		C13T: Nayaya Logic and Epistemiology-II	6	5-1-0	15	60	75
		Core-14		C14T: Ethics (Western)	6	5-1-0	15	60	75
		DSE-3		TBD	6	5-1-0	15	60	75
		DSE-4		TBD	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENVS** = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

List of Core and Elective courses

Core Courses (CC)

CC - 1: Indian Philosophy - I
CC - 2: History of Western Philosophy - I
CC - 3: Indian Philosophy - II
CC - 4: History of Western Philosophy- II
CC - 5: Philosophy of Mind
CC - 6: Social and Political Philosophy
CC - 7: Philosophy of Religion
CC - 8: Western Logic – I
CC - 9: Western Logic – II
CC -10: Epistemology and Metaphysics (Western)
CC -11: Nyya Logic and Epistemology – I
CC -12: Ethics (Indian)
CC -13: Nayaya Logic and Epistemology – II
CC -14: Ethics (Western)

Discipline Specific Elective (DSE)

DSE-1: Philosophy of language (Indian)

DSE-2: Ethics (Applied Ethics)
Or
DSE-2: Philosophy of Language (Western)

DSE-3: ***(Any one text from following four texts of Western philosophy and Indian philosophy)***

DSE-3A: An Enquiry Concerning Human Understanding - D. Hume
Or
DSE-3B: The Problems of Philosophy-- Bertrand Russell
Or
DSE-3C: Vedāntasāra: Sadananda Yogindra Saraswati
Or
DSE-3D: Śrimadbhagabadgīta

DSE-4: ***(Any one philosophical system from following philosophical systems of contemporary Indian thought)***

DSE-4A: Swami Vivekananda
Or
DSE-4B: Rabindranath Tagore
Or
DSE-4C: Sri Aurobindo
Or
DSE-4D: M.K.Gandhi

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Skill Enhancement Course (SEC)

SEC-1: Computer Application
Or
SEC-1: Philosophy of Human Rights

SEC -2: Value Education
Or
SEC -2: Man and Environment

Generic Elective (GE)
[Interdisciplinary for other department]

GE-1: Ethics: Indian and Western
Or
GE-1: Western Logic

GE-2: Feminism
Or
GE-2: Philosophy of Mind

GE-3: Theory of Inference in Nyāya
Or
GE-3: Theory of God in Nyāya Metaphysics

GE- 4: Environmental Ethics
Or
GE- 4: Termination of Life & Ethics

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Core Courses (CC)

CC-1: Indian Philosophy – I **Credits 06**

C1T: Indian Philosophy – I

Course Contents:

a) Introduction: Division of Indian Philosophical Schools:Āstika and Nāstika
b) Cārvāka School- Epistemology, Metaphysics, Ethics.
c) Jainism- Concept of Dravya, Sat, Guṇa, Paryāya Anekāntavāda, Syādvāda and Saptabhaṅginaya.
d) Buddhism- Four noble Truths, Theory of Dependent Origination (Pratītyasamutpādavāda), Definition of Reality(Arthakriyākāritva), Doctrine of Momentariness, (Kṣanabhangavāda), Theory of no-soul (Nairātmyavāda), Four Schools of Buddhism (Basic tenets).
e) Nyāya – Pramā and Pramāṇa, Pratyakṣa (Definition), Sannikarṣa, Classification ofPratyakṣa: Nirvikalpaka, Savikalpaka, Laukika, Alaukika;
f) Anumiti, Anumāna (Definition), vyāpti, parāmarśa, Classification of Anumāna: pūrvavat, śesavat, smānyatodṛsta, kevalānvayī, kevalavyātirekī, anvayavyātirekī, svārthānumāna, parārthānumāna, Upamāna (definition), Śabda (definition),
g) Vaiśeṣika—Seven Padārthas, dravya, guṇa, karma, sāmānya, viśeṣa, samavāya, abhāva,
h) Different types of causes: samavayi, asamavayi and nimitta. Asatkāryavāda.

Suggested Readings:

English:

- Outlines of Indian Philosophy: M. Hiriyanna
- A Critical Survey of Indian Philosophy: C.D. Sharma
- An Introduction to Indian Philosophy: D. M. Dutta & S.C. Chatterjee
- Classical Indian Philosophy: J.N. Mohanty
- History of Indian Philosophy: S.N. Dasgupta
- Indian Philosophy (Vol. I & II): S. Radhakrishnan
- Indian Philosophy (Vol. I & II): J.N. Sinha
- Studies on the Carvaka/Lokayata: Ramakrishna Bhattacharya
- The Central Philosophy of Buddhism: T.R.V. Murti
- Yogacara Idealism: A.K.Chatterjee
- An Introduction to Maddhyamika Philosophy: Jaydev Singh
- Reflections on Indian Philosophy: K.P. Sinha
- Philosophy of Jainism: K.P. Sinha
- Nyaya Theory of Knowledge: S.C. Chatterjee
- Six Ways of Knowing: D.M. Dutta
- Nyaya-Vaisesika Metaphysics: Sadananda Bhaduri
- The Doctrine of Maya: A.K. Roychoudhuri
- Self and Falsity in Advaita Vedanta: A.K. Roychoudhuri
- The Word and the world: Bimal Krishna Matilal
- Logic, Language and Reality: Bimal Krishna Matilal

Bengali:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Bharatiya Darshan: Debabrata Sen
- Bharatiya Darshan: Nirodbaran Chakraborty
- Sayan Madhaviya Sarva Darshan Samgraha: Satyajyoti Chakraborti
- Lokayata Darshan: Debiprasad Chatoopadhyay
- Carvakacarca: Ramakrisna Bhattacharya
- Carvaka Darshan: Panchanan Sastri
- Carvaka Darshan: Amit Kumar Bhattacharya
- Bauddha Dharma O Darshan: Swami Vidyaranya
- Bauddha Darshan: Panchanan Sastri
- Gautama Buddher Darshan o Dharma: Sukomol Choudhury
- Bauddha Darshan: Amit Kumar Bhattacharya
- Ksanabhangavada: Bidhubhusan Bhattacharya
- Jainadarshaner Digdarshan: Satindra Chandra Bhattacharya
- Nyaya Darshan: Phanibhushan Tarkavagisha
- Nyaya Paricaya: Phanibhushan Tarkavagisha
- Nyaya-Vaisesika Darshan: Karuna Bhattacharya
- Nyaya Tattva Parikrama: Kalikrishna Bandyopadhyaya
- Samkhya Darshan: Bhupendranath Bhattacharya
- Samkhya Darshaner Vivarana: Bidhubhushan Bhattacharya
- Samkhyamata Samiksa: Yogendranath Bagchi
- Samkhya Tattva Kaumudi: Narayan Chandra Goswami
- Samkhya-Patanjal Darshan: Kanakprabha Bandyopadhyaya
- Patanjal Darshan: Purnachandra Vedantachanchu
- Puva Mimasa Darshan: Sukhamaya Bhattacharya
- Vedanta Darshan: Roma Choudhury
- Vedanta Darshan: Advaitavada: Ashutosh Sastri
- Mayavada: Pramatha Nath Tarkabhushan
- Vedanta Darshan: Swami Vidyaranya

CC-2: History of Western Philosophy – I **Credits 06**

C2T: History of Western Philosophy – I

Course Contents:

a) **Pre Socratic Philosophy:** A brief outline
b) **Plato:** Theory of Knowledge, Theory of Forms.
c) **Aristotle :** Critique of Plato's theory of Forms, Doctrine of four causes, Form and Matter
d) **St. Thomas Aquinas:** Faith and Reason, Essence and Existence.
e) **Descartes:**Cartesian method of doubt, cogito ergo sum, criterion of truth, types of ideas, Proofs for the existence of God, Mind- body dualism Proofs for the existence of the external world,
f) **Spinoza:** Doctrine of substance, Attributes and Modes, Existence of God, Pantheism, Three orders of knowing.
g) Leibniz: Monads, Truths of reason, Truths of facts, Innate ideas, Some metaphysical principles: Law of Identity of indiscernibles, Law of sufficient reason, Law of continuity, Doctrine of Pre-established harmony.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Suggested Readings:

English:

- The Greek Philosophers from Thales to Aristotle: W. K. C. Guthrie
- A Critical History of Greek Philosophy: W.T. Stace
- Encyclopedia of Philosophy: P. Edwards (ed.)
- A History of Philosophy: F. Copleston, vols. I, II, IV, V, VI
- History of Western Philosophy: B. Russell
- History of Modern Philosophy: R. Falckenberg
- A Critical History of Modern Philosophy: Y.H. Masih
- A History of Philosophy: F. Thilly
- A History of Modern Philosophy: W.K. Wright
- A Critical History of Western Philosophy: D.J. O'Connor
- A History of Philosophy from Descartes to Wittgenstein: R. Scruton
- The Fundamental Questions of Philosophy: A.C. Ewing
- A Brief History of Western Philosophy: A. Kenny
- The Works of Descartes: Haldane & Ross (eds.)
- Descartes: The Project of Pure Enquiry: B. Williams
- Descartes: A. Kenny
- Spinoza: Leon Roth
- Leibniz: An Introduction to His Philosophy: N. Rescher
- The Rationalists: J. Cottingham

Bengali:

- Paschatya Darshaner Itihas: Tarak Candra Roy (pratham o dwitiya khanda)
- Paschatya Darshaner Itihas: Kalyan Chandra Gupta
- Paschatya Darshaner Itihas: Susanta Chakraborty
- Paschatya Darshaner Itihas: Samarendra Bhattacharya (pratham o dwitiya khanda)
- Paschatya Darshaner Itihas(Plato o Aristotle): N.B. Chakraborty
- Paschatya Darshaner Itihas(Plato o Aristotle): Debabrata Sen
- Paschatya Darshaner Itihas(Adhunik Yuga-Yuktivada (Descartes), Spinoza, Leibniz:): Chandrodaya Bhattacharya

CC-3: Indian Philosophy – II **Credits 06**

C3T: Indian Philosophy – II

Course Contents:

a) Sāmkhya - Satkāryavāda, Nature of Prakṛti, its constituents and proofs for its existence. Nature of Puruṣa and proofs for its existence, Plurality of Puruṣas, theory of evolution.
b) Yoga - Citta, Cittavṛtti, Cittabhūmi. Eight fold path of Yoga, God.
c) Mīmāmsā (Prābhakara and Bhātta) :Anvitābhidhānvāda and avihitānvayavāda, Arthāpatti and Anupalabdhi as sources of knowledge
d) Advaita Vedānta - Sankara's view of Brahman, Saguṇa and Nirguṇa Brahman, Three grades ofSattā: prātibhāsika, vyavahārika and pāramārthika, Jīva, Jagat and Māyā.
e) Viśistādvaita - Rāmānuja's view of Brahman, Jīva, Jagat. Refutation of the doctrine of Māyā.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Suggested Readings:

English:

- Outlines of Indian Philosophy: M. Hiriyanna
- A Critical Survey of Indian Philosophy: C.D. Sharma
- An Introduction to Indian Philosophy: D. M. Dutta & S.C. Chatterjee
- Classical Indian Philosophy: J.N. Mohanty
- History of Indian Philosophy: S.N. Dasgupta
- Indian Philosophy (Vol. I & II): S. Radhakrishnan
- Indian Philosophy (Vol. I & II): J.N. Sinha
- Six Ways of Knowing: D.M. Dutta
- The Doctrine of Maya: A.K. Roychoudhuri
- Self and Falsity in Advaita Vedanta: A.K. Roychoudhuri
- The Word and the world: Bimal Krishna Matilal
- Logic, Language and Reality: Bimal Krishna Matilal

Bengali:

- Bharatiya Darshan: Debabrata Sen
- Bharatiya Darshan: Nirodbaran Chakraborty
- Sayan Madhaviya Sarva Darshan Samgraha: Satyajyoti Chakraborti
- Lokayata Darshan: Debiprasad Chatoopadhyay
- Carvakacarca: Ramakrisna Bhattacharya
- Carvaka Darshan: Panchanan Sastri
- Carvaka Darshan: Amit Kumar Bhattacharya
- Bauddha Dharma o Darshan: Swami Vidyaranya
- Bauddha Darshan: Panchanan Sastri
- Gautama Buddher Darshan o Dharma: Sukomol Choudhury
- Bauddha Darshan: Amit Kumar Bhattacharya
- Ksanabhangavada: Bidhubhusan Bhattacharya
- Jainadarshaner Digdarshan: Satindra Chandra Bhattacharya
- Nyaya Darshan: Phanibhushan Tarkavagisha
- Nyaya Paricaya: Phanibhushan Tarkavagisha
- Nyaya-Vaisesika Darshan: Karuna Bhattacharya
- Nyaya Tattva Parikrama: Kalikrishna Bandyopadhyaya
- Samkhya Darshan: Bhupendranath Bhattacharya
- Samkhya Darshaner Vivarana: Bidhubhushan Bhattacharya
- Samkhyamata Samiksa: Yogendranath Bagchi
- Samkhya Tattva Kaumudi: Narayan Chandra Goswami
- Samkhya-Patanjal Darshan: Kanakprabha Bandyopadhyaya
- Patanjal Darshan: Purnachandra Vedantachanchu
- Puva Mimasa Darshan: Sukhamaya Bhattacharya
- Vedanta Darshan: Roma Choudhury
- Vedanta Darshan: Advaitavada: Ashutosh Sastri
- Mayavada: Pramatha Nath Tarkabhushan
- Vedanta Darshan: Swami Vidyaranya

CC- 4: History of Western Philosophy – II **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

C4T: History of Western Philosophy – II

Course Contents:

a) Locke **:** Refutation of innate ideas, the origin and formation of ideas, simple and complex ideas, substance, modes and relations, nature of knowledge and its degrees, limits of knowledge, primary and secondary qualities, representative realism.
b) Berkeley: Refutation of abstract ideas. Criticism of Locke's distinction between primary and secondary qualities, Immaterialism, esse-est-percipi, role of God.
c) Hume:Impression and ideas, association of ideas, distinction between judgements concerning relations of ideas and judgements concerning matters of fact, theory of causality, theory of self and personal identity, scepticism.
d) Kant **:** Conception of critical Philosophy, distinction between a priori and a posteriori judgements, distinction between analytic and synthetic judgements. Synthetic a priori judgements, General problem of the Critique, Copernican Revolution in Philosophy, Transcendental Aesthetic **:** Space & time - Metaphysical & Transcendental expositions of the ideas of space & time.

Suggested Readings:

English:

- Encyclopedia of Philosophy: P. Edwards (ed.)
- A History of Philosophy: F. Coppleston, vols. I, II, IV, V, VI
- History of Western Philosophy: B. Russell
- History of Modern Philosophy: R. Falckenberg
- A Critical History of Modern Philosophy: Y.H. Masih
- A History of Philosophy: F. Thilly
- A History of Modern Philosophy: W.K. Wright
- A Critical History of Western Philosophy: D.J. O'Connor
- A History of Philosophy from Descartes to Wittgenstein: R. Scruton
- The Fundamental Questions of Philosophy: A.C. Ewing
- A Brief History of Western Philosophy: A. Kenny
- The Rationalists: J. Cottingham
- An Essay Concerning Human Understanding: J. Locke
- John Locke: R. Aron
- Berkeley: G. Pitcher
- The Works of George Berkeley: T.E. Jessop & A.R. Luce(eds.) 8 vols
- An Enquiry Concerning Human Understanding-D. Hume: J. N. Mohanty (ed)
- A Treatise on Human Nature: D. Hume
- Locke, Berkeley, Hume: J. Bennett
- Locke, Berkeley, and Hume: C.R. Morris
- A Critique of Pure Reason-Immanuel Kant: N.K. Smith(tr. & ed.)
- Kant's Metaphysics of Experience: H.J. Paton vols I & II
- The Philosophy of Kant: J. Kemp
- Kant: Paul Guyer
- A Handbook to Kant's Critique of Pure Reason: Rasvihari Das
- Kant: S. Körner
- Kant: Allen W. Wood
- Lectures on Kant's Critique of Pure Reason: J.N. Mohanty

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Bengali:

- Paschatya Darshaner Itihas: Tarak Candra Roy (pratham o dwitiya khanda)
- Paschatya Darshaner Itihas: Kalyan Chandra Gupta
- Paschatya Darshaner Itihas: Susanta Chakraborty
- Paschatya Darshaner Itihas:Ikshanvada(Locke, Berkeley,Hume): Chandrodaya Bhattacharya
- Paschatya Darshaner Itihas:(Locke, Berkeley,Hume): N.B. Chakraborty
- Hume-er Enquiry-Ekti Upasthapana: Ramaprasad Das
- Kanter Darshan-Tattva o Prayog: Prahlad Kumar Sarkar (ed.)
- Kanter Darshan:Rasvihari Das
- Kanter Shuddha Prajnar Bichar: Mrinal Kanti Bhadra
- Bishuddha Prajnar Bichar: Gopal Chandra Khan

CC-5: Philosophy of Mind **Credits 06**

C5T: Philosophy of Mind

Course Contents:

a) Psychology: Definition, Nature and Scope
b) Methods of Psychology: Introspection, Extrospection, Experimental Methods – variables - dependent &independent, controls in experiment, limitations of experimental method.
c) Sensation and Perception: Nature of sensation, nature of perception, relation between sensationand perception, Gestalt theory of perception. Illusion and Hallucination.
d) Learning: Theories of Learning - Trial and error theory, Thorndike's laws of learning, GestaltTheory, Pavlov's theory of conditioned response, B.F. Skinner's theory of Operant Conditioning(reinforcement, extinction, punishment).
e) Philosophical Theories of Mind: Interactionism, Double-aspect theory, Philosophical Behaviorism, Materialism mind - brain identity theory, The Person theory (Strawson).
f) Consciousness: Levels of mind—Conscious, Sub-conscious, Unconscious, proofs for the existence of Unconscious, Freud's theory of Dream.
g) Personality: Types, Factors and Traits of Personality.

Suggested Readings:

English:

- A Textbook of Psychology: Paresh Nath Bhattacharya
- Introduction to Psychology: G.T. Morgan, R. A. King Jr.
- A Modern Introduction to Psychology: Rex Knight & M. Knight
- A Manual of Psychology: G.F. Stout
- Psychology: Woodworth & Marquis
- Science and Human Behaviour: B.F. Skinner
- About Behaviorism: B.F. Skinner
- General Psychology: G.D. Boaz
- General Psychology: G. Murphy
- Psychology: W. James
- A Textbook of Psychology: E.B. Titchener

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Principles of Psychology: W. James
- Introduction to Psychology: N.L. Muna
- A Materialist Theory of Mind: D.M. Armstrong
- Philosophy of Mind: J. Heil
- Philosophy of Mind: J. Shaffer
- An Introduction to Philosophy of Mind: C.J. Lowe

Bengali:

- Monovidya: Priti Bhushan Chattopadhyay
- Monovidya: Pareshnath Bhattacharya
- Monovidya: Ira Sengupta
- Monovidya: Samarendra Bhattacharya
- Monosamikksha: M. N. Mitra o Pushpa Mishra
- Monodarshan-Sarirvada o Tar Vikalap: M. N. Mitra o P. Sarkar (Sampadito)
- Monovijana Prasanga: Saradindu Bandyopadhyay
- Adhunik Monovijana: Ira Sengupta
- Shikshashrayi Monovidya: Sushil Roy
- Monodarshan: Arabinda Basu o Nibedita Chakraborty

CC- 6: Social and Political Philosophy **Credits 06**

C6T: Social and Political Philosophy

Course Contents:

a) Nature and Scope of i) Social Philosophy ii) Political Philosophy iii) Relation between social and Political Philosophy.
b) Primary concepts: Society, community, association, institution, family: nature, different forms of family, role of family in the society.
c) Social Class and Caste: Principles of class and caste, Marxist conception of class, Varṇaśrama dharma.
d) Theories regarding the relation between individual and society:
   I. Individualistic theory
   II. Organic theory
   III. Idealistic theory
e) Secularism—its nature, Secularism in India.
f) Social Change: Nature, Relation to Social progress, Marx-Engles on social change, Gandhi onsocial change.
g) Political Ideals: Nature of Democracy and its different forms, direct and indirect democracy, liberal democracy, democracy as a political ideal, Socialism: Utopian and Scientific, Anarchism.

Suggested Readings:

English:

- Philosophy: A Guide through the subject: A.C. Grayling (Ed.)
- Individuals: An Essay in Descriptive Metaphysics: P.F. Strawson
- The Concept of Person and Other Essays: A.J.Ayer
- Fundamentals of Sociology: P. Gisbert

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Outlines of Social Philosophy: J.S. Mackenzie
- Problems of Polical Philosophy: D.D. Raphael
- Society: R.M. MacIver & C.H. Page
- Sociology: M. Ginsberg
- Sociology: Tom Bottomore
- Sociology: S.N. Shankar Rao
- Sociology: D.C. Bhattacharya
- Sociology: P.B. Kar
- Guide to Modern Thought: C.E.M. Joad
- Introduction to Modern political Theory: C.E.M. Joad
- The Evolution of Political Philosophy of Gandhi: Buddhadeb Bhattacharya
- Social and Political Thought of Gandhi: Jayantanuja Bandyopadhyay
- The Philosophy of Mahatma Gandhi: D.M. Dutta
- The Philosophy of Sarvodaya: K.S. Bharathi
- Communist Manifesto: Karl Marx & Frederick Engels
- Socialism: Utopian and Scientific: F. Engels Ngv nnv
- Open Society and Its Enemies: Karl Popper
- The Open Philosophy and The Open Society: M. Cornforth
- Religion in India: T.N. Madan(ed.)
- Religion and Society: S. Radhakrishnan
- Secularism in the Present Indian Society, Amal Kumar Mukhopadhyay in Bulletin of the Ramakrishna Mission Institute of Culture, Vol.LVII, No. 11
- Secularism and Its Critics: Rajeev Bhargava (ed.)
- Civil Society and Its Institutions: Andre Beteille
- Unravelling the Nation:Sectarian Conflict and India's Secular Identity: Kaushik Basu &Sanjay Subramaniyam (eds.)
- India as A Secular State: D.E. Smith
- Political Thought: C.L. Wayper
- Political Philosophy:An Introduction: W.T. Blackstone
- Political Philosophy:East and West: Krishna Roy
- Political Philosophy: V.P. Verma
- Essays in Social and Political Philosophy: Krishna Roy & Chhanda Gupta (eds.)
- Western Political Thought: Brian R. Nelson
- Western Political Thought: From Plato to Marx: Shefali Jha

Bengali:

- Samaj Darshan Dipika: Pritibhushan Chattopadhyay
- Samaj Tattva: Parimal Bhushan Kar
- Samaj Tattva: T. Bottomore
- Bisay Samaj Tattva: Anadi Kumar Mahapatra
- Samajdarshan o Rashtradarshaner Parichoy: A.K. Mahapatra o P. Mukherjee
- Rashtradarshaner Dhara: Amal kumar Mukhopadhyay
- Samajdarshan o Rashtradarshan: Samarendra Bhattacharya
- Samaj o Rajnaitikdarshan: Sandip Das
- Samyabader Itihas: Marx o Engels
- Samajtantra: Kalpanik o Baijnanik: F. Engels
- Marxiya Rashtrachinta: Shovan Lal Dutta Gupta
- Sarvodaya Andoloner Itihas: Gurudas Bandyopadhyay
- Gandhi Rachanasambhar: M.K. Gandhi

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Bharater Dharmanirapekshatar Sankat, Bholanath Bandyopadhyay in Essays on Science and Society: Biplab Chakraborti
- Dharmanirapekshata Birodhi Istahar: Ashis Nandy.

CC-7: Philosophy of Religion **Credits 06**

C7T: Philosophy of Religion

Course Contents:

a) Nature and scope of Philosophy of Religion. Doctrine of karma and rebirth, doctrine of liberation, (Hindu, Bauddha and Jaina views).
b) The Philosophical teachings of the Holy Quran: God the ultimate Reality, His attributes, Hisrelation to the world and man.
c) Some basic tenets of Christianity: The doctrine of Trinity, The theory of Redemption
d) Religious Pluralism, Inter-religious dialogue and Possibility of Universal Religion.
e) Arguments for the existence of God: Cosmological, Telelogical and Ontological arguments, Nyāya arguments
f) Grounds for Disbelief in God: Sociological theory (Durkheim), Freudian theory, Cārvāka, Bauddha and Jaina views
g) The Peculiarity of Religious Language: The doctrine of analogy, Religious statements as Symbolic, Religious language as Non-Cognitive (Randal's view), the language game theory (D.Z. Phillip).

Suggested Readings:

English:

- Philosophy of Religion: J. Hick
- An Introduction to the Philosophy of Religion: Brian Davies
- Indian Philosophy of Religion: A. Sharma
- Comparative Religion: P.B. Chatterjee
- Comparative Religion: Eric J. Sharpe
- Patterns in Comparative Religion: M. Eliade (Ch I, Sec. I)
- Atheism in Indian Philosophy: D.P. Chattopadhyay
- Essays in Indian Philosophy : Sukharanjan Saha (ed.)
- Studies in Nyaya-Vaisesika Theism: Gopika Mohan Bhattacharya
- The Religions of the World: R.K.M. Institute of Culture
- Encyclopedia Britannica, Vol. I
- Encyclopedia of Islam, Vols. I & II
- Indian Religions: S. Radhakrishnan
- Foundations of Living Faith: H.D. Bhattacharya
- Aspects of Hindu Morality: Saral Jhingram
- A History of Muslim Philosophy (Vols.I &II): M.M. Sharif
- Islam and Secularism: Sayed Muhammad Al-Naquib Al-Attas
- The History of Philosophy in Islam-T.J. de Boer: E. Jones (tr.)
- The Holy Quran: Mohammad Yusuf Ali (tr.)
- The Spirit of Islam: Syed Amir Ali
- The Meaning of the Glorious Koran: M. Pickthall

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- A History of Islamic Philosophy: M. Fakhry
- The Spirit of Islam's Message, Muhammad Qamaruddin in Religions of the People of India:S.R. Saha (ed.)
- Cultural Heritage of Islam: Osman Ghani
- Old Testament: R. Kittel (ed.)
- New Testament: Kilpatrick
- The Doctrine of the Trinity: R.S. Franks
- The Doctrine of the Trinity: Loenard Hodgson
- The Idea of the Holy: R. Otto
- A Brief Account of the Religion of the Hindus: Srilekha Dutta in Religions of the People of India: S.R. Saha (ed.)
- Dharma in Hinduism: An Ideal Religion: Tapan Kumar Chakraborty in Religions of the People of India: S.R. Saha (ed.)
- Jainism - A Religion of Non-Theistic Humanism: Tushar Sarkar in Religions of the People of India: S.R. Saha (ed.)
- Essays in Analytical Philosophy (Ch.VII): Gopinath Bhattacharya
- Buddhism in India and Abroad: Anukul Badyopadhyay

CC-8: Western Logic –I **Credits 06**

C8T: Western Logic –I

Course Contents:

a) Logic and Arguments, Deductive and Inductive Arguments, Argument forms and arguments, statement forms and statement, Truth and Validity. Categorical propositions and classes: quality, quantity and distribution of terms, Translating categorical propositions into standard form.
b) Immediate inferences: Conversion, Obversion and Contrapositon, Traditional square of opposition and Immediate Inferences based there on; Existential Import, symbolism and Diagrams for categorical propositions.
c) Categorical Syllogism: Standard Form categorical Syllogism; The Formal nature of Syllogistic Argument, Rules and Fallacies, General Rules; To test Syllogistic Arguments for validity (by applying general rules for syllogism); To solve problems and prove theorems concerning syllogism.
d) Boolean Interpretation of categorical propositions; Review of the Traditional Laws of Logic concerning immediate inference and syllogism; Venn Diagram Technique for Testing Syllogisms, Hypothetical and Disjunctive Syllogisms, Enthymeme, The Dilemma.
e) Induction: Argument by Analogy, Appraising Analogical Arguments, Refutation by Logical Analogy.
f) Causal Connections: Cause and Effect, the meaning of "Cause"; Induction by Simple Enumeration; Mill's Method of Experimental Inquiry; Mill's Method of Agreement, Method of Difference, Joint Method of Agreement and Difference, Method of Residues, Method of Concomitant Variations; Criticism of Mills Methods, Vindication of Mill's Methods.
g) Science and Hypothesis: Explanations; Scientific and Unscientific, Evaluating Scientific Explanations; The pattern of Scientific Investigation; Crucial Experiments and Ad Hoc Hypotheses.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

h) Probability: Alternative Conception of Probability; The Probability Calculus; Joint Occurrences; Alternative Occurrences.

Suggested Readings:

English:

- Introduction to Logic (13th Edn.): I.M. Copi & C. Cohen
- Symbolic Logic: I.M. Copi
- Methods of Logic (Part I,Ch.s 5,7,9): W.V.O. Quine
- Introduction to Logic and Scientific Method: Cohen & Nagel
- Logic: Informal, Symbolic and Inductive: Chhanda Chakraborty
- Logic: Stan Baronett & Madhuchhanda Sen
- The Elements of Logic: Stephen Barkar
- Understanding Symbolic Logic: Virginia Klenk
- Logic- A Comprehensive Introduction; S.D. Guttenplan & M. Tamney
- Logic & Philosophy- A Modern Introduction: Howard Kahne
- Logic- A First Course: A.E. Blumberg

Bengali:

- Nabya Yuktibijnana(Pratham theke caturtha khanda): Ramaprasad Das
- Sanketik Yuktibijnana:Ramaprasad Das
- Samsad Yuktibijnana Abhidhan: Ramaprasad Das o Subirranjan Bhattacharya

CC-9: Western Logic – II **Credits 06**

C9T: Western Logic – II

Course Contents:

a) Symbolic Logic**:** The value of special symbols; Truth-Functions; Symbols for Negation, Conjunction, Disjunction, Conditional Statements and Material Implication; Material Equivalence and Logical Equivalence; Dagger and stroke functions; inter-definability of truth functors.
b) Tautologous, Contradictory and Contingent Statement-Forms; The Paradoxes of Material Implication; The three Laws of Thought.
c) Testing Argument Form and Argument for validity by
    i. The Method of Truth-table.
    ii. The Method of Resolution (Fellswoop & Full Sweep)[dot notation excluded]
d) Determining the logical character of statement form and statements by
    i. The Method of Truth-table.
    ii. The Method of Resolution [dot notation excluded]
e) The Method of Deduction: Formal Proof of Validity: Difference between Implicational Rules and the Rules of Replacement; Construction of Formal Proof of Validity by using nineteen rules; Proof of invalidity by assignment of truth-values.
f) Quantification Theory**:** Need for Quantification Theory, Singular Propositions; Quantification; Translating Traditional subject predicate proposition into the logical notation of propositional function and quantifiers;

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

g) Quantification Rules and Proving Validity; Proving Invalidity for arguments involving quantifiers.

Suggested Readings:

English:

- Introduction to Logic (13th Edn.): I.M. Copi & C. Cohen
- Symbolic Logic: I.M. Copi
- Methods of Logic (Part I,Ch.s 5,7,9): W.V.O. Quine
- Introduction to Logic and Scientific Method: Cohen & Nagel
- Logic: Informal, Symbolic and Inductive: Chhanda Chakraborty
- Logic: Stan Baronett & Madhuchhanda Sen
- The Elements of Logic: Stephen Barkar
- Understanding Symbolic Logic: Virginia Klenk
- Logic- A Comprehensive Introduction; S.D. Guttenplan & M. Tamney
- Logic & Philosophy- A Modern Introduction: Howard Kahne
- Logic- A First Course: A.E. Blumberg

Bengali:

- Nabya Yuktibijnana(Pratham theke caturtha khanda): Ramaprasad Das
- Sanketik Yuktibijnana:Ramaprasad Das
- Samsad Yuktibijnana Abhidhan: Ramaprasad Das o Subirranjan Bhattacharya

CC-10: Epistemology and Metaphysics (Western) Credits 06

C10T: Epistemology and Metaphysics (Western)

Course Contents:

a) Concepts, Truth.
b) Sources of Knowledge.
c) Some Principal uses of the verb "To know", Conditions of Propositional Knowledge, Strong and weak senses of "know".
d) Analytic truth and logical possibility.
e) The apriori.
f) The Problem of Induction.
g) Cause and Causal Principles
h) Realism, Idealism.
i) Phenomenalism
j) Substance and Universal

Suggested Readings:

English:

- An Introduction to Philosophical Analysis—John Hospers
- The Problem of Knowledge: A.J. Ayer
- Language, Truth and Logic: A.J. Ayer
- Readings in Philosophical Analysis: J. Hospers
- The Central Questions of Philosophy: A.J. Ayer
- Theory of Knowledge: A.J. Woozley
- An Introduction to Philosophy: Shibapada Chakraborty

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Bengali:

- Darshanik Jijnasa (Bagarthatattva): Ramaprasad Das
- Darshanik Jijnasa (Jnanatattva-Jnaner Svarup): Ramaprasad Das
- Darshanik Jijnasa (Jnanatattva): Ramaprasad Das
- Darshanik Jijnasa (Paratattva o Bhauto Jagater Jnana): Ramaprasad Das
- Darshanik Bishlesaner Ruparekha (Pratham O dvitiya khanda): Samarikanta Samanta
- Paschatya darshaner Ruparekha: Ramaprasad Das o Shibapada Chakraborty

CC-11: Nyaya Logic and Epistemology –I **Credits 06**

C11T: Nyaya Logic and Epistemology –I

Course Contents:

a) Definition of buddhi or jñāna (cognition), its two kinds; Definition of smṛti; Two kinds of smṛti (memory);Definition of anubhava, its division into veridical (yathārtha) and non-veridical (ayathārtha);Three kinds of nonveridical anubhava; Definitions clarified in Tarkasaṁgraha Dīpikā.
b) Four-fold division of pramā and pramāṇa. Definition of "Kāraṇa" (special causal condition) and "kāraṇa" (general causal condition). The concept of anyathāsiddhi (irrelevance) and its varieties.The definition of kārya (effect). Kinds of cause: smavāyi, a-samavāyi and nimitta kāraṇa (definitions and analysis).
c) Definition of pratyakṣa and its two-fold division: nirvikalpaka and savikalpaka jñāna. Evidence for the actuality of nirvikalpaka.
d) Sannikarsa and its six varieties. Problem of transmission of sound; the claim of "anupalabdhi" as a distinctive pramāṇa examined.

Suggested Readings:

English:

- Tarkasaṁgraha with Dipika: Gopinath Bhattacharya
- Tarkasaṁgraha: M.R. Bodas & Y.V. Athalye (tr. & ed.)
- The Elements of Indian Logic and Epistemology: Chandrodaya Bhattacharya
- A Primer of Indian Logic: Kuppuswami Shastri
- Fundamental Questions of Indian Metaphysics & Logic: S.K. Maitra
- The Nyaya Theory of Knowledge: S.C. Chatterjee

Bengali:

- Tarkasamgraha with Dipika: Narayan Chandra Goswami
- Tarkasamgraha with Dipika: Indira Mukhopadhyay
- Tarkasamgraha with Dipika: Panchanan Shastri
- Tarkasamgraha with Dipika: Kanailal Poddar

CC-12: Ethics (Indian) **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

C12T: Ethics (Indian)

Course Contents:

a) Introduction: Concerns and Presuppositions, Concept of Sthitaprañjna, Karmayoga: (Gīta) Puruṣārthas and their inter-relations.
b) Meaning of Dharma, Concept of ṛṇa and ṛta. Classification of Dharma: sādhāraṇadharma and Asadharana Dharma,Varnasrama Dharma
c) Vidhi and Niṣedha
d) Buddhist Ethics: Pancaśīla, Brahmavihārabhāvanā (Bauddha) Anubrata, Mahābrata, Ahimsā.
e) Jaina Ethics: anubrata, mahāvrata
f) Mimāṁsa Ethics: nitya naimittika karma and kāmya karma, the imperative in kāmya karmas and in kāmya karmas involving hiṁsā.

Suggested Readings:

English:

- The Fundamentals of Hinduism-A Philosophical Study: S.C. Chatterjee
- The Ethics of the Hindus: S.K. Maitra
- An Outline of Hinduism: T.M.P. Mahadevan
- Classical Indian Ethical Thought: K.N. Tewari
- Ethics in the Gita-An Analytical Study (pp-119-145): Rajendra Prasad
- Ethics in the Vedas, Satya prakash Singh in Historical-Developmental Study of Classical Indian Philosophy,[History of Science, Philosophy and Culture in Indian Civilisation (Vol. XII, Part 2)]: Rajendra Prasad (ed.)
- Ṛta, Satya, Tattva, Tathya, Samiran Chandra Chakraborty in Philosophical Concepts Relevant to Sciences in Indian Tradition,[History of Science, Philosophy and Culture in Indian Civilisation (Vol. VIII, Part 4)]: P.K. Sen (ed.)
- Development of Moral Philosophy in India; Surama Dasgupta
- Ethical Philosophies of India: I.C. Sharma
- Studies on the Purusarthas: P.K. Mahapatra (ed.)
- A Critical Survey of Indian Philosophy: C.D. Sharma
- Indian Philosophy (Vo. I): J.N. Sinha
- Philosophy of Hindu Sadhana: N.K. Brahma

Bengali:

- Nitividya: Mrinal Kanti Bhadra
- Nitividyar Tattvakatha: Somnath Chakraborty
- Nitishastra: Dikshit Gupta
- Nitividya: Sibapada Chakraborty
- Pashchatya Darshaner Itihas (Pratham o dwitiya khanda): S. Radhakrishnan
- Dharma Darshan: A. Bandyopadhyay o K.C. Gupta
- Dharma Darshan: Rabindranath Das
- Dharmadarshanser Katipoy Samasya: Dilip Kumar Mohanto
- Dharma Darshan: Sushil Kumar Chakraborty
- Bharatiya Dharmaniti: Amita Chattopadhyay (Sampadita)
- Bharatiya Darshane Nirishvarvada: B.B. Purakayastha (pp-39-50,56-66)
- Bharatiya Darshaner Drishtite Muktir Swarup: Chandana Das

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Sarvadarshanasamgraha: Satyajyoti Chakraborty (Pratham Khanda)

CC-13: Nyaya Logic and Epistemology –II **Credits 06**

C13T: Nyaya Logic and Epistemology –II

Course Contents:

a) Definiton of anumāna, anumiti and parāmarśa. Analysis of pakṣatā. Definition of vyāpti, Vyāptigraha.
b) Definition of pakṣadharmatā—svārthānumiti and parārthānumiti; Analysis of pañcāvayavī Nyāya. Necessity of parāmarśa. Three kinds of linga or hetu: kevalānvayī, kevalavyātirekī and anvayavyātirekī. Definiton of pakṣa, Sapakṣa and vipakṣa with illustrations. Marks of sadhetu.
c) Hetvābhāsa-two types of definition. Five kinds of hetvābhāsa:
    (1) "Savyābhicāra'' and its three kinds-defined and illustrated;
    (2) "Viruddha" defined and illustrated:
    (3) "Satpratipakṣa" defined and illustrated;
    (4) Three kinds of "Asiddha" enumerated;
        (a) āśrayāsiddha
        (b) svarūpāsiddha and
        (c) vyāpyatvāsiddha. Vyāpyatvāsiddha defined as"sopādhika hetu". Upādhi and its four kinds (definition and illustration)
    (5) "Bādhita" (definition and illustration).

d) "Upamāna pramāṇa": Definition and analysis."Śabda pramāṇa" : Definition and analysis. "Śakti" (the direct signifying power), the padapadārtha- sambandha considered as Īśvara-saṁketa, Controversy between the Mīmāṃsakas and the Naiyāyikas regarding the nature of Śakti as universal or particular.
e) "Śaktigraha" (ascertainment of the meaning-relation), lakṣaṇa, varieties of lakṣaṇa, Analysis of "Gauṇī-vṛtti" (the secondary signifying power of a term), "Vyānjanā-vṛtti" (the suggestive power of a term) analysed as a kind of śakti or lakṣaṇā.
f) The definition of lakṣaṇā, The concept of "yoga-rūḍhi". The conditions of "śābda-bodha", ākānkṣā, yogyatā and sannidhi. Two kinds of statements distinguished—Vaidika and Laukika.
g) "Arthāpatti" as a distinctive pramāṇa: Controversy between the Mīmāṃsakas and the Naiyāyikas.
h) The theory of prāmāṇya: the issue between svataḥ-prāmāṇyavāda and parataḥ-prāmāṇyavāda regarding utpatti and jñapti; The Prābhākara theory of akhyāti.

Suggested Readings:

English:

- Tarkasamgraha with Dipika: Gopinath Bhattacharya
- Tarkasamgraha: M.R. Bodas & Y.V. Athalye (tr. &ed.)
- The Elements of Indian Logic and Epistemology: Chanrodaya Bhattacharya
- A Primer of Indian Logic: Kuppuswami Shastri
- Fundamental Questions of Indian Metaphysics & Logic: S.K. Maitra

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- The Nyaya Theory of Knowledge: S.C. Chatterjee

Bengali:

- Tarkasamgraha with Dipika: Narayan Chandra Goswami
- Tarkasamgraha with Dipika: Indira Mukhopadhyay
- Tarkasamgraha with Dipika: Panchanan Shastri
- Tarkasamgraha with Dipika: Kanailal Poddar

CC-14: Ethics (Western) **Credits 06**

C14T: Ethics (Western)

Course Contents:

a) Nature and Scope of Ethics, Classification of Ethics: **a:** Prescriptive, **b:** Meta Ethics, **c:** Applied Ethics.
b) Moral and Non-moral actions, Object of Moral Judgement - Motive and Intention
c) Moral Theories: Plato and Aristotle
d) Standards of Morality: Hedonism - Ethical, Psychological. Utilitarianism: Act utilitarianism, Ruleutilitarianism. Deontological Theories: Act - Deontological Theories, Rule-Deontological Theories - Kant's Theory.
e) Theories of Punishment
f) Environmental Ethics: Its nature, Concepts of Anthropocentrism and Non anthropocentrism, value beyond sentient beings, reverence for life.

Suggested Readings:

English:

- History of Philosophy-Eastern and Western: (Vol. I & II): S. Radhakrishnan
- Principles of Ethics: P.B. Chatterjee
- A Manual of Ethics: J.S. Mackenzie
- Ethics: W. Frankena
- An Introduction to Ethics: W. Lillie
- Ethics-Theory and Practice: J. Thiroux (Chs II & III)
- Ethics-Theory and Practice: Y.V. Satyanaryana
- Moral Reasons: J. Nuttal
- Human Conduct: J. Hospers
- Ethics-The Fundamentals: Julia Driver
- An Introduction to Kant's Ethics: R. Sullivan
- Nicomachean Ethics: Aristotle
- Philosophical Ethics-An Introduction to Moral Philosophy: T.L. Beauchamp (ed.)
- Virtue Ethics: Rosalind Hursthouse (Ch. III)
- Karma,Causation and Retributive Morality: Rajendra Prasad

Bengali:

- Nitividya: Mrinal Kanti Bhadra
- Nitividyar Tattvakatha: Somnath Chakraborty

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Nitishastra: Dikshit Gupta
- Nitividya: Samarendra Bhattacharya
- Nitividya: Sibapada Chakraborty
- Pashchatya Darshaner Itihas (Pratham o dwitiya khanda): S. Radhakrishnan
- Dharma Darshan: A. Bandyopadhyay o K.C. Gupta
- Dharma Darshan: Rabindranath Das
- Dharmadarshanser Katipoy Samasya: Dilip Kumar Mohanto
- Dharma Darshan: Sushil Kumar Chakraborty
- Bharatiya Dharmaniti: Amita Chattopadhyay (Sampadita)
- Bharatiya Darshane Nirishvarvada: B.B. Purakayastha
- Bharatiya Darshaner Drishtite Muktir Swarup: Chandana Das
- Sarvadarshanasamgraha: Satyajyoti Chakraborty (Pratham Khanda)
- Islami Darshan: Hasan Ayub
- Quran Sharif: Maulana Mobarak Qarim Zahar (Anudita)
- Quran Sharif: Osman Ghani (Anubad O bhasya)
- Islamer Chinta o Chetanar Kramabikash (dasham Khanda): Osman Gani
- Pabitra Bible (Puratn o Natun Niyam): Bharater Bible Society
- Bauddhadharmer Itihas: Mani Kuntala Halder
- Bauddhadharma o Darshan: Sukomal Chowdhury

Discipline Specific Elective (DSE)

DSE-1: Philosophy of Language (Indian) **Credits 06**

DSE1T: Philosophy of Language (Indian)

Course Contents:

a) Definition and classification of pada
b) Introduction of concepts of āsatti, yogyatā, tātparya, ākāṁṣā
c) Different types of lakṣaṇā
d) śābdabodha
e) anvitābhidhānvāda and abhihitānvayavāda.

Suggested Readings:

English:

- Tarkasaṁgraha: Annaṁbhatta
- Tarkasamgraha: M.R. Bodas & Y.V. Athalye (tr. &ed.)
- The Elements of Indian Logic and Epistemology: Chandrodaya Bhattacharya
- A Primer of Indian Logic: Kuppuswami Shastri
- Fundamental Questions of Indian Metaphysics & Logic: S.K. Maitra
- The Nyaya Theory of Knowledge: S.C. Chatterjee

Bengali:

- Tarkasamgraha with Dipika: Narayan Chandra Goswami
- Tarkasamgraha with Dipika: Indira Mukhopadhyay
- Tarkasamgraha with Dipika: Panchanan Shastri
- Tarkasamgraha with Dipika: Kanailal Poddar

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

DSE-2: Ethics (Applied ethics) **Credits 06**

DSE2T: Ethics (Applied ethics)

Course Contents:

a. Nature and scope of applied ethics.
b. Killing: Suicide, Euthanasia, Animal killing.
c. Poverty, Affluence and Morality.
d. War and Violence: Terrorism.
e. Right: Nature and Value of Human Rights—Discrimination on the basis of race, caste and religion.
f. The Ethics of Care.
g. Value beyond sentient beings, Reverence for life, Deep Ecology, Concepts of Kinship Ethics.
h. Ecological Concern in Indian thoughts: Jaina and Bauddha views.

Suggested Readings:

- Ethics-The Fundamentals: Julia Driver
- Ethics-Theory and Practice: J. Thiroux (Chs II & III)
- Ethics-Theory and Practice: Y.V. Satyanaryana
- Moral Reasons: J. Nuttal
- Moral Reasons: James Rachels
- Philosophical Ethics-An Introduction to Moral Philosophy: T.L. Beauchamp (ed.)
- Elements of Moral Philosophy: James Rachels
- Theories of Rights: J. Waldron (ed.)
- Human Rights: Alan Gewirth
- Modern Moral Philosophy: W.D. Hudson
- Ethics Since 1900: Mary Warnock
- Introductory Ethics: Fred Feldman
- Ethics: W. Frankena
- Identity and Violence: Amartya Sen
- Twentieth Century Ethics: Roger Hancock
- Aspects of Hindu Morality: Saral Jhingram
- Practical Ethics: Peter Singer (Chs V,VII,VIII,X)
- Applied Ethics: Peter Singer (ed.)
- A Companion to Ethics: Peter Singer (Chs 14,19,22)
- A Companion to Bio-Ethics: Peter Singer & H. Kuhse (eds.)
- Human Rights-An Introduction: D.J. O'Byrne
- Man and Nature: G.F. MacLean (ed.)
- Human Rights, Gender and the Environment: Manisha Preya, Krishna Menon, Madhulika Banerjee
- Gender: G. Geetha
- A Short Introduction to Feminist Theory: Rinita Mazumdar
- Feminist Thought: Shefali Moitra
- Justice and Care: Essential Readings in Feminist Ethics: Virginia Held (ed.)
- Language, Truth and Logic: A.J. Ayer
- The language of Morals: R.M. Hare
- Nitishastra: Dikshit Gupta

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Vyavaharik Nitivijnan: N. Nandy & M. Bal
- Nitividya: Sanjib Ghosh
- Nitividyar Tattvakatha: Somnath Chakraborty
- Tattvagata Nitividya o Vyavaharik Nitividya: Samarendra Bhattacharya
- Vyavaharik Nitividya-Peter Singer: Pardip Kumar Roy (tr.)
- Prayogik Nitividya: A.S.M. Abdul Khalek
- Nitibidya- Shibapada Chakraborty

Or

DSE-2: Philosophy of Language (Western) **Credits 06**

DSE2T: Philosophy of Language (Western)

Course Contents:

a) Syntax, Semantics, Pragmatics.
b) Word-meaning, Definitions.
c) Vagueness.
d) Sentence-meaning.
e) Testability and Meaning.

Suggested Readings:

English:

- The Philosophy of Language : A.P. Martinich (ed.)
- An Introduction to Philosophical Analysis—John Hospers
- The Problem of Knowledge: A.J. Ayer
- Language, Truth and Logic: A.J. Ayer
- Readings in Philosophical Analysis: J. Hospers
- The Central Questions of Philosophy: A.J. Ayer
- Theory of Knowledge: A.J. Woozley
- An Introduction to Philosophy: Shibapada Chakraborty

Bengali:

- Darshanik Jijnasa (Bagarthatattva): Ramaprasad Das
- Darshanik Jijnasa (Jnanatattva-Jnaner Svarup): Ramaprasad Das
- Darshanik Jijnasa (Jnanatattva): Ramaprasad Das
- Darshanik Jijnasa (Paratattva o Bhauto Jagater Jnana): Ramaprasad Das
- Darshanik Bishlesaner Ruparekha (Pratham O dvitiya khanda): Samarikanta Samanta
- Paschatya darshaner Ruparekha: Ramaprasad Das o Shibapada Chakraborty

DSE-3:
(Any one text from following four texts of Western philosophy and Indian philosophy)

[***DSE-3A:*** *An Enquiry Concerning Human Understanding - D. Hume*
Or
DSE-3B: *The Problems of Philosophy-- Bertrand Russell.*
Or
DSE-3C: *Vedāntasāra: Sadananda Yogindra Saraswati*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Or
DSE-3D: *Śrimadbhagabadgīta*]

DSE-3A: An Enquiry Concerning Human Understanding - D. Hume Credits 06

DSE3AT: An Enquiry Concerning Human Understanding - D. Hume

Course Contents:

a) Chapter 1 - 3 (15)
b) Chapter 4 - 6 (15)
c) Chapter 7- 9 (15)
d) Chapter 10 -12(15)

Suggested Readings:

- An Enquiry Concerning Human Understanding-D. Hume: J.N. Mohanty (intr.)
- The Philosophy of David Hume: Pabitra Kumar Roy
- The Philosophy of David Hume: N.K. Smith
- Hume's Theory of Causality: Tapan Kumar Chakraborty
- Hume: V.C. Chappell (ed.)
- Hume-er Enquiry-Ekti Upasthapana: Ramaprasad Das
- Hume -er Darshan – Prahlad Kumar Sarkar (Ed.)

Or

DSE-3B: The Problems of Philosophy-- Bertrand Russell Credits 06

DSE3BT: The Problems of Philosophy-- Bertrand Russell

Course Contents:

a) Chapter 1 - 3 (15)
b) Chapter 4 - 6 (15)
c) Chapter 7- 9 (15)
d) Chapter 10 - 12(15)

Suggested Readings:

- Russell and Moore – An Analytical Heritage: A.J. Ayer
- Russell: A.J. Ayer
- Russell : Mark Sanisbury
- The Philosophy of B. Russell : Schlipp (ed)
- Russell – A Short Introduction: A.C. Grayling
- Darshaner Samasya: Debika Saha
- Darshan Samasya: Sushil Kumar Chakrabarty

Or

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

DSE-3C: Vedāntasāra: Sadananda Yogindra Saraswati **Credits 06**

DSE3CT: Vedāntasāra: Sadananda Yogindra Saraswati

Course Contents:

a) Mangalācaraṇa
b) Vedānter Paricaya
c) From anubandha catuṣtaya to relation between Iśvara and Prājña
d) Origin of Sthūla Bhūta to Brahma- sākṣātkāra
e) Śravana o ṣaḍbidhalinganirupaṇa to jibanmuktir śeṣ phala

Suggested Readings:

- Vedantasara : Upendranath Mukhopadhaya
- Vedantasara: Medha Caitanya
- Vedantasara: Kalibar Vedanta Vagish
- Vedantasara: Bipadbhanjan Pal
- Vedantasara- Advaitavada :Ashutosh Shastri
- Vedantasara: Swami Nikhilananda (Eng Version)
- A History of Indian Philosophy S.N. Dasgupta

Or

DSE-3D: Śrimadbhagabadgīta **Credits 06**

DSE3DT: Śrimadbhagabadgīta

Course Contents:

a) Karmayoga (third chapter)
b) Guṇatrayabibhāga (fourteenth chapter)

Suggested Readings:

- Śrimadbhagabadgīta: Madhusudan Saraswati
- Śrimadbhagabadgīta: Atul Chandra Sen
- Śrigīta: Jagadish Chandra Ghosh
- Gitanibandha: Sri Aurobindo
- Śrimadbhagabadgīta: Swami Jagadiswarananda (Tran.)
- Ethics in the Gita- An Analytical Study : Rajendra Prasad
- Central Theme of Gita : Swami Ranganathananda

DSE-4:
(Any one philosophical system from following philosophical systems of contemporary Indian thought)

[**DSE-4A:** Swami Vivekananda
Or
DSE-4B: Rabindranath Tagore
Or

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

DSE-4C: Sri Aurobindo
Or
DSE-4D: M.K. Gandhi]

DSE-4A: Swami Vivekananda **Credits 06**

DSE4AT: Swami Vivekananda

Course Contents:

a) Real nature of man.
b) Nature of Religion.
c) Ideal of Universal Religion.
d) Concept of Practical Vedanta.

Suggested Readings:

- Contemporary Indian Philosophy: T.M.P. Mahadevan & G.V. Saroja
- Contemporary Indian Philosophy: Basant Kumar Lal
- Contemporary Indian Philosophy: Binoy Gopal Roy
- Practical Vedanta (Vol.II,pp-291-358): Swami Vivekananda
- Swami Vivekananda as a Philosopher: J.L. Shaw
- The Philosophy of Swami Vivekananda: Pradip Kumar Sengupta
- The Complete Works of Swami Vivekananda (Vol.I,pp-333-343 & II,pp-70-87,375-396): Mayavati Memorial Edition
- The Philosophy of Vivekananda: Govinda Dev

Or

DSE-4B: Rabindranath Tagore **Credits 06**

DSE4BT: Rabindranath Tagore

Course Contents:

a) Reality and God.
b) Nature of Man.
c) Surplus in man.
d) Nature of Religion.
e) Tagore's Humanism.

Suggested Readings:

- Contemporary Indian Philosophy: T.M.P. Mahadevan & G.V. Saroja
- Contemporary Indian Philosophy: Basant Kumar Lal
- Contemporary Indian Philosophy: Binoy Gopal Roy
- Religion of Man: Rabindranath Tagore
- Philosophy of Rabindranath Tagore: S. Radhakrishnan
- Rabindra Rachanabali (Khanda 12,pp-532-545,567-614): Janmashatbarshiki Samskaran

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Rabindra Darsan: Sachindranath Gangopadhyay, Pabitra Kumar Roy, Nripendranath Bandyopadhyay.
- The Philosophy of Rabindranath Tagore : Binay Gopal Roy

Or

DSE-4C: Sri Aurobindo **Credits 06**

DSE4CT: Sri Aurobindo

Course Contents:

a) Reality as Sat-Cit-Ānanda
b) Nature of Creation, the World process: Descent or involution, Maya and Lila, Ascent or evolution.
c) Integral Yoga.

Suggested Readings:

- Contemporary Indian Philosophy: T.M.P. Mahadevan & G.V. Saroja
- Contemporary Indian Philosophy: Basant Kumar Lal
- Contemporary Indian Philosophy: Binoy Gopal Roy
- Life Divine: Sri Aurobindo
- Synthesis of Yoga: Sri Aurobindo
- Integral Yoga: Sri Aurobindo
- Among the Great: Dilip Kumar Roy (Chapter on Sri Auribinda)
- Towards Supermanhood-The Philosophy of Sri Aurobindo: P.B. Chatterjee
- The Philosophy of Sri Aurobindo: Ramnath Sharma
- An Introduction to the Philosophy of Sri Aurobindo: S.K. Maitra
- Guide to Sri Aurobindo's Philosophy: K.D. Acharya
- Future Evolution of Man-The Divine Life Upon Earth: Sri Aurobindo
- Sri Aurobindo-The Prophet of Life Divine: Haridas Choudhuri
- Sri Aurobindo's Concept of the Superman: Chittaranjan Goswami
- Visva-Vivek: Asit kumar Bandyopadhyay, Sankari Prasad Basu, Sankar
- Manavjatir Bhabiswat Bibartan: Sri Aurobindo Ghosh
- Sri Aurobindo Katha: manmatho Mukhopadhyaya
- Divya Jivan: Srimat Anirban
- Yogo-samannay: Srimat Anirban
- Sri Aurobindo Janmo Satabarshiki Smarak Grantha: Sri Aurobindo Patha Mandir

Or

DSE-4D: M.K.Gandhi **Credits 06**

DSE4DT: M.K.Gandhi

Course Contents:

a) God and Truth.
b) Nature of Man.
c) Non-Violence
d) Satyāgraha.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

e) Swaraj
f) Theory of Trusteeship

Suggested Readings:

- Contemporary Indian Philosophy: T.M.P. Mahadevan & G.V. Saroja
- Contemporary Indian Philosophy: Basant Kumar Lal
- Contemporary Indian Philosophy: Binoy Gopal Roy
- Hind Swaraj: M.K. Gandhi
- Trusteeship; M.K. Gandhi
- Selections from Gandhi: N.K. Bose
- Contemporary Indian Philosophy: S,Radhakrishnan& J.H. Murihead (eds.)
- The Evolution of Political Philosophy of Gandhi: Buddhadeb Bhattacharya
- Social and Political Thought of Gandhi: Jayantanuja Bandyopadhyay
- The Philosophy of Mahatma Gandhi: D.M. Dutta
- The Philosophy of Sarvodaya: K.S. Bharathi
- Gandhi's Political Philosophy: Bhikhu Parekh
- Sarvodaya Andoloner Itihas: Gurudas Bandyopadhyay
- Gandhi Parikrama: Sailesh Kumar Bandyopadhyay
- Gandhi Rachanasambhar: M.K. Gandhi

Skill Enhancement Course (SEC)

SEC-1: Computer Application **Credits 02**

SEC1T: Computer Application

Course Contents:

a) Computer and its Basic Organisation, Working with Flow Charts
b) Working with tools in MS Word
c) Introduction to spreadsheets (MS Excel)
d) First step to Multimedia Presentation (MS Power point)
e) Internet and E mail services
f) Computer virus, Ethical hacking.

Suggested Readings:

- Understanding Information Technology 7: Vijay Kumar Pandey, Arya Publishing Company
- Computer Fundamentals: P.K. Sinha
- Computer Fundamentals and Programming: P.Dey& M.Ghosh
- Microsoft Word [Version 97, 2000, 2002 (XP)]: Mahbabur Rahaman

Or

SEC-1: Philosophy of Human Rights **Credits 02**

SEC1T: Philosophy of Human Rights

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

a) Definition and Nature of Human Rights

b) The Idea of Human Rights: Its Origins and Historical Developments during Ancient period, Modern period and Contemporary period
c) The Idea of Natural Law and Natural Rights: Thomas Hobbes and John Locke.
d) The Natural Rights Tradition: Some Reactions from Jeremy Bentham, Edmund Burke and Thomas Paine
e) Natural Right, Fundamental Right and Human Right
f) Preamble, Fundamental Rights and Duties (Indian Constitution)
g) Contemporary Perspectives: Joel Feinberg—Basic Rights

Suggested Readings:

- Patrick Hayden (ed.): The Philosophy of Human Rights, Paragon House, St. Paul, First Edition,
- Morton E. Winston (ed.): The Philosophy of Human Rights, Wadsworth Publishing Co. Belmont, California,
- Jeremy Waldron (ed.): Theories of Rights, Oxford University Press, Oxford, 1984
- Ashwani Peetush and Jay Drydyk: Human Rights*: India and West*, Oxford University Press, New Delhi,
- James Nickel: Making Sense of Human Rights, Blackwell Publishing, Oxford,
- Henry Shue: Basic Rights: Subsistence, Affluence and U. S. Foreign Policy, Princeton University Press, Princeton,
- Gary, B. Herbert: Philosophical History of Human rights, Transaction Publishers, New Jersey
- Michael Freeden: Rights, Worldview Publications, New Delhi, 1998.
- Lynn Hunt: Inventing Human Rights: A History, Norton & Company, New York,
- Jack Donnelly: Universal Human rights in Theory and Practice, Manas Publications, New Delhi,

SEC-2: Value Education **Credits 02**

SEC2T: Value Education

Course Contents:

a) Meaning, Characteristics, significance and objectives of Value education
b) Values in different contexts: Individual, Social, Cultural, Moral and Global and Spiritual.
c) Meaning and Characteristics of Peace education
d) Aims and Objectives of Peace Education
e) Types of peace education
f) Peace and Value education in Global Perspective

Suggested Readings:

- Introduction to Peace Studies: David P. Barash Belmont

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- ‘International Relations’, in The English Writings of Rabindranath Tagore: A Miscellany, (ed) Sisir Kumar Das: Rabindra Nath Tagore New Delhi: Sahitya Akademi.
- Handbook of Peace and Conflict Studies: Charles Webel and Johan Galtung(eds.), Routledge, London and New York,
- Peace and Value Education: Babu Muthuja,
- Philosophy of Value: Aditya Mohanty

Or

SEC -2: Man and Environment **Credits 02**

SEC2T: Man and Environment

Course Contents:

a) Classical Indian attitude to Environment

a. The Upanisadic world-view,
b. Tagore’s understanding of nature,
c. The post-Upanisadic view of nature

b) Respect for Nature

a. The attitude of respect,
b. Bio-centric outlook to nature,
c. Ethical standards and rules that follow from the attitude of respect to nature,
d. The idea of inherent worth of nature.

c) Intrinsic Value of nature

a. Moore’s talk of ‘intrinsic properties’,
b. Chilsom’s idea of intrinsic value,
c. Attfield on the intrinsic value of nature,
d. Callicott’s idea of intrinsic value of nature,
e. Rolston III on intrinsic value of nature,
f. intrinsic value and objective value

d) Deep ecology and its third world critique

a. Arne Naess on Deep Ecology,
b. Ramchandra Guha’s critique of Deep Ecology

e) Eco-feminism

a. Understanding nature and the feminine,
b. Dualisms in Western tradition,
c. Masculinity, humanity and nature.

Suggested Readings

- John Passmore, ‘Attitudes to Nature’, Environmental Ethics (ed.) Robert Elliot, Oxford University Press, Oxford,
- Rabindranath Tagore, Sadhana (first Chapter), Macmillan, New York,
- Paul Taylor, Respect for Nature: A Theory of Environmental Ethics (Select Parts), Princeton University Press, Princeton,

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

- Robert Elliot, 'Intrinsic value, Environmental Obligation and Naturalness', Monist,
- Arne Naess, 'The Shallow and the Deep, Long-Range Ecology Movements: A Summary', Inquiry,
- Val Plumwood, Nature, Self and Gender: Feminism, Environmental Philosophy and the Critique of Rationalism, Environmental Ethics (ed.) Robert Elliot, Oxford University Press, Oxford,
- Nirmalya Narayan Chakraborty, Paribesh o Naitikata, Progressive Book Forum, Kolkata.

Generic Elective (GE)
[Interdisciplinary for other department]

GE-1: Ethics: Indian and Western **Credits 06**

GE1T: Ethics: Indian and Western

Course Contents:

a) Four Purusarthās – dharma, artha, kāma and mokṣa and their interrelation. Karma (Sakāma & Niṣkāma), Cārvāka Ethics.
b) Buddhist Ethics: The Four Noble Truths and the Eight-Fold Path.
c) Moral and Non-Moral Actions, Object of Moral Judgement.
d) Teleological Ethics: Utilitarianism (Bentham and Mill). Deontological Ethics: Kant's Moral Theory.
e) Theories of Punishment.

Suggested Readings:

- The Fundamentals of Hinduism-A Philosophical Study: S.C. Chatterje
- Nitividya: Shibapada Chakrabarty
- Nitividyar Tattvakatha: Somnath Chakrabarty
- Nitisastra: Dikshit Gupta
- An Introduction to Ethics: W. Lillie

Or

GE-1: Western Logic **Credits 06**

GE1T: Western Logic

Course Contents:

a) Introductory topics: Sentence, proposition, argument, truth and validity.
b) Aristotelian classification of categorical propositions, distribution of terms. Existential Import,
c) Boolean interpretation of categorical propositions. Immediate inference. Immediate inference based on the square of opposition, conversion, obversion and contraposition.
d) Categorical syllogism: Figure, mood, rules for validity, Venn Diagram method of testing validity, fallacies.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

e) Symbolic Logic: Use of symbols, Truth-functions: Negation, Conjunction, disjunction, implication, equivalence.
f) Tautology, Contradiction, Contingent statement forms. Construction of truth-table, using truth-tables for testing the validity of arguments and statement forms.
g) Mill's methods of experimental inquiry.

Suggested Readings:

- Introduction to Logic (13th edn): I.M. Copi and C. Cohen
- Paschatya Darshan O Yuktivijnan: Ramaprasad Das
- Paschatya Darsan O Yuktivijnan: Samir Kumar Chakrabarty

GE-2: Feminism **Credits 06**

GE2T: Feminism

Course Contents:

a) Original Development of Feminist Thought.
b) Philosophical basis of Feminism.
c) Different Branches of Feminism.
d) Important issues of Feminism: FeministEthics. some basic concepts of Feminism: Sexism, Patriarchy and Androcentricism. TheEthics of Care.

Suggested Readings:

- Feminist Thought: Androcentrism,Communication and Objectivity: Shefali Moitra,Munshiram Monoharlal Publishers Pvt. Ltd.,2002, NewDelhi
- Understanding Gender: Kamla Bhasin, Women Unlimited,2001,New Delhi
- Handbook of Feminist Theory : Lisa Disch And Mary Hawkesworth, Oxford University Press,2016
- Practical Ethics: Peter Singer
- Applied Ethics: Peter Singer
- Redefining Ethics As Care: Bidisha Mukherjee, Papyrus,Kolkata 2008
- The Ethics Of Care : Virginia Held
- The Core Of Care Ethics : S.Collins, P.Macmillan Publishers, 2015
- In a Different Voice : Gilligan,C., Harvard University Press, 1982
- Naitikata O Narivada : Shefali Moitra
- Nitividya: Samarendra Bhattacharya

Or

GE-2: Philosophy of Mind **Credits 06**

GE2T: Philosophy of Mind

Course Contents:

a) Sensation: What is sensation? Attributes of sensation.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

b) Perception: What is perception? Relation between sensation and perception, Gestalt theory of perception, illusion and hallucination.
c) Consciousness: Conscious, Subconscious, Unconscious,Evidence for the existence of the Unconscious, Freud's theory of dream.
d) Memory: Factors of memory, Laws of association, Forgetfulness. Learnung: The trialand Error theory, Pavlov's Conditioned Response theory, Gestalt theory.
e) Intelligence: Measurement of Intelligence, I.Q., Testof Intelligence, Binnet-Simon test.

GE-3: Theory of Inference in Nyāya **Credits 06**

GE3T: Theory of Inference in Nyāya

Course Contents:

a. Definition & classification of Anumiti.
b. Importance of Paňcabayabinyāya.

Suggested Readings:

- Nyāya Theory of Knowledge: S.C. Chatterjee
- Six ways of Knowing: D.M. Dutta
- Bhāṣāpariccheda Siddhāntamuktāvalisahita: Paňcānan Shastri
- Tarkasamgraha with Dīpika: Annambhatta, translated by Narayan Chandra Goswami.

Or

GE-3: Theory of God in Nyāya Metaphysics **Credits 06**

GE3T: Theory of God in Nyāya Metaphysics.

Course Contents:

a. Relevance of the acceptance of God in Nyāya.
b. Arguments in favour of the existence of God.

Suggested Readings:

- Udayanācāryakṛita Nyāyakusumānjali: Shyamapada Misra
- Nyāyatattvaparikramā: Kalikrishna Bandopadhyaya

GE- 4: Environmental Ethics **Credits 06**

GE4T: Environmental Ethics

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

Course Contents:

a. Anthropocentrism & Non-anthropocentrism.
b. Holism.

Suggested Readings:

- The Economy of the Earth: Philosophy, Law and the Envirnment, Second Edition-Mark Sagoff.
- Ethics and the Environment: An Introduction-Dale Jamieson.
- Falita Nītiśastra, First edition – Dr. Santosh Kumar Pal.

Or

GE- 4: Termination of Life & Ethics **Credits 06**

GE4T: Termination of Life & Ethics

Course Contents:

a. Euthanasia.
b. Abortion.

Suggested Readings:

- Practical Ethics, Second Edition, Cambridge University Press- Peter Singer.
- A Companion to Bio-ethics, Blackwell Publisher – Peter Singer and Helga Kuhse.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:25:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_HONS/philosophy_hons_revised.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-year B.A (General)

Philosophy

Revised Syllabus under CBCS
(w. e. f. 2022-2023)

Vidyasagar University
Midnapore 721102
West Bengal

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_General/BAGen_Philosophy_S1.pdf

Vidyasagar University

Curriculum for B.A (General) in Philosophy

[Revised Syllabus w.e.f. 2022-23]

SEMESTER-I

Course Structure

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC1 [DSC-1A]		**DSC-1A: Indian Philosophy**	Core Course-1	5	1	0	6	75
CC2 [DSC-2A]		**DSC-2A: TBD *(from other Discipline*)**	Core Course-2				6	75
AECC Core[L-1]		**English-1**	AECC-Core **[Language core]**	5	1	0	6	75
AECC (Elective)		**English**	AECC (Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC =** Core Course, **TBD =** To be decided, **AECC (Elective) =** Ability Enhancement Compulsory Course (Elective) **DSC-1** = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,
AECC- Core [L-1]: Ability Enhancement Compulsory Course-Core [Language Core -1]

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_General/BAGen_Philosophy_S1.pdf

SEMESTER- I

DSC-1A (CC-1): Indian Philosophy **Credits 06**

DSC1AT: Indian Philosophy **Credits 06**

1. Introduction:

(a) General Features of Indian Philosophy: *Āstika and Nāstika*

2. Cārvāka:

(a) *pratyakṣa* (perception) as the only Source of Knowledge

(b) *jaḍavāda* and *dehātmavāda*

3. Jainism:

(a) *anekāntavāda*

(b) *syādvāda*

4. Buddhism:

(a) Four Noble Truths

(b) *pratītyasamutpāda*

(c) *kṣaṇabhaṅgavāda*

5. Nyāya–Vaiśeṣika:

(a) *pramāṇa*: *pratyakṣa* (perception) and its different types, *anumāna* (inference), *upamāna* (comparison)and *śabda* (testimony)

(b) *Vaisesika* theory (definition and classification) of *padārthas.*

6. Sāṁkhya:

(a) *Satkāryavāda* (Theory of Causality)

(b) *Pariṇāmavāda* (Theory of Evolution)

7. Yoga :

(a) *aṣṭāṅgayoga*

8. Mīmāṁsā

(a) Vidhi and Nisedha

9. Advaita Vedānta:

(a)Brahman, *jīva* and *jagat*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_General/BAGen_Philosophy_S1.pdf

Suggested Readings:

- S. C. Chatterjee & D. M. Dutta: *An Introduction to Indian Philosophy*
- C. D. Sharma: *A Critical Survey of Indian Philosophy*
- Haridas Bandyaopadhyay: *Bhāratīya Darśaner Marmakathā*
- J. N. Mohanti : Classical Indian Philosophy
- Niradbaran Chakraborty: *Bhāratīya Darśan*
- Karuna Bhattacharya: *Nyāya-Vaiśeṣika Darśan*
- Panchanan Shastri: *Cārvāka Darśan*
- Panchanan Shastri: *Bauddha Darśan*
- Rajat Bhattacharya: *Sāṁkhyakārikā* O *Sāṁkhyatattvakumudī*
- Niradbaran Chakraborty: *Bhāratīya Darśan*
- Deepak Kumar Bagchi: *Bhāratīya Darśan*
- Debabrata Sen : *Bhāratīya Darśan*
- Pradyot Kumar Mandal: *Bhāratīya Darśan*
- Kanakprabha Bandyopadhyay: *Sāṁkhyapātañjaladarśan*
- Tarakishor Sharma Choudhury: *Pātañjaladarśan*
- Gobindagopal Mukhopadhyay: *Yoger Kathā: Patañjalir Dṛṣṭite*
- Purnachandra Vedanta Chunchu: *Pātañjal Darśan*

*****

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:21:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_General/BAGen_Philosophy_S1.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-year B.A (General)

Philosophy

Revised Syllabus under CBCS
(w. e. f. 2022-2023)

Vidyasagar University
Midnapore 721102
West Bengal

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_General/BAGen_Philosophy_S2.pdf

Vidyasagar University

Curriculum for B.A (General) in Philosophy

[Revised Syllabus w.e.f. 2022-23]

SEMESTER-II

Course Structure

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC4 [DSC-1B]		**DSC-1B: Western Philosophy**	Core Course-4	5	1	0	6	75
CC5 [DSC-2A]		**DSC-2A: TBD *(from other Discipline)***	Core Course-5	5	1	0	6	75
AECC Core		**MIL-1**	AECC-Core **[Language core]**	5	1	0	6	75
AECC (Elective)		**ENVS**	AECC-2 (Elective)				4	100
Semester Total							**22**	**325**

L=Lecture, **T=**Tutorial, **P=**Practical, **CC =** Core Course, **TBD =** To be decided, **AECC (Elective) =** Ability Enhancement Compulsory Course (Elective) **DSC-1** = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2, **MIL** = Modern Indian Language **ENVS**= Environmental Studies

AECC- Core: Ability Enhancement Compulsory Course-Core [Language Core]

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_General/BAGen_Philosophy_S2.pdf

SEMESTER- II

DSC-1B: Western Philosophy **Credits 06**

DSC1BT: Western Philosophy **Credits 06**

1. **Metaphysics:** Nature of Metaphysics, Elimination of Metaphysics
2. **Realism:** Naïve Realism, Scientific Realism, Representative Realism
3. **Idealism:** Subjective Idealism, Objective Idealism
4. **Critical Theory of Kant:** Possibility of metaphysics, Phenomena (Appearance) and Noumenon (Reality), Space and Time
5. **Theories of Causation:** Regularity Theory and Entailment Theory
6. **Substance:** Views of Descartes, Spinoza, Locke and Berkeley
7. **Relation between Mind and Body:** Interactionism and Parallelism

Suggested Readings:

1. Falkenberg : History of Western Philosophy
2. Sibapada Chakraborty : General Philosophy
3. Sibapada Chakraborty : An Introduction to General Philosophy
4. Ramchandra Pal : Darśan Parichaya
5. Rama Prasad Das & Sibapada Chakraborty : Pāścātya Darśaner Rūprekhā
6. Niradbaran Chakraborty : Pāścātya Darśaner Bhūmikā
7. J. N. Sinha, Introduction to Philosophy
8. Falguni Mukhopadhyaya, Jnanavidya o Adhividya (in Bengali)

*****

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:22:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_2022_23/BA_General/BAGen_Philosophy_S2.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (General)
in

Philosophy

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

VIDYASAGAR UNIVERSITY

BA(General) in Philosophy

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Indian Philosophy	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline(Discipline-2)/TBD	6	5-1-0	15	60	75
		AECC (core)		English-1	6	5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
	II	SEMESTER-II							
		Core-4 (DSC-1B)		Western Philosophy	6	5-1-0	15	60	75
		Core-5 (DSC-2B)		Other Discipline(Discipline-2)//TBD	6	5-1-0	15	60	75
		AECC (core)		Mil-1	6	5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-7 (DSC-1C)		Logic	6	5-1-0	15	60	75
		Core-8 (DSC-2C)		Other Discipline(Discipline-2)//TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC (core)		English-II	6	5-1-0	15	60	75
		SEC-1		SEC-1: Philosophy of Human Rights Or Ethics in Practice	2	1-1-0	10	40	50
				Semester - 3 : Total	**20**				**275**
	IV	SEMESTER-IV							
		Core-10 (DSC-1D)		Contemporary Indian Philosophy	6	5-1-0	15	60	75
		Core-11 (DSC-2D)		Other Discipline(Discipline-2)/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC (core)		MIL-II	6	5-1-0	15	60	75
		SEC-2		SEC-2: Philosophical Analysis **Or** Man and Environment	2	1-1-0	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Philosophy)/TBD	6	5-1-0	15	60	75
		DSE-2A		Other Discipline(Discipline-2)/TBD	6	4-0-4/ 5-1-0	15	60	75
		GE-1		TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		SEC- 3: Philosophy in Practice Or Value Education	2	1-1-0	10	40	50
				Semester - 5 : Total	**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Philosophy)/TBD	6	5-1-0	15	60	75
		DSE-2B		Other Discipline(Discipline-2)/TBD	6	4-0-4/ 5-1-0	15	60	75
		GE-2		TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		SEC -4: Computer Applications Or Logical Reasoning and Application	2	1-1-0	10	40	50
				Semester - 6 : Total	**20**				**275**
				Total in all semester:	**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

List of Core & Elective courses

Core Courses (CC)

DSC-1A: Indian Philosophy
DSC-1B: Western Philosophy
DSC-1C: Logic
DSC-1D: Contemporary Indian Philosophy

Discipline Specific Electives (DSE)

DSE-1: Philosophy of Religion
Or
DSE-1: Emerging Trends of Thoughts
DSE-2: Tarkasaṁgraha with Dīpikā
Or
DSE-2: Feminism

Skill Enhancement Courses (SEC)

SEC-1: Philosophy of Human Rights
Or
SEC-1: Ethics in Practice
SEC-2: Philosophical Analysis
Or
SEC -2: Man and Environment
SEC- 3: Philosophy in Practice
Or
SEC -3: Value Education
SEC -4: Computer Applications
Or
SEC -4: Logical Reasoning and Application

Generic Elective (GE)

[Interdisciplinary for other department]

GE-1: Western Philosophy
Or
GE-1: Indian Philosophy
Or
GE-1: Philosophy of Religion
GE-2: Social –Political Philosophy- I
Or
GE-2: Philosophy of Mind
Or
GE-2: Applied Ethics and Philosophy of Religion

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

Core Courses (CC)

DSC-1A (CC-1): Indian Philosophy **Credits 06**

DSC1AT: Indian Philosophy

Course Contents:

1. Introduction:
(a) General Features of Indian Philosophy

2. Cārvāka:
(b) *pratyakṣa* (perception) as the only Source of Knowledge
(c) Refutation of *anumāna* (inference) and *śabda* (testimony) as Sources of Knowledge
(d) *jaḍavāda* and *dehātmavāda*

3. Jainism:
(a) *anekāntavāda*
(b) *syādvāda* and *nayavāda*

4. Buddhism: (a) Four Noble Truths
(a) (b) *pratītyasamutpāda*
(b) *kṣaṇabhaṅgavāda*
(c) *nairātmyavāda*

5. Nyāya–Vaiśeṣika:
(a) *pramāṇa*: *pratyakṣa* (perception), *anumāna* (inference), *upamāna* (comparison) and *śabda* (testimony)
(b) *Saptapadārtha* (Seven Categories)

6. Sāṁkhya:
(a) *Satkāryavāda* (Theory of Causality)
(b) *Pariṇāmavāda* (Theory of Evolution)

7. Yoga :
(a) *cittavṛttinirodha*
(b) *aṣṭāṅgayoga*

8. Mīmāṁsā
(a) *arthāpatti*
(b) *anupalabdhi*

9. Advaita Vedānta:
(a) (a)Brahman, *jīva* and *jagat*

Suggested Readings:

- S. C. Chatterjee & D. M. Dutta: *An Introduction to Indian Philosophy*
- C. D. Sharma : *A Critical Survey of Indian Philosophy*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

- Haridas Bandyaopadhyay : *Bhāratīya Darśaner Marmakathā*
- J. N. Mohanti : Classical Indian Philosophy
- Niradbaran Chakraborty : *Bhāratīya Darśan*
- Karuna Bhattacharya : *Nyāya-Vaiśeṣika Darśan*
- Panchanan Shastri : *Cārvāka Darśan*
- Panchanan Shastri : *Bauddha Darśan*
- Rajat Bhattacharya : *Sāṁkhyakārikā* O *Sāṁkhyatattvakumudī*
- Niradbaran Chakraborty : *Bhāratīya Darśan*
- Deepak Kumar Bagchi : *Bhāratīya Darśan*
- Debabrata Sen : *Bhāratīya Darśan*
- Pradyot Kumar Mandal : *Bhāratīya Darśan*
- Kanakprabha Bandyopadhyay : *Sāṁkhyapātañjaladarśan*
- Tarakishor Sharma Choudhury : *Pātañjaladarśan*
- Gobindagopal Mukhopadhyay : *Yoger Kathā : Patañjalir Dṛṣṭite*
- Purnachandra Vedanta Chunchu : *Pātañjal Darśan*

DSC-1B (CC-2): Western Philosophy **Credits 06**

DSC1BT: Western Philosophy

Course Contents:

1. Metaphysics: Nature of Metaphysics, Elimination of Metaphysics

2. Realism: Naïve Realism, Scientific Realism, Representative Realism

3. Idealism: Subjective Idealism, Objective Idealism

4. Critical Theory of Kant

5. Theories of Causation: Regularity Theory and Entailment Theory

6. Substance: Views of Descartes, Spinoza, Locke and Berkeley

7. Relation between Mind and Body: Interactionism and Parallelism

8. Theories of Evolution: Mechanistic and Emergent

Suggested Readings:

- Falkenberg : History of Western Philosophy
- Sibapada Chakraborty : General Philosophy
- Sibapada Chakraborty : *An Introduction to General Philosophy*
- Ramchandra Pal : *Darśan Parichaya*
- Rama Prasad Das & Sibapada Chakraborty : *Pāścātya Darśaner Rūprekhā*
- Niradbaran Chakraborty : *Pāścātya Darśaner Bhūmikā*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

DSC-1C (CC-3): Logic **Credits 06**

DSC1CT: Logic

Course Contents:

1. Basic Concept of Logic: (a) Nature and Scope of Logic, (b) Sentence, Proposition and Statement , (c) Inference and Argument,
2. Types of Argument and Inference:
(a) Deductive Argument and Inductive Argument, (b) Immediate inference and Mediate inference, (c) Categorical Syllogism, (d) Truth Functional Argument and Quantificational Argument
3. Opposition of Propositions: Rules and Fallacies
4. Immediate Inference: Rules and Fallacies
5. Categorical Syllogisms: Rules and Fallacies, Venn diagram
6. Truth functional Argument: Rules and Fallacies
7. Inductive Argument: Rules and Fallacies
8. Analogical Reasoning

9. Science and Hypothesis

Suggested Readings:

• M. Copi, C. Cohen, P. Jetli & M. Prabhakar : Introduction to Logic (14th Edition)
• R. S. Agarwal: A Modern Approach to Logical Reasoning, Paperback, 2007
• Bo Bennett : Logically Fallacious: The Ultimate Collection of Over 300 Logical Fallacies (Academic Edition)

DSC-1D (CC-4): Contemporary Indian Philosophy **Credits 06**

DSC1DT: Contemporary Indian Philosophy

Course Contents:

Philosophical Thoughts of Rabindranath Tagore, Swami Vivekananda, Sri Aurobindo, S. Radhakrishnan, Md. Iqbal and Mahatma Gandhi

1. **Rabindranath Tagore**
(a)Nature of man : The Finite Aspect of Man, the Infinite Aspect of Man ,the Finite-Infinite Aspect of Man, (b) Nature of Religion, (c) Problem of Evil
(f) Surplus in man

2. **Swami Vivekananda**
(a)Practical Vedānta, (b) Universal Religion, (c) Yoga

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

3. **Sri Aurobindo**
(a)Nature of Reality, (b) Human Evolution– its different stages,
(c) Integral Yoga

4. **S. Radhakrishnan**
(a)Nature of Man, (b) Nature of Religious Experience, (c) Nature of Intuitive Apprehension
5. **Md. Iqbal**
(a)Nature of the Self, (b) Nature of the World, (c) Nature of God

6.Mahatma Gandhi
(a) God and Truth, (b) Ahimsa, (c) Trusteeship

Suggested Readings:
• B. K. Lal : *Contemporary Indian Philosophy*
• D. M. Dutta : *Chief Currents of Contemporary Philosophy*
• Binay Gopal Roy : *Contemporary Indian Philosophers*
• Swami Vivekananda : *Complete Works of Swami Vivekananda* (Vol. II)

Discipline Specific Electives (DSE)

DSE-1: Philosophy of Religion **Credits 06**

DSE1T: Philosophy of Religion

Course Contents:

1. Nature and Scope of Philosophy of Religion:
(a) Religion, Dharma, Dhamma,
(b) Philosophy of Religion, Comparative Religion and Theology

2. Origin and Development of Religion

3. Fundamental Features of Major Religions:
Hinduism, Christianity, Islam, Buddhism: Basic Tenets, Prophets (if any), Incarnation, Bondage and Liberation

4. Arguments for the Existence of God (Indian and Western):
Sāṁkhya-Yoga Arguments, Nyāya Arguments, Cosmological Arguments, Teleological Arguments, Ontological Arguments

5. Arguments against the Existence of God:
Sociological Arguments, Freudian Arguments, Buddhist Arguments
6. Religious Pluralism & Mysticism

7. Monotheism, Polytheism, Henotheism

8. Immanence and Transcendence of God

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

Suggested Readings:

1. J. Hick : *Philosophy of Religion*
2. P. B. Chatterjee : *Studies in Comparative Religion*
3. Edward : *Philosophy of Religion*
4. Swami Vivekananda: *A Study of Religion*
5. Kalidas Bhattacharyya : *Alternative Religions*
6. Amlan Datta : *Dharma O Yukti*
7. D. Mahanta: Dharma Darśaner Katipay Samasyā
8. Kalyan Gupta & Amitava Chakraborty : *Dharma Darsana*
9. M.M.Sharif : *A History of Muslim Philosophy*
10. M. Fakhry : *A History of Islamic Philosophy*
11. S. R. Saha (ed) : *Religions of the People of India*
12. R. K. M. Institute of Culture : *The Religion of the World*
13. Osman Ghani : *Ilamer Chita O Chetanar Kramabikash* (Dasham Khanda)
14. Hasan Ayub : *Islami Darshan*
15. R. S. Franks : *The Doctrine of Trinity*
16. K. N. Tiwari : *Comparative Religion*
17. Pijush Kanti Ghosh : *Dharma Darshan*
18. N. Arabinda Basu and Nibedita Chakraborty: *Dharma Darsan Parichaya*
19. A. Bandyopadhyay & K.C. Gupta : *Dharma Darśan*
20. Susil Kumar Chakraborty : *Dharma Darśan*
21. Samarendra Bhattacharya : *Dharma Darśan*

Or

DSE-1: Emerging Trends of Thoughts **Credits 06**

DSE1T: Emerging Trends of Thoughts

Course Contents:

A. Bioethics

1. Introduction to Bioethics
2. Understanding Ethics and Bioethics
3. Human Dignity and Human rights
4. Principles of benefits and harm

B. Autonomy, consent and privacy

1. Autonomy and individual responsibility
2. Consent
3. Persons without the capacity to consent
4. Respect for human vulnerability and personal integrity
5. Privacy and confidentiality

C. Health and Responsibility

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

1. Social responsibility and health
2. Sharing of benefits
3. Protecting future generations
4. Protection of the environment, the biosphere and bio-diversity.

Suggested Readings:

1. Bioethcs: An Anthology,Kuhse,H and Singer,P(2008)2ND Ed.,Blackwels
2. The Cambridge Textbook of Bioethics,Singer,P.A. and Viens,A.M(2008), Cambridge University Press
3. Principles issues and cases, Vaughn, L(2012),Oxford University Press
4. Human Dignity, Human Rights and Responsibility – The New Language of Global Bioethics and Biolaw, Barilan,Y.M (2014), USA:MIT

DSE-2: Tarkasaṁgraha with Dīpikā **Credits 06**

DSE2T: Tarkasaṁgraha with Dīpikā

Recommended Topics:

1. *Saptapadārtha*

Suggested Readings:

1. Annaṁbhaṭṭa ***:*** *Tarkasaṁgraha with Dīpikā*
2. Gopinath Bhattacharyya (English trans. & elucidation) *Tarkasaṁgrahadīpikā on Tarkasaṁgraha*, Progressive Publishers, Calcutta
3. Narayan Chandra Goswami : *Tarkasaṁgraha of Annambhatta* (Bengali trans. & elucidation)
4. Anamika Roychoudhury : *Tarkasaṁgraha* (Bengali trans. & elucidation)

Or

DSE-2: Feminism **Credits 06**

DSE2T: Feminism

Course Contents:

A. Original Development of Feminist Thought.
B. Philosophical basis of Feminism.
C. Different Branches of Feminism.
D. Important issues of Feminism: FeministEthics. some basic concepts of Feminism: Sexism, Patriarchy and Androcentricism. TheEthics of Care.

Suggested Readings:

1. Feminist Thought: Androcentrism,Communication and Objectivity: Shefali Moitra,Munshiram Monoharlal Publishers Pvt. Ltd.,2002, NewDelhi

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

2. Understanding Gender: Kamla Bhasin, Women Unlimited,2001,New Delhi
3. Handbook of Feminist Theory : Lisa Disch And Mary Hawkesworth, Oxford University Press,2016
4. Practical Ethics: Peter Singer
5. Applied Ethics: Peter Singer
6. Redefining Ethics As Care: Bidisha Mukherjee, Papyrus,Kolkata 2008
7. The Ethics Of Care : Virginia Held
8. The Core Of Care Ethics : S.Collins, P.Macmillan Publishers, 2015
9. In a Different Voice : Gilligan,C., Harvard University Press, 1982
10. Naitikata O Narivada : Shefali Moitra
11. Nitividya: Samarendra Bhattacharya

Skill Enhancement Course (SEC)

SEC-1: Philosophy of Human Rights **Credits 02**

SEC1T: Philosophy of Human Rights

Course Contents:

1. Definition and Nature of Human Rights

2. The Idea of Human Rights: Its Origins and Historical Developments during Ancient period, Modern period and Contemporary period
3. The Idea of natural Law and Natural Rights: Thomas Hobbes and John Locke.
4. The Natural Rights Tradition: Some Reactions from Jeremy Bentham, Edmund Burke and Thomas Paine

5. Natural Right, Fundamental Right and Human Right

6. Preamble, Fundamental Rights and Duties (Indian Constitution)

7. Contemporary Perspectives: Joel Feinberg—Basic Rights

Suggested Readings:

1. Patrick Hayden (ed.): *The Philosophy of Human Rights*, Paragon House, St. Paul, First Edition, 2001.
2. Morton E. Winston (ed.): *The Philosophy of Human Rights*, Wadsworth Publishing Co. Belmont, California, 1989.
3. Jeremy Waldron (ed.): *Theories of Rights*, Oxford University Press, Oxford, 1984
4. Ashwani Peetush and Jay Drydyk: *Human Rights: India and West*, Oxford University Press, New Delhi, 2015.
5. James Nickel: *Making Sense of Human Rights*, Blackwell Publishing, Oxford, 2007.
6. Henry Shue: *Basic Rights: Subsistence, Affluence and U. S. Foreign Policy*, Princeton University Press, 1980
7. Gary, B. Herbert: *Philosophical History of Human rights*, Transaction Publishers, New Jersey, 2002.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

8. Michael Freeden: *Rights*, Worldview Publications, New Delhi, 1998.
9. Lynn Hunt: *Inventing Human Rights*: A History, Norton & Company, New York, 2007.
10. Jack Donnelly: *Universal Human rights in Theory and Practice*, Manas Publications, New Delhi, 2013,
11. Benulal Dhar: *The Philosophical Understanding of Human Rights*, D. K. Print World, New Delhi, 2013.
12. William A. Edmundson: *An Introduction to Rights*, Cambridge University Press, Cambridge, 2012.
13. Carl Wellman: *The Moral Dimensions of Human Rights*, Oxford University Press, Oxford, 2011.
14. Benulal Dhar, *Manvadhikar Ki Ebong Kena* (PragatiPrakashak, Kolkata, 2016)
15. J. K. Das: *Human Rights Law and Practice*, (PHI Learning, 2016
16. Durga Das Basu : *Introduction to the Constitution of India*, (Lexis Nexis, 2016)
17. Justice Ruma Paul & M.P Jain: *Indian Constitutional Law* (Lexis Nexis, 2016)
18. L. K. Thakur, *Comparative International human Rights*, Authors Press, Delhi, 2001

Or

SEC-1: Ethics in Practice **Credits 02**

SEC1T: Ethics in Practice

Course Contents:

1. Morality and Ethics
2. Motive and Intention
3. Moral action and Moral Judgment
4. Normative Theories: (a) Ethical Egoism & Utilitarianism, (b) Kant's Moral Theory
5. puruṣārtha (Buddha and *āstika* views)
6. Vedic Concepts of *ṛta, yajña, ṛṇa, vidhi* and *niṣedha*
7. Concept of *ahiṁsā* in Yoga
8. Concept of *niṣkāmakarma* preached in *Śrīmadbhagavadgītā*
9. Concept of *pañcaśīla* in Buddhism
10. Jaina Concepts of *pañcamahāvrata, triratna, anuvrata* and *mahāvrata*
11. Awareness, Views and Praxis on Basic Moral Concerns of Environment:
(a) Environmental awareness and Buddhism
(b) Rabindranath Tagore's Environmental Praxis
(c) Land Ethics
(d) Shallow and Deep Ecology

Suggested Readings:

1. W. Frankena: *Ethics*
2. Y. V. Satyanarayan : *Ethics : Theory and Practice*
3. S. K. Maitra : *Ethics of the Hindus*
4. C. Sharma : *The Ethical Philosophy of India*
5. W. Lillie *: An Introduction to Ethics*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

6. J. S. Mackenzie : *A Manual of Ethics*
1. P. B. Chatterjee : Principles of Ethics
2. P. Singer : *Practical Ethics*
3. Surama Dasgupta: *Developments of Moral Philosophy in India*
4. K. N. Tewari: *Classical Indian Ethical Thought*
5. S. Radhakrishnan: *The Bhagavadgitā*
6. Ranchor Prime, (1994) *Hinduism and Ecology*, MLBD, Delhi.
7. Peter Harvey : *Buddhist Ethics*
8. Hammalawa Saddhatissa, (2003) *Buddhist Ethics*, Wisdom pub, Boston.

9. K. P. Sinha: Studies in Jainism
10. Dasgupta, Chatterjee & Chatterjee (ed), *Rethinking Tagore's Views on Society, Development*

SEC-2: Philosophical Analysis **Credits 02**

SEC2T: Philosophical Analysis

Course Contents:

1. **Meaning:** (a) Word -meaning and Sentence-meaning, (b) Testability and Meaning
2. Definition
3. Concept and Truth
4. Knowledge: Nature and Source of Knowledge
5. Determinism and Freedom

Suggested Readings :

• Hospers: *An Introduction to Philosophical Analysis* (Chapters—1, 2, 3, 4 & 5)

Or
SEC -2: Man and Environment **Credits 02**

SEC2T: Man and Environment

Course Contents:

A. Classical Indian Attitude to Environment
a) The Upanisadic world-view, b) Tagore's understanding of nature, c) The post-Upanisadic view of nature
B. Respect for Nature
a) The attitude of respect, b) Bio-centric outlook to nature, c) Ethical standards and rules that follow from the attitude of respect to nature,
d) The idea of inherent worth of nature.
C. Intrinsic Value of nature

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

a) Moore's talk of 'intrinsic properties', b) Chilsom's idea of intrinsic value, c) Attfield on the intrinsic value of nature, d) Callicott's idea of intrinsic value of nature, e) Rolston III on intrinsic value of nature, f)
Intrinsic value and objective value

D. Deep Ecology and its Third World Critique
a) Arne Naess on Deep Ecology, b) Ramchandra Guha's critique of Deep Ecology

E. Eco-feminism
a) Understanding nature and the feminine, b) Dualisms in Western tradition, c) Masculinity, humanity and nature.

Suggested Readings

1. John Passmore, 'Attitudes to Nature', Environmental Ethics (ed.) Robert Elliot, Oxford University Press, Oxford,
2. Rabindranath Tagore, Sadhana (first Chapter), Macmillan, New York,
3. Paul Taylor, Respect for Nature: A Theory of Environmental Ethics (Select Parts), Princeton University Press, Princeton,
4. Robert Elliot, 'Intrinsic value, Environmental Obligation and Naturalness', Monist,
5. Arne Naess, 'The Shallow and the Deep, Long-Range Ecology Movements: A Summary', Inquiry,
6. Val Plumwood, Nature, Self and Gender: Feminism, Environmental Philosophy and the Critique of Rationalism, Environmental Ethics (ed.) Robert Elliot, Oxford University Press, Oxford,
7. Nirmalya Narayan Chakraborty, Paribesh o Naitikata, Progressive Book Forum, Kolkata,

SEC- 3: Philosophy in Practice **Credits 02**

SEC3T: Philosophy in Practice

Course Contents:

1. Common and Differentiating Characteristics of Philosophy and *darśana*

2. Nature of Inquiry in Philosophy and *darśana*

3. Outlines of the types of Inquiry in Philosophy and *darśana*:
(a) Epistemic Inquiry in Philosophy and *darśana,* (b) Metaphysical Inquiry in Philosophy and *darśana,* (c) Axiological Inquiry in Philosophy and *darśana*

4. A few Model World-views and corresponding paths leading to Perfection
(a) Plato's view, (b) Kant's view, (c) Sāṁkhya view and (d) Advaita Vedānta View

5. Methods of Philosophical Discourse
(a) Reasoned Speculation, (b) Conceptual Analysis, (c) Linguistic Analysis, (d) Logical Argumentation, (e) Critical Reflection

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

6. Methods of *Dārśanika* Discourse (*kathā*)
(a) *chala,* (b) *jāti,* (c) *nigrahasthāna,* (d) *vāda,* (e) *jalpa,* (f) *vitaṇḍā*

Suggested Readings :

1. H. Cappelen: *The Oxford Handbook of Philosophical Methodology*, Oxford University Press,
2. B.K. Matilal: *The Word and The World* , Oxford University Press, 2001
3. Bimal Krishna Matilal: *The Character of Logic in India*
4. Bertrand Russell: *Problems of Philosophy*

5. Paul F. Kisak: *Philosophical Methodology : the Methods of Philosophical Inquiry* CSI Publishing Platform,
6. E. V. Stubley: Philosophic as a Method of Inquiry
7. R. M. Keon: Philosophic Semantics and Philosophic Inquiry
8. The Methods of philosophy is the Methods of Inquiry (https://explicitblog.wordpress.com)
9. Plato : *The Republic*
10. G. E. Moore: *Some Main Problems of Philosophy*, New York
11. Īśvarakṛṣṇa : *Sāṁkhyakārikā*
12. Sadānanda Yogīndra: *Vedāntasāra*

Or

SEC -3: Value Education **Credits 02**

SEC3T: Value Education

Course Contents:

A. Meaning, Characteristics, significance and objectives of Value education
B. Values in different contexts: Individual, Social, Cultural, Moral and Global and Spiritual.
C. Meaning and Characteristics of Peace education
D. Aims and Objectives of Peace Education
E. Types of peace education
F. Peace and Value education in Global Perspective

Suggested Readings:

1. Introduction to Peace Studies: David P. Barash Belmont
2. 'International Relations', in The English Writings of Rabindranath Tagore: A Miscellany, (ed) Sisir Kumar Das: Rabindra Nath Tagore New Delhi: Sahitya Akademi,
3. Handbook of Peace and Conflict Studies: Charles Webel and Johan Galtung(eds.), Routledge, London and New York,
4. Peace and Value Education: Babu Muthuja,
5. Philosophy of Value: Aditya Mohanty

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

SEC -4: Computer Applications **Credits 02**

SEC4T: Computer Applications

Course Contents:

A. Computer and its Basic Organisation.

B. Working with tools in MS Word

C. Introduction to spreadsheets (MS Excel)

D. First step to Multimedia Presentation (MS Power point)

E. Internet and E mail services

F. Computer virus, Ethical hacking.

Suggested Readings:

1. Understanding Information Technology 7: Vijay Kumar Pandey, Arya Publishing Company
2. Computer Fundamentals: P.K. Sinha
3. Computer Fundamentals and Programming: P.Dey & M.Ghosh
4. Microsoft Word [Version 97, 2000, 2002 (XP)]: Mahbabur Rahaman

Or

SEC -4: Logical Reasoning and Application **Credits 02**

SEC4T: Logical Reasoning and Application

Course Contents:

A. The main objective of logical reasoning.

B. Definitions: Pakṣa, sādhya, hetu, sapakṣa and Vipakṣa.

C.Construction of kevalānvayī, kevalavyātirekī anvayvyātirekī anumiti.

D. Hetvābhāsa and its different kinds, detection of hetvābhāsa.

E. Reasoning in practice:

(i). Fallacy of relevance, Fallacies of ambiguity, Fallacies of weak induction, Avoiding fallacies
(ii) Logical applications of the concept of pakṣatā
(iii) Functional applications of ordinary operative relations between sense-organs and respective objects .

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

F. Inductive reasoning in Law

(i) The method of Inquiry in Law
(ii) Causation in Legal reasoning
(iii) Analogical Reasoning in legal argument
(iv) Probability in legal argument

G. Deductive Reasoning in Law

(i) Determining the correct rule of Law
(ii) Identifying, formulating, and applying rules of law.
(iii) The law of libel
(iv) Logic is right reasoning

Suggested Readings:

1. Introduction to Logic (9th Edition) : I. M. Copi & C. Cohen, Prentice Hall of India Pvt. Ltd., New Delhi,
2. The Elements of Logic (5th Edition): S.F.Barker, McGraw- Hill Book Company,
3. Introduction to Logic : P.J. Hurley, Wadsworth
4. Tarkasaṁgraha: Annaṁbhatta
5. Word and the World: B.K. Matilal
6. Tarkasaṁgraha: M.R. Bodas & Y.V. Athalye (tr. &ed.)
7. The Concept of Logical Fallacies: Nandita Bandyopadhaya
8. Tarkasaṁgraha with Dipika: Narayan Chandra Goswami
9. Tarkasaṁgraha with Dipika: Indira Mukhopadhyay
10. Tarkasaṁgraha with Dipika: Panchanan Shastri
11. Tarkasaṁgraha with Dipika: Kanailal Poddar

Generic Elective (GE)
[Interdisciplinary for other Department]

GE-1: Western Philosophy **Credits 06**

GE1T: Western Philosophy

Course Contents:

1. Metaphysics: Nature of Metaphysics, Elimination of Metaphysics
2. Realism: Naïve Realism, Scientific Realism, Representative Realism
3. Idealism: Subjective Idealism, Objective Idealism
4. Critical Theory of Kant
5. Theories of Causation: Regularity Theory and Entailment Theory
6. Substance: Views of Descartes, Spinoza, Locke and Berkeley
7. Relation between Mind and Body: Interactionism and Parallelism
8. Theories of Evolution: Mechanistic and Emergent

Suggested Readings:

1. Falkenberg : History of Western Philosophy

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

2. Sibapada Chakraborty : General Philosophy
3. Sibapada Chakraborty : *An Introduction to General Philosophy*
4. Ramchandra Pal : *Darśan Parichaya*
5. Rama Prasad Das & Sibapada Chakraborty : *Pāścātya Darśaner Rūprekhā*
6. Niradbaran Chakraborty : *Pāścātya Darśaner Bhūmikā*

Or

GE-1: Indian Philosophy **Credits 06**

GE1T: Indian Philosophy

Course Contents:

1. Introduction:
General Features of Indian Philosophy

2. Cārvāka:
(a) *pratyakṣa* (perception) as the only Source of Knowledge
(b) Refutation of *anumāna* (inference) and *śabda* (testimony) as Sources of Knowledge
(c) *jaḍavāda* and *dehātmavāda*

3. Jainism:
(a) *anekāntavāda*
(b) *syādvāda* and *nayavāda*

4. **Buddhism:**
(a) Four Noble Truths
(b) *pratītyasamutpāda*
(c) *kṣaṇabhaṅgavāda*
(d) *nairātmyavāda*

5. Nyāya–Vaiśeṣika:
(a) *pramāṇa*: *pratyakṣa* (perception), *anumāna* (inference), *upamāna* (comparison) and *śabda* (testimony)
(b) *Saptapadārtha* (Seven Categories)

6. **Sāṁkhya:**
(a) *Satkāryavāda* (Theory of Causality)
(b) *Pariṇāmavāda* (Theory of Evolution)

7. Yoga :
(a) *cittavṛttinirodha*
(b) *aṣṭāṅgayoga*
8. Mīmāṁsā
(a) *arthāpatti*
(b) *anupalabdhi*
9. Advaita Vedānta:
Brahman, *jīva* and *jagat*

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

Suggested Readings:

1. S. C. Chatterjee & D. M. Dutta: *An Introduction to Indian Philosophy*
2. C. D. Sharma : *A Critical Survey of Indian Philosophy*
3. Haridas Bandyaopadhyay : *Bhāratīya Darśaner Marmakathā*
4. J. N. Mohanti : Classical Indian Philosophy
5. Niradbaran Chakraborty : *Bhāratīya Darśan*
6. Karuna Bhattacharya : *Nyāya-Vaiśeṣika Darśan*
7. Panchanan Shastri : *Cārvāka Darśan*
8. Panchanan Shastri : *Bauddha Darśan*
9. Rajat Bhattacharya : *Sāṁkhyakārikā* O *Sāṁkhyatattvakumudī*
10. Niradbaran Chakraborty : *Bhāratīya Darśan*
11. Deepak Kumar Bagchi : *Bhāratīya Darśan*
12. Debabrata Sen : *Bhāratīya Darśan*
13. Pradyot Kumar Mandal : *Bhāratīya Darśan*
14. Kanakprabha Bandyopadhyay : *Sāṁkhyapātañjaladarśan*
15. Tarakishor Sharma Choudhury : *Pātañjaladarśan*
16. Gobindagopal Mukhopadhyay : *Yoger Kathā : Patañjalir Dṛṣṭite*
17. Purnachandra Vedanta Chunchu : *Pātañjal Darśan*

Or

GE-1: Philosophy of Religion **Credits 06**

GE1T: Philosophy of Religion

Course Contents:

(a) Nature and scope of Philosophy of Religion. Doctrine of karma and rebirth, doctrine of liberation.
(b) Origin and Source of Religion: Animism, Totemism, Freud's theory
(c) National Religion, Universal religion.
(d) The Philosophical teachings of the Holy Quran: God the ultimate Reality, His attributes, His relation to the world and man.
(e) Some basic tenets of Christianity: The doctrine of Trinity, The theory of Redemption
(f) Arguments for the existence of God: Cosmological, Teleological and Ontological arguments,
(g) The Peculiarity of Religious Language: The doctrine of analogy, Religious statements as Symbolic, Religious language as Non-Cognitive (Randal's view).

Suggested Readings:

- Philosophy of Religion: J. Hick
- An Introduction to the Philosophy of Religion: Brian Davies
- Indian Philosophy of Religion: A. Sharma
- Comparative Religion: P.B. Chatterjee
- Comparative Religion: Eric J. Sharpe
- Patterns in Comparative Religion: M. Eliade (Ch I, Sec. I)
- Atheism in Indian Philosophy: D.P. Chattopadhyay
- Essays in Indian Philosophy (pp-145-169): Sukharanjan Saha (ed.)

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

- Studies in Nyaya-Vaisesika Theism (pp-102-137,139-159): Gopika Mohan Bhattacharya
- The Religions of the World: R.K.M. Institute of Culture
- Encyclopedia Britannica, Vol. I
- Encyclopedia of Islam, Vols. I & II
- Indian Religions: S. Radhakrishnan
- Foundations of Living Faith: H.D. Bhattacharya
- Aspects of Hindu Morality: Saral Jhingram
- A History of Muslim Philosophy (Vols.I &II): M.M. Sharif
- Islam and Secularism: Sayed Muhammad Al-Naquib Al-Attas
- The History of Philosophy in Islam-T.J. de Boer: E. Jones (tr.)
- The Holy Quran: Mohammad Yusuf Ali (tr.)
- The Spirit of Islam: Syed Amir Ali
- The Meaning of the Glorious Koran: M. Pickthall
- A History of Islamic Philosophy: M. Fakhry
- The Spirit of Islam's Message, Muhammad Qamaruddin in Religions of the People of India: S.R. Saha (ed.)
- Cultural Heritage of Islam: Osman Ghani
- Old Testament: R. Kittel (ed.)
- New Testament: Kilpatrick
- The Doctrine of the Trinity: R.S. Franks
- The Doctrine of the Trinity: Loenard Hodgson
- The Idea of the Holy: R. Otto
- A Brief Account of the Religion of the Hindus: Srilekha Dutta in Religions of the People of India: S.R. Saha (ed.)
- Dharma in Hinduism: An Ideal Religion: Tapan Kumar Chakraborty in Religions of the People of India: S.R. Saha (ed.)
- Jainism-A Religion of Non-Theistic Humanism: Tushar Sarkar in Religions of the People of India: S.R. Saha (ed.)
- Essays in Analytical Philosophy (Ch.VII): Gopinath Bhattacharya
- Buddhism in India and Abroad: Anukul Badyopadhyay

GE-2: Social –Political Philosophy- I **Credits 06**

GE2T: Social –Political Philosophy- I

Course Contents:

(a) Nature & Scope of Social Philosophy.Nature & Scope of Political Philosophy.Relation between Social Philosophy and Political Philosophy.
(b) Primary Concepts: Society, Community, Association, Institution.
(c) Social Groups: Its Different Forms. Family: Its Different Forms.
(d) Social Class and Caste: Principles of Class and Caste; Marxist conception of class; Class Attitudes and Class consciousness

Or

GE-2: Philosophy of Mind **Credits 06**

GE2T: Philosophy of Mind

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

Course Contents:

(a) Sensation: What is sensation? Attributes of sensation.
(b) Perception: What is perception? Relation between sensation and perception, Gestalt theory of perception, illusion and hallucination.
(c) Consciousness: Conscious, Subconscious, Unconscious,Evidence for the existence of the Unconscious, Freud's theory of dream.
(d) Memory: Factors of memory, Laws of association, Forgetfulness. Learnung: The trialand Error theory, Pavlov's Conditioned Response theory, Gestalt theory.
(e) Intelligence: Measurement of Intelligence, I.Q., Testof Intelligence, Binnet-Simon test.

Or

GE-2: Applied Ethics and Philosophy of Religion **Credits 06**

GE2T: Applied Ethics and Philosophy of Religion

Course Contents:

A. Concepts of Applied Ethics.
B. Killing: Suicide, Euthanasia.
C. Famine, Affluence and Morality.
D. Environmental Ethics: Value Beyond Sentient Beings, Reverence for life, Deep Ecology.
E. Nature & Concerns of Philosophy of Religion. Argument for the existence of God: Cosmological argument, Ontological argument and Teleological argument.
F. Problem of Evil and Suffering.
G. Grounds for disbelief in God: Sociological theory of Durkheim, Freudian Theory, CārvākaView.

Downloaded from Vidyasagar University by 103.77.136.15 on 25 July 2023 : 16:26:00; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Philosophy_general.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Physics [Choice Based Credit System]

Semester-I

Sl.No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C1	**C1T:** Mathematical Physics-I	Core Course-1		4	0	0	6	75
	C1P: Mathematical Physics –I Lab	Core Course1 [Practical]		0	0	4		
C2	**C2T:** Mechanics	Core Course-2		4	0	0	6	75
	C2P: Mechanics Lab	Core Course-2 [Practical]		0	0	4		
GE-1	GE-1	GE					4/5	75
	GE-1	GE					2/1	
AECC	English	AECC					2	50
				Total Credits =20				

AECC- Ability Enhancement Compulsory Course: English /Modern Indian Language

Interdisciplinary/Generic Elective (GE) from other Department

[**Four papers are to be taken and each paper will be of 6 credits**]:

[Papers are to be taken from any of the following discipline (**GE-1 from Mathematics**)]: **Mathematics/Chemistry/Computer Science/Statistics/Geology/Electronics/Bio-technology**

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Semester -1

Core Courses-1

CC-1: Mathematical Physics — Credits 06

C1T1 – Mathematical Physics — Credits 04

Mathematical Physics	
	4 Credits
Calculus	
Recapitulation: Limits, continuity, average and instantaneous quantities, differentiation. Plotting functions. Intuitive ideas of continuous, differentiable, etc. functions and plotting of curves. Approximation: Taylor and binomial series (statements only). First Order and Second Order Differential equations: First Order Differential Equations and Integrating Factor. Homogeneous Equations with constant coefficients. Wronskian and general solution. Statement of existence and Uniqueness Theorem for Initial Value Problems. Particular Integral. Calculus of functions of more than one variable: Partial derivatives, exact and inexact differentials. Integrating factor, with simple illustration. Constrained Maximization using Lagrange Multipliers.	
Vector Calculus	
Recapitulation of vectors: Properties of vectors under rotations. Scalar product and its invariance under rotations. Vector product, Scalar triple product and their interpretation in terms of area and volume respectively. Scalar and Vector fields. Vector Differentiation: Directional derivatives and normal derivative. Gradient of a scalar field and its geometrical interpretation. Divergence and curl of a vector field. Del and Laplacian operators. Vector identities. Vector Integration: Ordinary Integrals of Vectors. Multiple integrals, Jacobian. Notion of infinitesimal line, surface and volume elements. Line, surface and volume integrals of Vector fields. Flux of a vector field. Gauss' divergence theorem, Green's and Stokes Theorems and their applications (no rigorous proofs).	
Orthogonal Curvilinear Coordinates	
Orthogonal Curvilinear Coordinates. Derivation of Gradient, Divergence, Curl and Laplacian in Cartesian,	

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Spherical and Cylindrical Coordinate Systems.
Introduction to probability
Independent random variables: Probability distribution functions; binomial, Gaussian, and Poisson, with examples. Mean and variance. Dependent events: Conditional Probability. Bayes' Theorem and the idea of hypothesis testing.
DiracDeltafunctionanditsproperties
Definition of Dirac delta function. Representation as limit of a Gaussian function and rectangular function. Properties of Dirac delta function.
Reference Books

- Mathematical Methods for Physicists, G.B. Arfken, H.J. Weber, F.E. Harris, 2013, 7th Edn., Elsevier.
- An introduction to ordinary differential equations, E.A. Coddington, 2009, PHI learning
- Differential Equations, George F. Simmons, 2007, McGraw Hill.
- Mathematical Tools for Physics, James Nearing, 2010, Dover Publications.
- Mathematical methods for Scientists and Engineers, D.A. McQuarrie, 2003, Viva Book
- Advanced Engineering Mathematics, D.G. Zill and W.S. Wright, 5 Ed., 2012, Jones and Bartlett Learning
- Mathematical Physics, Goswami, 1st edition, Cengage Learning
- Engineering Mathematics, S.Pal and S.C. Bhunia, 2015, Oxford University Press
- Advanced Engineering Mathematics, Erwin Kreyszig, 2008, Wiley India.
- Essential Mathematical Methods, K.F.Riley & M.P.Hobson, 2011, Cambridge Univ. Press
- Mathematical methods in the Physical Sciences, M. L. Boas, 2005, Wiley.

C1P1 – Mathematical Physics Lab Credits 02

Mathematical Physics	
	2 credits
Introduction and Overview	
Computer architecture and organization, memory and Input/output devices	
Basics of scientific computing	
Binary and decimal arithmetic, Floating point numbers, algorithms, Sequence, Selection and Repetition, single and double precision arithmetic, underflow &overflow- emphasize the importance of making equations in terms of dimensionless variables, Iterative methods	
Errors and error Analysis	

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Truncation and round off errors, Absolute and relative errors, Floating point computations.

Introduction to plotting graphs with Gnuplot

Basic 2D and 3D graph plotting - plotting functions and datafiles, fitting data using gnuplot's fit function, polar and parametric plots, modifying the appearance of graphs, Surface and contour plots, exporting plots.

Introduction to programming in python:

Introduction to programming, constants, variables and data types, dynamical typing, operators and expressions, modules, I/O statements, iterables, compound statements, indentation in python, the if-elif-else block, for and while loops, nested compound statements, lists, tuples, dictionaries and strings, basic ideas of object oriented programming.

Programs

Sum & average of a list of numbers, largest of a given list of numbers and its location in the list, sorting of numbers in ascending descending order, Binary search

Random number generation

Area of circle, area of square, volume of sphere, value of pi (π)

Solution of Algebraic and Transcendental equations by Bisection, Newton Raphson and Secant methods

Solution of linear and quadratic equation, solving $\alpha = tan\alpha$, ב $= ב\left\{\frac{sin\alpha}{\alpha}\right\}^2$, in optics

Interpolation by Newton Gregory Forward and Backward difference formula, Error estimation of linear interpolation

Evaluation of trigonometric functions e.g. sin θ, cos θ, tan θ, etc.

Numerical differentiation (Forward and Backward difference formula) and Integration (Trapezoidal and Simpson rules), Monte Carlo method

Given Position with equidistant time data to calculate velocity and acceleration and vice versa. Find the area of B-H Hysteresis loop

Solution of Ordinary Differential Equations (ODE) First order Differential equation Euler, modified Euler and Runge-Kutta (RK) second and fourth order methods

First order differential equation

- Radioactive decay
- Current in RC, LC circuits with DC source

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

- Newton's law of cooling
- Classical equations of motion

Attempt following problems using RK 4 order method

Solve the coupled differential equations

$$\frac{dx}{dt} = y + x - \frac{x3}{3}; \frac{dy}{dx} = -x$$

For four initial conditions x(0) = 0, y(0) = -1, -2, -3, -4.

Plot x vs y for each of the four initial conditions on the same screen for 0≤ t ≤15

The differential equation describing the motion of a pendulum is $\frac{d^2(\ )}{d^2} = -sin(\beta)$.The pendulum is released from rest at an angular displacementα, i. e. B(0) = α, and B'(()) = 0. Solve the equation for = 0.1, 0.5 and 1.0 and plot B as a function of time in the range 0≤t≤8. Also plot the analytic solution valid for small B (sin(B) = B

Reference Books

- Introduction to Numerical Analysis, S.S. Sastry, 5th Edn. , 2012, PHI Learning Pvt. Ltd.
- Learning with Python-how to think like a computer scientist, J. Elkner, C. Meyer, and A. Downey, 2015, Dreamtech Press.
- Introduction to computation and programming using Python, J. Guttag, 2013, Prentice Hall India.
- Effective Computation in Physics- Field guide to research with Python, A. Scopatz and K.D. Huff, 2015, O'Rielly
- A first course in Numerical Methods, U.M. Ascher & C. Greif, 2012, PHI Learning.
- Elementary Numerical Analysis, K.E. Atkinson, 3 rd Edn . , 2007, Wiley India Edition.
- Numerical Methods for Scientists & Engineers, R.W. Hamming, 1973, Courier Dover Pub.
- An Introduction to computational Physics, T.Pang, 2nd Edn., 2006,Cambridge Univ. Press
- Computational Physics, Darren Walker, 1st Edn., 2015, Scientific International Pvt. Ltd.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

CC-2: Mechanics Credits 06

C2T2: Mechanics	Credits 04
	4 Credits
Fundamentals of Dynamics	
Reference frames. Inertial frames; Review of Newton's Laws of Motion. Galilean transformations; Galilean invariance. Momentum of variable- mass system: motion of rocket. Motion of a projectile in Uniform gravitational field Dynamics of a system of particles. Centre of Mass. Principle of conservation of momentum. Impulse.	
Work and Energy	
Work and Kinetic Energy Theorem. Conservative and non- conservative forces. Potential Energy. Qualitative study of one dimensional motion from potential energy curves. Stable and unstable equilibrium. Elastic potential energy. Force as gradient of potential energy. Work & Potential energy. Work done by non-conservative forces. Law of conservation of Energy.	
Collisions	
Elastic and inelastic collisions between particles. Centre of Mass and Laboratory frames.	
Rotational Dynamics	
Angular momentum of a particle and system of particles. Torque. Principle of conservation of angular momentum. Rotation about a fixed axis. Moment of Inertia. Calculation of moment of inertia for rectangular, cylindrical and spherical bodies. Kinetic energy of rotation. Motion involving both translation and rotation.	
Elasticity	
Relation between Elastic constants. Twisting torque on a Cylinder or Wire.	
Fluid Motion	
Kinematics of Moving Fluids: Poiseuille's Equation for Flow of a Liquid through a Capillary Tube.	
Gravitation and Central Force Motion	
Law of gravitation. Gravitational potential energy. Inertial and gravitational mass. Potential and field due to spherical shell and solid sphere. Motion of a particle under a central force field. Two-body problem and its reduction to one-body problem and its solution. The energy equation and energy diagram. Kepler's Laws. Satellite in circular orbit and	

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

applications. Geosynchronous orbits. Weightlessness. Basic idea of global positioning system (GPS).

Oscillations

SHM: Simple Harmonic Oscillations. Differential equation of SHM and its solution. Kinetic energy, potential energy, total energy and their time-average values. Damped oscillation. Forced oscillations: Transient and steady states; Resonance, sharpness of resonance; power dissipation and Quality Factor.

Non-Inertial Systems:

Non-inertial frames and fictitious forces. Uniformly rotating frame. Laws of Physics in rotating coordinate systems. Centrifugal force. Coriolis force and its applications. Components of Velocity and Acceleration in Cylindrical and Spherical Coordinate Systems.

Special Theory of Relativity

Michelson-Morley Experiment and its outcome. Postulates of Special Theory of Relativity. Lorentz Transformations. Simultaneity and order of events. Lorentz contraction. Time dilation. Relativistic transformation of velocity, frequency and wave number. Relativistic addition of velocities. Variation of mass with velocity. Massless Particles. Mass-energy Equivalence. Relativistic Doppler effect. Relativistic Kinematics. Transformation of Energy and Momentum.

Reference Books

- An introduction to mechanics, D. Kleppner, R.J. Kolenkow, 1973, McGraw-Hill.
- Mechanics, Berkeley Physics, vol.1, C.Kittel, W.Knight, et.al. 2007, Tata McGraw-Hill.
- Physics, Resnick, Halliday and Walker 8/e. 2008, Wiley.
- Analytical Mechanics, G.R. Fowles and G.L. Cassiday. 2005, Cengage Learning.
- Feynman Lectures, Vol. I, R.P.Feynman, R.B.Leighton, M.Sands, 2008, Pearson Education
- Introduction to Special Relativity, R. Resnick, 2005, John Wiley and Sons.
- University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.

Additional Books for Reference

- Mechanics, D.S. Mathur, S. Chand and Company Limited, 2000
- University Physics. F.W Sears, M.W Zemansky, H.D Young 13/e, 1986, Addison Wesley
- Physics for scientists and Engineers with Modern Phys., J.W. Jewett, R.A. Serway, 2010, Cengage Learning
- Theoretical Mechanics, M.R. Spiegel, 2006, Tata McGraw Hill.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

C2 P2: Mechanics Lab Credits 02

Mechanics	
	2 Credits

General Topic

Discussion on random errors in observations.

List of Practical

1. Measurements of length (or diameter) using vernier caliper, screw gauge and travelling microscope.
2. To study the random error in observations.
3. To determine the height of a building using a Sextant.
4. To study the Motion of Spring and calculate, (a) Spring constant, (b) g and (c) Modulus of rigidity.
5. To determine the Moment of Inertia of a Flywheel.
6. To determine g and velocity for a freely falling body using Digital Timing Technique
7. To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille's method).
8. To determine the Young's Modulus of a Wire by Optical Lever Method.
9. To determine the Modulus of Rigidity of a Wire by Maxwell's needle.
10. To determine the elastic Constants of a wire by Searle's method.
11. To determine the value of g using Bar Pendulum.
12. To determine the value of g using Kater's Pendulum.

Note: Some of these experiments may be too expensive to set up in all colleges. In particular, the digital timing technique is usually too costly, unless use is made of comparatively cheap solutions like the expeyes stystem developed by IUAC. It may be more feasible to leave the universities some freedom in chosing experiments that are similar in spirit, but more in keeping with equipment that may be already available in the labs.

Reference Books

- Advanced Practical Physics for students, B. L. Flint and H.T. Worsnop, 1971, Asia Publishing House
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Edn, 2011, Kitab Mahal
- Engineering Practical Physics, S.Panigrahi & B.Mallick, 2015, Cengage Learning India Pvt. Ltd.
- Practical Physics, G.L. Squires, 2015, 4th Edition, Cambridge University Press.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Generic Elective

GE-1 [Interdisciplinary for other department]

GE- T: Elements of Modern Physics Credits 06

GE-1T1: Elements of Modern Physics Credits 04

Elements of Modern Physics	
	4 Credits
Planck's quantum	
Planck's constant and light as a collection of photons; Photo- electric effect and Compton scattering. De Broglie wavelength and matter waves; Davisson-Germer experiment.	
Problems with Rutherford model	
Instability of atoms and observation of discrete atomic spectra; Bohr's quantization rule and atomic stability; calculation of energy levels for hydrogen like atoms and their spectra.	
Position measurement	
Gamma ray microscope thought experiment; Wave-particle duality, Heisenberg uncertainty principle- impossibility of a particle following a trajectory; Estimating minimum energy of a confined particle using uncertainty principle; Energy-time uncertainty principle.	
Two slit interference experiment	
Two slit interference experiment with photons, atoms & particles; linear superposition principle as a consequence; Matter waves and wave amplitude; Schrodinger equation for non-relativistic particles; Momentum and Energy operators; stationary states; physical interpretation of wavefunction, probabilities and normalization; Probability and probability current densities in one dimension.	
One Dimensional infinitely Rigid Box	
Energy eigenvalues and eigenfunctions, normalization; Quantum dot as an example; Quantum mechanical scattering and tunnelling in one dimension - across a step potential and across a rectangular potential barrier.	
Size and structure of atomic nucleus and its relation with atomic weight	
Impossibility of an electron being in nucleus as a consequence of the uncertainty principle. Nature of	

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

nuclear force, NZ graph, semi-empirical mass formula and binding energy.

Radioactivity

Stability of nucleus; Law of radioactive decay; Mean life and half-life; decay; decay - energy released, spectrum and Pauli's prediction of neutrino; -ray emission.

Fission and fusion

Mass deficit, relativity and generation of energy; Fission - nature of fragments and emission of neutrons. Nuclear reactor: slow neutrons interacting with Uranium 235; Fusion and thermonuclear reactions.

Reference Books

- Concepts of Modern Physics, Arthur Beiser, 2009, McGraw-Hill
- Modern Physics, J.R. Taylor, C.D. Zafiratos, M.A. Dubson,2009, PHI Learning
- Six Ideas that Shaped Physics:Particle Behave like Waves, Thomas A. Moore, 2003, McGraw Hill
- Quantum Physics, Berkeley Physics, Vol.4. E.H. Wichman, 2008, Tata McGraw- Hill Co.
- Modern Physics, R.A. Serway, C.J. Moses, and C.A.Moyer, 2005, Cengage Learning
- Modern Physics, G. Kaur and G.R. Pickrell, 2014, McGraw Hill

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

GE-1P1:Elements of Modern Physics Lab Credits 02

Elements of Modern Physics	
	2 Credits

List of Practical

1. To determine value of Boltzmann constant using V-I characteristic of PN diode.
2. To determine work function of material of filament of directly heated vacuum diode.
3. To determine the ionization potential of mercury.
4. To determine value of Planck's constant using LEDs of at least 4 different colours.
5. To determine the wavelength of H-alpha emission line of Hydrogen atom.
6. To determine the absorption lines in the rotational spectrum of Iodine vapour.
7. To study the diffraction patterns of single and double slits using laser and measure its intensity variation using Photosensor & compare with incoherent source – Na.
8. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
9. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
10. To setup the Millikan oil drop apparatus and determine the charge of an electron.

Reference Books

- Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th
- Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Physics [Choice Based Credit System]

Semester-II

Sl.No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C3	**C3T:** Electricity and Magnetism	Core Course-3		4	0	0	6	75
	C3P: Electricity and Magnetism Lab	Core Course3 [Practical]		0	0	4		
C4	**C4T:** Waves and Optics	Core Course-4		4	0	0	6	75
	C4P: Wave and Optics Lab	Core Course-4 [Practical]		0	0	4		
GE-2	GE-2	GE					4/5	75
	GE-2	GE					2/1	
AECC -2	Environmental Studies	AECC					4	100
				Total Credits =22				

L=Lecture, T=Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: Environmental Studies.

Interdisciplinary/Generic Elective (GE) from other Department

[**Four papers are to be taken and each paper will be of 6 credits**]:

[Papers are to be taken from any of the following discipline (**GE-2 from Mathematics**)]:

Mathematics/Chemistry/Computer Science/Statistics/Geology/Electronics/Bio-technology

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Semester -II

Core Courses

Core-3

CC-3: Electricity and Magnetism **Credits 06**

C3 T - Electricity and Magnetism **Credits 04**

Electricity and Magnetism

4 Credits

Electric Field and Electric Potential

Electric field: Electric field lines. Electric flux. Gauss' Law with applications to charge distributions with spherical, cylindrical and planar symmetry.

Conservative nature of Electrostatic Field. Electrostatic Potential. Laplace's and Poisson equations. The Uniqueness Theorem. Potential and Electric Field of a dipole. Force and Torque on a dipole.

Electrostatic energy of system of charges. Electrostatic energy of a charged sphere. Conductors in an electrostatic Field. Surface charge and force on a conductor. Capacitance of a system of charged conductors. Parallel-plate capacitor. Capacitance of an isolated conductor. Uniqueness theorem (statement). Method of Images and its application to: (1) Plane Infinite Sheet and (2) Sphere.

Dielectric Properties of Matter

Electric Field in matter. Polarization, Polarization Charges. Electrical Susceptibility and Dielectric Constant. Capacitor (parallel plate, spherical, cylindrical) filled with dielectric. Displacement vector D. Relations between E, P and D. Gauss' Law in dielectrics.

Magnetic Field

Magnetic force between current elements and definition of Magnetic Field B. Biot-Savart's Law and its simple applications: straight wire and circular loop. Current Loop as a Magnetic Dipole and its Dipole Moment (Analogy with Electric Dipole).

Ampere's Circuital Law and its application to (1) infinite straight wire, (2) Infinite planar surface current, and (3) Solenoid. Properties of B: curl and divergence. Axial vector property of B and its consequences. Vector Potential. Magnetic Force on (1) point charge (2) current carrying wire (3) between current elements. Torque on a current loop in a uniform Magnetic Field.

Magnetic Properties of Matter

Magnetization vector (M). Magnetic Intensity (H). Magnetic Susceptibility and permeability. Relation between B, H, M. Ferromagnetism. B-H curve and hysteresis.

Electromagnetic Induction

Faraday's Law. Lenz's Law. Self-Inductance and Mutual Inductance. Reciprocity Theorem. Energy stored in a Magnetic Field. Introduction to Maxwell's Equations. Charge Conservation and Displacement current

Electrical Circuits

AC Circuits: Kirchhoff's laws for AC circuits. Complex Reactance and Impedance. Series LCR Circuit: (1) Resonance, (2) Power Dissipation and (3) Quality Factor, and (4) Band

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Width. Parallel LCR Circuit

Network theorems

Ideal Constant-voltage and Constant-current Sources. Network Theorems: Thevenin theorem, Norton theorem, Superposition theorem, Reciprocity theorem, Maximum Power Transfer theorem. Applications to dc circuits

Note: For the sake of brevity, details of ballistic galvanometer may be omitted from the theory course. Some part of the theory may be needed for the experiments, but this can be covered as part of Practical.

Reference Books

- Electricity, Magnetism & Electromagnetic Theory, S. Mahajan and Choudhury, 2012, Tata McGraw
- Electricity and Magnetism, Edward M. Purcell, 1986 McGraw-Hill Education
- Introduction to Electrodynamics, D.J. Griffiths, 3rd Edn., 1998, Benjamin Cummings.
- Feynman Lectures Vol.2, R.P.Feynman, R.B.Leighton, M. Sands, 2008, Pearson Education
- Elements of Electromagnetics, M.N.O. Sadiku, 2010, Oxford University Press.
- Electricity and Magnetism, J.H.Fewkes & J.Yarwood. Vol. I, 1991, Oxford Univ. Press.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

C3P – Electricity and Magnetism (Lab) **Credits 02**
Electricity and Magnetism

General topic
Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current, (d) Capacitances, and (e) Checking electrical fuses**.**

List of Practicals
1. To study the characteristics of a series RC Circuit.
2. To determine an unknown Low Resistance using Potentiometer.
3. To determine an unknown Low Resistance using Carey Foster's Bridge.
4. To determine the resistance of a galvanometer using Thomson's method.
5. Measurement of field strength B and its variation in a solenoid (determine dB/dx)
6. To verify the Thevenin and Norton theorems.
7. To verify the Superposition, and Maximum power transfer theorems.
8. To determine self-inductance of a coil by Anderson's bridge.
9. To study response curve of a Series LCR circuit and determine its (a) Resonant frequency, (b) Impedance at resonance, (c) Quality factor Q, and (d) Band width.
10. To study the response curve of a parallel LCR circuit and determine its (a) Anti-resonant frequency and (b) Quality factor Q.

Reference Books

- Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
- A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- Engineering Practical Physics, S.Panigrahi and B.Mallick, 2015, Cengage Learning.
- A Laboratory Manual of Physics for undergraduate classes, D.P.Khandelwal, 1985, Vani Pub.

Core Course-4

CC-4 Waves and Optics **Credits 06**

C4 T - Waves and Optics **Credits 04**
Waves and Optics

Superposition of Collinear Harmonic oscillations
Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats).
Superposition of N collinear Harmonic Oscillations with (1) equal phase differences and (2) equal frequency differences.

Superposition of two perpendicular Harmonic Oscillations
Graphical and Analytical Methods. Lissajous Figures with equal an unequal frequency and their uses.

Wave Motion

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Plane and Spherical Waves. Longitudinal and Transverse Waves. Plane Progressive (Travelling) Waves. Wave Equation. Particle and Wave Velocities. Differential Equation. Pressure of a Longitudinal Wave. Energy Transport. Intensity of Wave. Water Waves: Ripple and Gravity Waves

Velocity of Waves

Velocity of Transverse Vibrations of Stretched Strings. Velocity of Longitudinal Waves in a Fluid in a Pipe. Newton's Formula for Velocity of Sound. Laplace's Correction.

Superposition of Two Harmonic Waves

Standing (Stationary) Waves in a String: Fixed and Free Ends. Analytical Treatment. Phase and Group Velocities. Changes with respect to Position and Time. Energy of Vibrating String. Transfer of Energy. Normal Modes of Stretched Strings. Plucked and Struck Strings. Melde's Experiment. Longitudinal Standing Waves and Normal Modes. Open and Closed Pipes. Superposition of N Harmonic Waves.

Wave Optics

Electromagnetic nature of light. Definition and properties of wave front. Huygens Principle. Temporal and Spatial Coherence.

Interference

Division of amplitude and wavefront. Young's double slit experiment. Lloyd's Mirror and Fresnel's Biprism. Phase change on reflection: Stokes' treatment. Interference in Thin Films: parallel and wedge-shaped films. Fringes of equal inclination (Haidinger Fringes); Fringes of equal thickness (Fizeau Fringes). Newton's Rings: Measurement of wavelength and refractive index.

Interferometer

Michelson Interferometer-(1) Idea of form of fringes (No theory required), (2) Determination of Wavelength, (3) Wavelength Difference, (4) Refractive Index, and (5) Visibility of Fringes. Fabry-Perot interferometer.

Diffraction and Holography

Kirchhoff's Integral Theorem, Fresnel-Kirchhoff's Integral formula. (Qualitative discussion only)

Fraunhofer diffraction: Single slit. Circular aperture, Resolving Power of a telescope. Double slit. Multiple slits. Diffraction grating. Resolving power of grating.

Fresnel Diffraction: Fresnel's Assumptions. Fresnel's Half-Period Zones for Plane Wave. Explanation of Rectilinear Propagation of Light. Theory of a Zone Plate: Multiple Foci of a Zone Plate. Fresnel's Integral, Fresnel diffraction pattern of a straight edge, a slit and a wire.

Holography: Principle of Holography. Recording and Reconstruction Method. Theory of Holography as Interference between two Plane Waves. Point source holograms.

Reference Books

- Waves: Berkeley Physics Course, vol. 3, Francis Crawford, 2007, Tata McGraw-Hill.
- Fundamentals of Optics, F.A. Jenkins and H.E. White, 1981, McGraw-Hill
- Principles of Optics, Max Born and Emil Wolf, 7th Edn., 1999, Pergamon Press.
- Optics, Ajoy Ghatak, 2008, Tata McGraw Hill
- The Physics of Vibrations and Waves, H. J. Pain, 2013, John Wiley and Sons.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

- The Physics of Waves and Oscillations, N.K. Bajaj, 1998, Tata McGraw Hill.
- Fundamental of Optics, A. Kumar, H.R. Gulati and D.R. Khanna, 2011, R. Chand Publications.

C4 P – Wave and Optics Lab **Credits 02**

Wave and Optics

2 Credits

List of Practical

1. To determine the frequency of an electric tuning fork by Melde's experiment and verify λ^2 –T law.
2. To investigate the motion of coupled oscillators.
3. To study Lissajous Figures.
4. Familiarization with: Schuster`s focusing; determination of angle of prism.
5. To determine refractive index of the Material of a prism using sodium source.
6. To determine the dispersive power and Cauchy constants of the material of a prism using mercury source.
7. To determine the wavelength of sodium source using Michelson's interferometer.
8. To determine wavelength of sodium light using Fresnel Biprism.
9. To determine wavelength of sodium light using Newton's Rings.
10. To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped Film.
11. To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.
12. To determine dispersive power and resolving power of a plane diffraction grating.

Reference Books

- Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
- A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Laboratory Manual of Physics for undergraduate classes, D.P.Khandelwal, 1985, Vani Pub.

Generic Elective
GE-2 [Interdisciplinary for other department]

GE2 T - Thermal Physics and Statistical Mechanics

Thermal Physics and Statistical Mechanics

4 Credits

Laws of Thermodynamics

Thermodynamic Description of system: Zeroth Law of thermodynamics and temperature. First law and internal energy, conversion of heat into work, Various Thermodynamical Processes, Applications of First Law: General Relation between CP and CV, Work Done during Isothermal and Adiabatic Processes, Compressibility and Expansion Coefficient,

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Reversible and irreversible processes, Second law and Entropy, Carnot's cycle & theorem, Entropy changes in reversible & irreversible processes, Entropy-temperature diagrams, Third law of thermodynamics, Unattainability of absolute zero.

Thermodynamical Potentials

Enthalpy, Gibbs, Helmholtz and Internal Energy functions, Maxwell's relations and applications - Joule-Thompson Effect, Clausius- Clapeyron Equation, Expression for (CP – CV), CP/CV, TdS equations.

Kinetic Theory of Gases

Derivation of Maxwell's law of distribution of velocities and its experimental verification, Mean free path (Zeroth Order), Transport Phenomena: Viscosity, Conduction and Diffusion (for vertical case), Law of equipartition of energy (no derivation) and its applications to specific heat of gases; mono-atomic and diatomic gases.

Theory of Radiation

Blackbody radiation, Spectral distribution, Concept of Energy Density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh- Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.

Statistical Mechanics

Phase space, Macrostate and Microstate, Entropy and Thermodynamic probability, Maxwell-Boltzmann law - distribution of velocity - Quantum statistics - Fermi-Dirac distribution law - electron gas - Bose-Einstein distribution law - photon gas - comparison of three statistics.

Reference Books

- Thermal Physics, S. Garg, R. Bansal and C. Ghosh, 1993, Tata McGraw-Hill.
- A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1969, Indian Press.
- Thermodynamics, Enrico Fermi, 1956, Courier Dover Publications.
- Heat and Thermodynamics, M.W.Zemasky and R. Dittman, 1981, McGraw Hill
- Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W.Sears and
- G.L. Salinger. 1988, Narosa
- University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
- Thermal Physics, A. Kumar and S.P. Taneja, 2014, R. chand Publications.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

GE2 P – Thermal Physics and Statistical (Lab)
Thermal Physics and Statistical

2 Credits

List of Practical

1. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
2. Measurement of Planck's constant using black body radiation.
3. To determine Stefan's Constant.
4. To determine the coefficient of thermal conductivity of Cu by Searle's Apparatus.
5. To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.
6. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method.
7. To determine the temperature co-efficient of resistance by Platinum resistance thermometer.
8. To study the variation of thermo emf across two junctions of a thermocouple with temperature.
9. To record and analyze the cooling temperature of an hot object as a function of time using a thermocouple and suitable data acquisition system
10. To calibrate Resistance Temperature Device (RTD) using Null Method/Off-Balance Bridge

Reference Books

- Advanced Practical Physics for students, B.L.Flint & H.T.Worsnop, 1971, Asia Publishing House.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.
- A Laboratory Manual of Physics for Undergraduate Classes, D.P. Khandelwal, 1985, Vani Publication.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Physics

[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		**C5T:** Mathematical Physics-II	Core Course - 5	4	0	0	6	75
		C5P: Mathematical Physics II Lab		0	0	4		
CC-6		**C6T:** Thermal Physics	Core Course - 6	4	0	0	6	75
		C6P: Thermal Physics Lab		0	0	4		
CC-7		**C7T:** Digital Systems and Applications	Core Course - 7	4	0	0	6	75
		C7P: Digital Systems and Applications Lab		0	0	4		
GE-3		**TBD**	Generic Elective -3				4/5	75
							2/1	
SEC-1		**SEC-1:**Physics Workshop Skill **Or** **SEC-1:**Electrical Circuits and Network Skills	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P=**Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [**Four papers are to be taken and each paper will be of 6 credits**]:

Papers are to be taken from any of the following discipline:

Mathematics/Chemistry/Computer Science/Statistics/Geology/Electronics/Bio-technology

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Semester-III
Core Course (CC)

CC-5 : Mathematical Physics-II **Credits 06**

C5T: Mathematical Physics-II **Credits 04**

Mathematical Physics – II

Fourier Series
Periodic functions. Orthogonality of sine and cosine functions, Dirichlet Conditions (Statement only). Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients. Complex representation of Fourier series. Expansion of functions with arbitrary period. Expansion of non-periodic functions over an interval. Even and odd functions and their Fourier expansions. Application. Summing of Infinite Series. Term-by-Term differentiation and integration of Fourier Series. Parseval Identity.

Frobenius Method and Special Functions
Singular Points of Second Order Linear Differential Equations and their importance. Frobenius method and its applications to differential equations. Legendre, Bessel, Hermite and Laguerre Differential Equations. Properties of Legendre Polynomials: Rodrigues Formula, Generating Function, Orthogonality. Simple recurrence relations. Expansion of function in a series of Legendre Polynomials. Bessel Functions of the First Kind: Generating Function, simple recurrence relations. Zeros of Bessel Functions (Jo(x) and J1(x))and Orthogonality.

Some Special Integrals
Beta and Gamma Functions and Relation between them. Expression of Integrals in terms of Gamma Functions. Error Function (Probability Integral).

Variational calculus in physics
Functionals. Basic ideas of functionals. Extremization of action as a basic principle in mechanics. Lagrangian fomulation. Euler's equations of motion for simple systems: harmonics oscillators, simple pendulum, spherical pendulum, coupled oscillators. Cyclic coordinates. Symmetries and conservation laws. Legendre transformations and the Hamiltonian formulation of mechanics. Canonical equations of motion. Applications to simple systems.

Partial Differential Equations
Solutions to partial differential equations, using separation of variables: Laplace's Equation in problems of rectangular, cylindrical and spherical symmetry. Wave equation and its solution for vibrational modes of a stretched string, rectangular and circular membranes. Diffusion Equation.

Reference Books

- Mathematical Methods for Physicists: Arfken, Weber, 2005, Harris, Elsevier.
- Fourier Analysis by M.R. Spiegel, 2004, Tata McGraw-Hill.
- Mathematics for Physicists, Susan M. Lea, 2004, Thomson Brooks/Cole.
- Differential Equations, George F. Simmons, 2006, Tata McGraw-Hill.
- Partial Differential Equations for Scientists & Engineers, S.J. Farlow, 1993, Dover Pub.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

- Engineering Mathematics, S.Pal and S.C. Bhunia, 2015, Oxford University Press
- Mathematical methods for Scientists & Engineers, D.A. McQuarrie, 2003, Viva Books
- Mathematical Physics, P. K. Chattopadhyay, 2014, New Academic Science.

C5P: Mathematical Physics II Lab **Credits 02**

Mathematical Physics II

Introduction to Numerical computation using numpy and scipy
Introduction to the python numpy module. Arrays in numpy, array operations, array item selection, slicing, shaping arrays. Basic linear algebra using the linalg submodule. Introduction to online graph plotting using matplotlib. Introduction to the scipy module. Uses in optimization and solution of differential equations.

Introduction to OCTAVE (if time permits)

Curve fitting, Least square fit, Goodness of fit, standard deviation

Ohms law to calculate R, Hooke's law to calculate spring constant

Solution of Linear system of equations by Gauss elimination method and Gauss Seidal method. Diagonalization of matrices, Inverse of a matrix, Eigen vectors, eigen values problems

Solution of mesh equations of electric circuits (3 meshes)
Solution of coupled spring mass systems (3 masses)

Generation of Special functions using User defined functions

Generating and plotting Legendre Polynomials Generating and plotting Bessel function

Solution of ODE First order Differential equation Euler, modified Euler and Runge-Kutta second order methods Second order differential equation Fixed difference method

First order differential equation

1. Radioactive decay
2. Current in RC, LC circuits with DC source
3. Newton's law of cooling
4. Classical equations of motion Second order Differential Equation
5. Harmonic oscillator (no friction)
6. Damped Harmonic oscillator
7. Over damped
8. Critical damped
9. Oscillatory
10. Forced Harmonic oscillator
11. Transient and
12. Steady state solution

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

13. Apply above to LCR circuits also
14. Solve $x^2\frac{d^2y}{dx^2} - 4x(1+x)\frac{dy}{dx} + 2(1+x)y = x^3$ with the boundary condition at x=1, y=$\frac{1}{2}e^2, \frac{dy}{dx} = \frac{-3}{2}e^2 - 0.5$, in the range 1≤x≤3. Plot y and $\frac{dy}{dx}$ against x in the given range in the same graph.

Partial differential equations

1. Wave equation
2. Heat equation
3. Poisson equation
4. Laplace equation

Reference Books

- Mathematical Methods for Physics and Engineers, K.F Riley, M.P. Hobson and S. J. Bence, 3rd ed., 2006, Cambridge University Press
- Complex Variables, A.S. Fokas & M.J. Ablowitz, 8th Ed., 2011, Cambridge Univ. Press
- Numpy beginners guide, Idris Alba, 2015, Packt Publishing
- Computational Physics, D.Walker, 1st Edn., 2015, Scientific International Pvt. Ltd.
- Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific and Engineering Applications: A.V. Wouwer, P. Saucez, C.V. Fernández. 2014 Springer

CC- 6: Thermal Physics **Credits 06**

C6T: Thermal Physics **Credits 04**

Thermal Physics

Introduction to Thermodynamics

Zeroth and First Law of Thermodynamics: Extensive and intensive Thermodynamic Variables, Thermodynamic Equilibrium, Zeroth Law of Thermodynamics & Concept of Temperature, Concept of Work & Heat, State Functions, First Law of Thermodynamics and its differential form, Internal Energy, First Law & various processes, Applications of First Law: General Relation between CP and CV, Work Done during Isothermal and Adiabatic Processes, Compressibility and Expansion Co-efficient.

Second Law of Thermodynamics: Reversible and Irreversible process with examples. Conversion of Work into Heat and Heat into Work. Heat Engines. Carnot's Cycle, Carnot engine & efficiency. Refrigerator & coefficient of performance, 2nd Law of Thermodynamics: Kelvin-Planck and Clausius Statements and their Equivalence. Carnot's Theorem. Applications of Second Law of Thermodynamics: Thermodynamic Scale of Temperature and its Equivalence to Perfect Gas Scale.

Entropy: Concept of Entropy, Clausius Theorem. Clausius Inequality, Second Law of Thermodynamics in terms of Entropy. Entropy of a perfect gas. Principle of Increase of

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Entropy. Entropy Changes in Reversible and Irreversible processes with examples. Entropy of the Universe. Entropy Changes in Reversible and Irreversible Processes. Principle of Increase of Entropy. Temperature–Entropy diagrams for Cycle. Third Law of Thermodynamics. Unattainability of Absolute Zero.

Thermodynamic Potentials

Thermodynamic Potentials: Internal Energy, Enthalpy, Helmholtz Free Energy, Gibb's Free Energy. Their Definitions, Properties and Applications. Surface Films and Variation of Surface Tension with Temperature. Magnetic Work, Cooling due to adiabatic demagnetization, First and second order Phase Transitions with examples, Clausius Clapeyron Equation and Ehrenfest equations

Maxwell's Thermodynamic Relations

Derivations and applications of Maxwell's Relations, Maxwell's Relations:(1) Clausius Clapeyron equation, (2) Values of Cp-Cv, (3) TdS Equations, (4) Joule-Kelvin coefficient for Ideal and Van der Waal Gases, (5) Energy equations, (6) Change of Temperature during Adiabatic Process.

Kinetic Theory of Gases

Distribution of Velocities: Maxwell-Boltzmann Law of Distribution of Velocities in an Ideal Gas and its Experimental Verification. Doppler Broadening of Spectral Lines and Stern's Experiment. Mean, RMS and Most Probable Speeds. Degrees of Freedom. Law of Equipartition of Energy (No proof required). Specific heats of Gases.
Molecular Collisions: Mean Free Path. Collision Probability. Estimates of Mean Free Path. Transport Phenomenon in Ideal Gases: (1) Viscosity, (2) Thermal Conductivity and (3) Diffusion. Brownian Motion and its Significance.

Real Gases: Behavior of Real Gases: Deviations from the Ideal Gas Equation. The Virial Equation. Andrew's Experiments on CO2 Gas. Critical Constants. Continuity of Liquid and Gaseous State. Vapour and Gas. Boyle Temperature. Van der Waal's Equation of State for Real Gases. Values of Critical Constants. Law of Corresponding States. Comparison with Experimental Curves. P-V Diagrams. Joule's Experiment. Free Adiabatic Expansion of a Perfect Gas. Joule-Thomson Porous Plug Experiment. Joule- Thomson Effect for Real and Van der Waal Gases. Temperature of Inversion. Joule- Thomson Cooling.

Reference Books

- Heat and Thermodynamics, M.W. Zemansky, Richard Dittman, 1981, McGraw-Hill.
- Thermal Physics, S. Garg, R. Bansal and Ghosh, 2nd Edition, 1993, Tata McGraw-Hill
- Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009, Springer.
- Thermodynamics, Kinetic Theory & Statistical Thermodynamics, Sears & Salinger. 1988, Narosa.
- Concepts in Thermal Physics, S.J. Blundell and K.M. Blundell, 2nd Ed., 2012, Oxford University Press
- Thermodynamics and an introduction to thermostatistics, H. B. Callen, 1985, Wiley.
- Thermal Physics, A. Kumar and S.P. Taneja, 2014, R. Chand Publications.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

C6P: Thermal Physics Lab **Credits 02**

Thermal Physics

List of Practical

1. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
2. To determine the Coefficient of Thermal Conductivity of Cu by Searle's Apparatus.
3. To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.
4. To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charlton's disc method.
5. To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT).
6. To study the variation of Thermo-Emf of a Thermocouple with Difference of Temperature of its Two Junctions.
7. To calibrate a thermocouple to measure temperature in a specified Range using (1) Null Method, (2) Direct measurement using Op-Amp difference amplifier and to determine Neutral Temperature

Reference Books

- Advanced Practical Physics for students, B. L. Flint and H.T. Worsnop, 1971, Asia Publishing House
- A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Laboratory Manual of Physics for undergraduate classes, D. P. Khandelwal, 1985, Vani Pub.

CC-7: Digital Systems and Applications **Credits 06**

C7T: Digital Systems and Applications **Credits 04**

Digital Systems and Applications

Integrated Circuits

Active & Passive components. Discrete components. Wafer. Chip. Advantages and drawbacks of ICs. Scale of integration: SSI, MSI, LSI and VLSI (basic idea and definitions only). Classification of ICs. Examples of Linear and Digital lCs.

Digital Circuits

Difference between Analog and Digital Circuits. Binary Numbers. Decimal to Binary and Binary to Decimal Conversion. BCD, Octal and Hexadecimal numbers. AND, OR and NOT Gates (realization using Diodes and Transistor). NAND and NOR Gates as Universal Gates. XOR and XNOR Gates and application as Parity Checkers.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Boolean algebra
De Morgan's Theorems. Boolean Laws. Simplification of Logic Circuit using Boolean Algebra. Fundamental Products. Idea of Minterms and Maxterms. Conversion of a Truth table into Equivalent Logic Circuit by (1) Sum of Products Method and (2) Karnaugh Map.

Dataprocessingcircuits
Basic idea of Multiplexers, De-multiplexers, Decoders, Encoders.

Circuits
Arithmetic Circuits: Binary Addition. Binary Subtraction using 2's Complement. Half and Full Adders. Half & Full Subtractors, 4-bit binary Adder/Subtractor.

Sequential Circuits: SR, D, and JK Flip-Flops. Clocked (Level and Edge Triggered) Flip-Flops. Preset and Clear operations. Race-around conditions in JK Flip-Flop. M/S JK Flip-Flop.

Timers
IC 555: block diagram and applications: Astable multivibrator and Monostable multivibrator.

Shiftregisters
Serial-in-Serial-out, Serial-in-Parallel-out, Parallel-in-Serial-out and Parallel-in-Parallel-out Shift Registers (only up to 4 bits).

Counters (4 bits)
Ring Counter. Asynchronous counters, Decade Counter. Synchronous Counter.

Computer Organization

Input/Output Devices. Data storage (idea of RAM and ROM). Computer memory. Memory organization & addressing. Memory Interfacing. Memory Map.

Reference Books

- Digital Principles and Applications, A.P. Malvino, D. P. Leach and Saha, 7th Ed., 2011, Tata McGraw
- Fundamentals of Digital Circuits, Anand Kumar, 2nd Edn, 2009, PHI Learning Pvt. Ltd.
- Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
- Digital Electronics G K Kharate ,2010, Oxford University Press
- Digital Systems: Principles & Applications, R.J.Tocci, N.S.Widmer, 2001, PHI Learning
- Logic circuit design, Shimon P. Vingron, 2012, Springer.
- Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
- Digital Electronics, S.K. Mandal, 2010, 1st edition, McGraw Hill
- Microprocessor Architecture Programming & applications with 8085, 2002, R.S. Goankar, Prentice Hall.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

C7P: Digital Systems and Applications Lab **Credits 02**

Digital Systems and Applications

List of Practical

1. To measure (a) Voltage, and (b) Time period of a periodic waveform using CRO.
2. To test a Diode and Transistor using a Multimeter.
3. To design a switch (NOT gate) using a transistor.
4. To verify and design AND, OR, NOT and XOR gates using NAND gates.
5. To design a combinational logic system for a specified Truth Table.
6. To convert a Boolean expression into logic circuit and design it using logic gate ICs.
7. To minimize a given logic circuit.
8. Half Adder, Full Adder and 4-bit binary Adder.
9. Half Subtractor, Full Subtractor, Adder-Subtractor using Full Adder I.C.
10. To build Flip-Flop (RS, Clocked RS, D-type and JK) circuits using NAND gates.
11. To build JK Master-slave flip-flop using Flip-Flop ICs
12. To build a 4-bit Counter using D-type/JK Flip-Flop ICs and study timing diagram.
13. To make a 4-bit Shift Register (serial and parallel) using D-type/JK Flip-Flop ICs.
14. To design an astable multivibrator of given specifications using 555 Timer.
15. To design a monostable multivibrator of given specifications using 555 Timer.

Reference Books

- Modern Digital Electronics, R.P. Jain, 4th Edition, 2010, Tata McGraw Hill.
- Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1994, Mc-Graw Hill.

Generic Elective Syllabus
GE-3 [Interdisciplinary for other department]

GE -3: Solid State Physics **Credits 06**

GE3T: Solid State Physics **Credits 04**

Solid State Physics

Crystal Structure

Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors. Lattice with a Basis – Central and Non-Central Elements. Unit Cell. Miller Indices. Reciprocal Lattice. Types of Lattices. Brillouin Zones. Diffraction of X-rays by Crystals. Bragg's Law. Atomic and Geometrical Factor.

Elementary Lattice Dynamics

Lattice Vibrations and Phonons: Linear Monoatomic and Diatomic Chains. Acoustical and Optical Phonons. Qualitative Description of the Phonon Spectrum in Solids. Dulong and Petit's Law, Einstein and Debye theories of specific heat of solids. T3 law

Magnetic Properties of Matter

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Dia-, Para-, Ferri- and Ferromagnetic Materials. Classical Langevin Theory of dia – and Paramagnetic Domains. Quantum Mechanical Treatment of Paramagnetism. Curie's law, Weiss's Theory of Ferromagnetism and Ferromagnetic Domains. Discussion of B-H Curve. Hysteresis and Energy Loss.

Dielectric Properties of Materials
Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons.

Elementary band theory
Kronig Penny model. Band Gaps. Conductors, Semiconductors and insulators. P and N type Semiconductors. Conductivity of Semiconductors, mobility, Hall Effect, Hall coefficient.

Superconductivity
Experimental Results. Critical Temperature. Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth. Isotope effect.

Reference Books

- Introduction to Solid State Physics, Charles Kittel, 8th Ed., 2004, Wiley India Pvt. Ltd.
- Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India
- Introduction to Solids, Leonid V. Azaroff, 2004, Tata Mc-Graw Hill
- Solid State Physics, N.W. Ashcroft and N.D. Mermin, 1976, Cengage Learning
- Solid State Physics, Rita John, 2014, McGraw Hill
- Solid-state Physics, H. Ibach and H. Luth, 2009, Springer
- Elementary Solid State Physics, 1/e M. Ali Omar, 1999, Pearson India
- Solid State Physics, M.A. Wahab, 2011, Narosa Publications

GE3 P: Solid State Physics Lab **Credits 02**

Solid State Physics

List of Practical

- Measurement of susceptibility of paramagnetic solution (Quinck`s Tube Method)
- To measure the Magnetic susceptibility of Solids.
- To determine the Coupling Coefficient of a piezoelectric crystal.
- To measure the Dielectric Constant of a dielectric Materials with frequency
- To determine the complex dielectric constant and plasma frequency of metal using Surface Plasmon resonance (SPR)
- To determine the refractive index of a dielectric layer using SPR
- To study the PE Hysteresis loop of a Ferroelectric Crystal.
- To study the BH curve of iron using a Solenoid and determine the energy loss.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

- To measure the resistivity of a semiconductor (Ge) crystal with temperature by four-probe method (room temperature to 150 oC) and to determine its band gap.
- To determine the Hall coefficient of a semiconductor sample.

Reference Books

- Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Edn., 2011, Kitab Mahal
- Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India

Skill Enhancement Course (SEC)

SEC-1: Physics Workshop Skill **Credits 02**
SEC1T – Physics Workshop Skill

Physics Workshop Skill

Introduction
Measuring units: conversion to SI and CGS. Familiarization with meter scale, Vernier calliper, Screw gauge and their utility. Measure the dimension of a solid block, volume of cylindrical beaker/glass, diameter of a thin wire, thickness of metal sheet, etc. Use of Sextant to measure height of buildings, mountains, etc.

Mechanical Skill
Concept of workshop practice. Overview of manufacturing methods: casting, foundry, machining, forming and welding. Types of welding joints and welding defects. Common materials used for manufacturing like steel, copper, iron, metal sheets, composites and alloy, wood. Concept of machine processing, introduction to common machine tools like lathe, shaper, drilling, milling and surface machines. Cutting tools, lubricating oils. Cutting of a metal sheet using blade. Smoothening of cutting edge of sheet using file. Drilling of holes of different diameter in metal sheet and wooden block. Use of bench vice and tools for fitting. Make funnel using metal sheet.

Electrical and Electronic Skill
Use of Multimeter. Soldering of electrical circuits having discrete components (R, L, C, diode) and ICs on PCB. Operation of oscilloscope. Making regulated power supply. Timer circuit, Electronic switch using transistor and relay.

Introduction to prime movers
Mechanism, gear system, wheel, Fixing of gears with motor axel. Lever mechanism, Lifting of heavy weight using lever. Braking systems, pulleys, working principle of power generation systems. Demonstration of pulley experiment.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Reference Books

- A text book in Electrical Technology - B L Theraja – S. Chand and Company.
- Performance and design of AC machines – M.G. Say, ELBS Edn.
- Mechanical workshop practice, K.C. John, 2010, PHI Learning Pvt. Ltd.
- Workshop Processes, Practices and Materials, Bruce J Black 2005, 3rd Edn., Editor Newnes [ISBN: 0750660732]
- New Engineering Technology, Lawrence Smyth/Liam Hennessy,The Educational Company of Ireland [ISBN: 0861674480]

OR

SEC-1: Electrical Circuits and Network Skills **Credits 02**
SEC1T: Electrical Circuits and Network Skills

Electrical Circuits and Network Skills

Basic Electricity Principles
Voltage, Current, Resistance, and Power. Ohm's law. Series, parallel, and series-parallel combinations. AC Electricity and DC Electricity. Familiarization with multimeter, voltmeter and ammeter.

Understanding Electrical Circuits
Main electric circuit elements and their combination. Rules to analyze DC sourced electrical circuits. Current and voltage drop across the DC circuit elements. Single-phase and three-phase alternating current sources. Rules to analyze AC sourced electrical circuits. Real, imaginary and complex power components of AC source. Power factor. Saving energy and money.

Electrical Drawing and Symbols
Drawing symbols. Blueprints. Reading Schematics. Ladder diagrams. Electrical Schematics. Power circuits. Control circuits. Reading of circuit schematics. Tracking the connections of elements and identify current flow and voltage drop.

Generators and Transformers
DC Power sources. AC/DC generators. Inductance, capacitance, and impedance. Operation of transformers.

Electric Motors
Single-phase, three-phase & DC motors. Basic design. Interfacing DC or AC sources to control heaters & motors. Speed & power of ac motor

Solid-State Devices
Resistors, inductors and capacitors. Diode and rectifiers. Components in Series or in shunt. Response of inductors and capacitors with DC or AC sources

Electrical Protection

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Relays. Fuses and disconnect switches. Circuit breakers. Overload devices. Ground-fault protection. Grounding and isolating. Phase reversal. Surge protection. Interfacing DC or AC sources to control elements (relay protection device)

Electrical Wiring

Different types of conductors and cables. Basics of wiring-Star and delta connection. Voltage drop and losses across cables and conductors. Instruments to measure current, voltage, power in DC and AC circuits. Insulation. Solid and stranded cable. Conduit. Cable trays. Splices: wirenuts, crimps, terminal blocks, split bolts, and solder. Preparation of extension board.

Reference Books

- A text book in Electrical Technology - B L Theraja - S Chand & Co.
- A text book of Electrical Technology - A K Theraja
- Performance and design of AC machines - M G Say ELBS Edn.

Downloaded from Vidyasagar University by 47.11.209.114 on 19 September 2022 : 13:19:24; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Physics
[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-8		**C8T:** Mathematical Physics III	Core Course - 8	4	0	0	6	75
		C8P: Practical		0	0	4		
CC-9		**C9T:** Elements of Modern Physics	Core Course - 9	4	0	0	6	75
		C9P: Practical		0	0	4		
CC-10		**C10T:** Analog Systems and Applications	Core Course - 10	4	0	0	6	75
		C10P: Practical		0	0	4		
GE-4	TBD		Generic Elective-4				4/5	75
							2/1	
SEC-2		**SEC2:** Computational Physics **Or** Basic Instruments Skill **Or** Renewable Energy & Energy Harvesting **Or** Applied Optics	Skill Enhancement Course-2	1	0	2	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P=**Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [**Four papers are to be taken and each paper will be of 6 credits**] [Papers are to be taken from any of the following discipline: **Mathematics/Chemistry/Computer Science/Statistics/Geology/Electronics/Bio-technology**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Semester-IV

Core Course (CC)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

CC-8: Mathematical Physics III Credits 06

C8T: Mathematical Physics III	Credits 04

Complex Analysis

Brief Revision of Complex Numbers and their Graphical Representation. Euler's formula, De Moivre's theorem, Roots of Complex Numbers. Functions of Complex Variables. Analyticity and Cauchy-Riemann Conditions. Examples of analytic functions. Singular functions: poles and branch points, order of singularity, branch cuts. Integration of a function of a complex variable. Cauchy's Inequality. Cauchy's Integral formula. Simply and multiply connected region. Laurent and Taylor's expansion. Residues and Residue Theorem. Application in solving Definite Integrals.

Integrals Transforms

Fourier Transforms: Fourier Integral theorem. Fourier Transform. Examples. Fourier transform of trigonometric, Gaussian, finite wave train & other functions. Representation of Dirac delta function as a Fourier Integral. Fourier transform of derivatives, Inverse Fourier transform, Convolution theorem. Properties of Fourier transforms (translation, change of scale, complex conjugation, etc.). Three dimensional Fourier transforms with examples. Application of Fourier Transforms to differential equations: One dimensional Wave and Diffusion/Heat Flow Equations.

Matrices

Addition and Multiplication of Matrices. Null Matrices. Diagonal, Scalar and Unit Matrices. Upper-Triangular and Lower-Triangular Matrices. Transpose of a Matrix. Symmetric and Skew-Symmetric Matrices. Conjugate of a Matrix. Hermitian and Skew- Hermitian Matrices. Singular and Non-Singular matrices. Orthogonal and Unitary Matrices. Trace of a Matrix. Inner Product

Eigen-values and Eigenvectors

Cayley- Hamiliton Theorem. Diagonalization of Matrices. Solutions of Coupled Linear Ordinary Differential Equations. Functions of a Matrix.

Reference Books

- Mathematical Methods for Physics and Engineers, K.F Riley, M.P. Hobson and S. J. Bence, 3rd ed., 2006, Cambridge University Press
- Mathematics for Physicists, P. Dennery and A.Krzywicki, 1967, Dover Publications
- Complex Variables, A.S.Fokas & M.J.Ablowitz, 8th Ed., 2011, Cambridge Univ. Press
- Complex Variables, A.K. Kapoor, 2014, Cambridge Univ. Press
- Complex Variables and Applications, J.W. Brown & R.V. Churchill, 7th Ed. 2003, Tata McGraw-Hill
- First course in complex analysis with applications, D.G. Zill and P.D. Shanahan, 1940, Jones & Bartlett

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

C8P: Mathematical Physics III Lab Credits 02

Mathematical Physics III

List of Practical

1. Solve differential equations:

$$\frac{dy}{dx} = e^{-x} with y = 0 for x = 0$$

$$\frac{dy}{dx} + e^{-x} = x^2$$

$$\frac{d^2y}{dt^2} + 2\frac{dy}{dt} = -y$$

$$\frac{d^2y}{dt^2} + e^{-t}\frac{dy}{dt} = -y$$

2. Dirac Delta Function:

   Evaluate $\frac{1}{\sqrt{2\pi\sigma^2}} \int e^{\frac{-(x-2)^2}{2\sigma^2}} (x+3)dx$, for σ=1, .1, .01 and show it tends to 5

3. Fourier Series

   Program to sum $\sum_{n=1}^{\infty}(.2)^n$Evaluate the Fourier coefficients of a given periodic function (square wave)

4. Frobenius method and Special functions:

   $\int_{-1}^{+1} P_n(\mu) P_m(\mu) d\mu = \delta_{n,m}$
   Plot $P_n(x)$, $j_v(x)$

   Show recursion relation

5. Calculation of error for each data point of observations recorded in experiments done in previous semesters (choose any two).
6. Calculation of least square fitting manually without giving weightage to error. Confirmation of least square fitting of data through computer program.
7. Evaluation of trigonometric functions e.g. sin θ, Given Bessel's function at N points find its value at an intermediate point. Complex analysis: Integrate 1/(x2+2) numerically and check with computer integration
8. Compute the nth roots of unity for n = 2, 3, and 4.
9. Find the two square roots of −5+12j.
10. Integral transform: FFT of e-x2

Reference Books

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

- Mathematical Methods for Physics and Engineers, K.F Riley, M.P. Hobson and S. J. Bence, 3rd ed., 2006, Cambridge University Press
- Mathematics for Physicists, P. Dennery and A. Krzywicki, 1967, Dover Publications
- Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández. 2014 Springer
- A Guide to MATLAB, B.R. Hunt, R.L. Lipsman, J.M. Rosenberg, 2014, 3rd Edn., Cambridge University Press
- https://web.stanford.edu/~boyd/ee102/laplace_ckts.pdf
- https://ocw.nthu.edu.tw/ocw/upload/12/244/12handout.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

CC-9: Elements of Modern Physics Credits 06

C9T: Elements of Modern Physics	Credits 04

Unit 1

Planck's quantum, Planck's constant and light as a collection of photons; Blackbody Radiation: Quantum theory of Light; Photo-electric effect and Compton scattering. De Broglie wavelength and matter waves; Davisson-Germer experiment. Wave description of particles by wave packets. Group and Phase velocities and relation between them. Two-Slit experiment with electrons. Probability. Wave amplitude and wave functions.

Unit 2

Position measurement- gamma ray microscope thought experiment; Wave-particle duality, Heisenberg uncertainty principle (Uncertainty relations involving Canonical pair of variables): Derivation from Wave Packets impossibility of a particle following a trajectory; Estimating minimum energy of a confined particle using uncertainty principle; Energy-time uncertainty principle- application to virtual particles and range of an interaction.

Two slit interference experiment with photons, atoms and particles; linear superposition principle as a consequence; Matter waves and wave amplitude; Schrodinger equation for non-relativistic particles; Momentum and Energy operators; stationary states; physical interpretation of a wave function, probabilities and normalization; Probability and probability current densities in one dimension.

Unit 3

One dimensional infinitely rigid box- energy eigenvalues and eigenfunctions, normalization; Quantum dot as example; Quantum mechanical scattering and tunnelling in one dimension-across a step potential & rectangular potential barrier.

Size and structure of atomic nucleus and its relation with atomic weight; Impossibility of an electron being in the nucleus as a consequence of the uncertainty principle. Nature of nuclear force, NZ graph, Liquid Drop model: semi-empirical mass formula and binding energy, Nuclear Shell Model and magic numbers.

Unit 4

Radioactivity: stability of the nucleus; Law of radioactive decay; Mean life and half-life; Alpha decay; Beta decay- energy released, spectrum and Pauli's prediction of neutrino; Gamma ray emission, energy-momentum

Conservation: electron-positron pair creation by gamma photons in the vicinity of a nucleus.

Fission and fusion- mass deficit, relativity and generation of energy; Fission - nature of fragments and emission of neutrons. Nuclear reactor: slow neutrons interacting with Uranium 235; Fusion and thermonuclear reactions driving stellar energy (brief qualitative discussions).

Lasers: Einstein's A and B coefficients. Metastable states. Spontaneous and Stimulated emissions. Optical Pumping and Population Inversion. Three-Level and Four-Level Lasers. Ruby Laser and He-Ne Laser. Basic

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

lasing.

Reference Books

- Concepts of Modern Physics, Arthur Beiser, 2002, McGraw-Hill.
- Introduction to Modern Physics, Rich Meyer, Kennard, Coop, 2002, Tata McGraw Hill
- Introduction to Quantum Mechanics, David J. Griffith, 2005, Pearson Education.
- Physics for scientists and Engineers with Modern Physics, Jewett and Serway, 2010, Cengage Learning.
- Modern Physics, G. Kaur and G.R. Pickrell, 2014, McGraw Hill
- Quantum Mechanics: Theory & Applications, A.K. Ghatak & S. Lokanathan, 2004, Macmillan

Additional Books for Reference

- Modern Physics, J.R. Taylor, C.D. Zafiratos, M.A. Dubson, 2004, PHI Learning.
- Theory and Problems of Modern Physics, Schaum`s outline, R. Gautreau and W. Savin, 2nd Edn, Tata McGraw-Hill Publishing Co. Ltd.
- Quantum Physics, Berkeley Physics, Vol.4. E.H. Wichman, 1971, Tata McGraw-Hill Co.
- Basic ideas and concepts in Nuclear Physics, K.Heyde, 3rd Edn., Institute of Physics Pub.
- Six Ideas that Shaped Physics: Particle Behave like Waves, T.A. Moore, 2003, McGraw Hill

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

C9P: Elements of Modern Physics Lab Credits 02

List of Practical

1. Measurement of Planck's constant using black body radiation and photo-detector
2. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
3. To determine work function of material of filament of directly heated vacuum diode.
4. To determine the Planck's constant using LEDs of at least 4 different colours.
5. To determine the wavelength of H-alpha emission line of Hydrogen atom.
6. To determine the ionization potential of mercury.
7. To determine the absorption lines in the rotational spectrum of Iodine vapour.
8. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
9. To setup the Millikan oil drop apparatus and determine the charge of an electron.
10. To show the tunneling effect in tunnel diode using I-V characteristics.
11. To determine the wavelength of laser source using diffraction of single slit.
12. To determine the wavelength of laser source using diffraction of double slits.
13. To determine (1) wavelength and (2) angular spread of He-Ne laser using plane diffraction grating

Reference Books

- Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Edn, 2011,Kitab Mahal

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

CC-10: Analog Systems and Applications Credits 06

C10T: Analog Systems and Applications Credits 04

Semiconductor Diodes

P and N type semiconductors. Energy Level Diagram. Conductivity and Mobility, Concept of Drift velocity. PN Junction Fabrication (Simple Idea). Barrier Formation in PN Junction Diode. Static and Dynamic Resistance. Current Flow Mechanism in Forward and Reverse Biased Diode. Drift Velocity. Derivation for Barrier Potential, Barrier Width and Current for Step Junction. Current Flow Mechanism in Forward and Reverse Biased Diode.

Two-terminal Devices and their Applications

Rectifier Diode: Half-wave Rectifiers. Centre-tapped and Bridge Full-wave Rectifiers, Calculation of Ripple Factor and Rectification Efficiency, C-filter

Zener Diode and Voltage Regulation. Principle and structure of (1) LEDs, (2) Photodiode and (3) Solar Cell.

Bipolar Junction transistors

n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Current gains α and β Relations between α and β. Load Line analysis of Transistors. DC Load line and Q-point. Physical Mechanism of Current Flow. Active, Cutoff and Saturation Regions.

Field Effect transistors

Basic principle of operations only.

Amplifiers

Amplifiers: Transistor Biasing and Stabilization Circuits. Fixed Bias and Voltage Divider Bias. Transistor as 2-port Network. h-parameter Equivalent Circuit. Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance. Current, Voltage and Power Gains. Classification of Class A, B & C Amplifiers. Frequency response of a CE amplifier.

Coupled Amplifier: Two stage RC-coupled amplifier.

Feedback in Amplifiers: Effects of Positive and Negative Feedback on Input Impedance, Output Impedance, Gain, Stability, Distortion and Noise.

Sinusoidal Oscillators: Barkhausen's Criterion for self-sustained oscillations. RC Phase shift oscillator, determination of Frequency. Hartley & Colpitts oscillators.

Operational Amplifiers (Black Box approach): Characteristics of an Ideal and Practical Op-Amp. (IC 741) Open-loop and Closed-loop Gain. Frequency Response. CMRR. Slew Rate and concept of Virtual ground.

Applications of Op-Amps: Linear - (1) Inverting and non-inverting amplifiers, (2) Adder, (3) Subtractor, (4) Differentiator, (5) Integrator, (6) Log amplifier, (7) Zero crossing detector (8) Wein bridge oscillator. Non-

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

linear – (1) inverting and non-inverting comparators, (2) Schmidt triggers.

Conversion: Resistive network (Weighted and R-2R Ladder). Accuracy and Resolution. A/D Conversion (successive approximation)

Reference Books

- Integrated Electronics, J. Millman and C.C. Halkias, 1991, Tata Mc-Graw Hill.
- Electronics: Fundamentals and Applications, J.D. Ryder, 2004, Prentice Hall.
- Solid State Electronic Devices, B.G. Streetman & S.K. Banerjee, 6th Edn.,2009, PHI Learning
- Electronic Devices & circuits, S. Salivahanan & N.S. Kumar, 3rd Ed., 2012, Tata Mc-Graw Hill
- OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall
- Microelectronic circuits, A.S. Sedra, K.C. Smith, A.N. Chandorkar, 2014, 6th Edn., Oxford University Press.
- Electronic circuits: Handbook of design & applications, U.Tietze, C.Schenk,2008, Springer
- Semiconductor Devices: Physics and Technology, S.M. Sze, 2nd Ed., 2002, Wiley India
- Microelectronic Circuits, M.H. Rashid, 2nd Edition, Cengage Learning
- Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson India

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

C10P: Analog Systems and Applications Lab Credits 02

List of Practical

1. To study V-I characteristics of PN junction diode, and Light emitting diode.
2. To study the V-I characteristics of a Zener diode and its use as voltage regulator.
3. Study of V-I & power curves of solar cells, and find maximum power point & efficiency.
4. To study the characteristics of a Bipolar Junction Transistor in CE configuration.
5. To study the various biasing configurations of BJT for normal class A operation.
6. To design a CE transistor amplifier of a given gain (mid-gain) using voltage divider bias.
7. To study the frequency response of voltage gain of a RC-coupled transistor amplifier.
8. To design a Wien bridge oscillator for given frequency using an op-amp.
9. To design a phase shift oscillator of given specifications using BJT.
10. To study the Colpitt`s oscillator.
11. To design a digital to analog converter (DAC) of given specifications.
12. To study the analog to digital convertor (ADC) IC.
13. To design an inverting amplifier using Op-amp (741,351) for dc voltage of given gain
14. To design inverting amplifier using Op-amp (741,351) and study its frequency response
15. To design non-inverting amplifier using Op-amp (741,351) & study its frequency response
16. To study the zero-crossing detector and comparator
17. To add two dc voltages using Op-amp in inverting and non-inverting mode
18. To design a precision Differential amplifier of given I/O specification using Op-amp.
19. To investigate the use of an op-amp as an Integrator.
20. To investigate the use of an op-amp as a Differentiator.
21. To design a circuit to simulate the solution of a 1st/2nd order differential equation.

Reference Books

- Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1994, Mc-Graw Hill.
- OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall.
- Electronic Principle, Albert Malvino, 2008, Tata Mc-Graw Hill.
- Electronic Devices & circuit Theory, R.L. Boylestad & L.D. Nashelsky, 2009, Pearson

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

Skill Enhancement Course (SEC)

SEC-2: Computational Physics Credits 02

SEC2T: Computational Physics	Credit 01
Introduction	
Importance of computers in Physics, paradigm for solving physics problems for solution. Usage of linux as an Editor. Algorithms and Flowcharts: Algorithm: Definition, properties and development. Flowchart: Concept of flowchart, symbols, guidelines, types. Examples: Cartesian to Spherical Polar Coordinates, Roots of Quadratic Equation, Sum of two matrices, Sum and Product of a finite series, calculation of sin(x) as a series, algorithm for plotting (1) lissajous figures and (2) trajectory of a projectile thrown at an angle with the horizontal.	
Scientific Programming	
Some fundamental Linux Commands (Internal and External commands). Development of FORTRAN, Basic elements of FORTRAN: Character Set, Constants and their types, Variables and their types, Keywords, Variable Declaration and concept of instruction and program. Operators: Arithmetic, Relational, Logical and Assignment Operators. Expressions: Arithmetic, Relational, Logical, Character and Assignment Expressions. Fortran Statements: I/O Statements (unformatted/formatted), Executable and Non-Executable Statements, Layout of Fortran Program, Format of writing Program and concept of coding, Initialization and Replacement Logic. Examples from physics problems.	
Control Statements	
Types of Logic (Sequential, Selection, Repetition), Branching Statements (Logical IF, Arithmetic IF, Block IF, Nested Block IF, SELECT CASE and ELSE IF Ladder statements), Looping Statements (DO-CONTINUE, DO-ENDDO, DO- WHILE, Implied and Nested DO Loops), Jumping Statements (Unconditional GOTO, Computed GOTO, Assigned GOTO) Subscripted Variables (Arrays: Types of Arrays, DIMENSION Statement, Reading and Writing Arrays), Functions and Subroutines (Arithmetic Statement Function, Function Subprogram and Subroutine), RETURN, CALL, COMMON and EQUIVALENCE Statements), Structure, Disk I/O Statements, open a file, writing in a file, reading from a file. Examples from physics problems.	
Scientific word processing: Introduction to LaTeX	
TeX/LaTeX word processor, preparing a basic LaTeX file, Document classes, Preparing an input file for LaTeX, Compiling LaTeX File, LaTeX tags for creating different environments, Defining LaTeX commands and environments, Changing the type style, Symbols from other languages. Equation representation: Formulae and equations, Figures and other floating bodies, Lining in columns- Tabbing and tabular environment, Generating table of contents, bibliography and citation, Making an index and glossary, List making environments, Fonts, Picture environment and colors, errors.	
Visualization	
Introduction to graphical analysis and its limitations. Introduction to Gnuplot. importance of visualization of computational and computational data, basic Gnuplot commands: simple plots, plotting data from a file,	

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

saving and exporting, multiple data sets per file, physics with Gnuplot (equations, building functions, user defined variables and functions), Understanding data with Gnuplot

SEC2P: Practical **Credit 01**

A: Programming :

1. Exercises on syntax on usage of FORTRAN

2. Usage of GUI Windows, Linux Commands, familiarity with DOS commands and working in an editor to write sources codes in FORTRAN.

3. To print out all natural even/ odd numbers between given limits.

4. To find maximum, minimum and range of a given set of numbers.

5.Calculating Euler number using exp(x) series evaluated at x=1

B: Hands on exercises

1. To compile a frequency distribution and evaluate mean, standard deviation etc.
2. To evaluate sum of finite series and the area under a curve.
3. To find the product of two matrices
4. To find a set of prime numbers and Fibonacci series.
5. To write program to open a file and generate data for plotting using Gnuplot.
6. Plotting trajectory of a projectile projected horizontally.
7. Plotting trajectory of a projectile projected making an angle with the horizontally.
8. Creating an input Gnuplot file for plotting a data and saving the output for seeing on the screen. Saving it as an eps file and as a pdf file.
9. To find the roots of a quadratic equation.
10. Motion of a projectile using simulation and plot the output for visualization.
11. Numerical solution of equation of motion of simple harmonic oscillator and plot the outputs for visualization.
12. Motion of particle in a central force field and plot the output for visualization.

Reference Books

- Introduction to Numerical Analysis, S.S. Sastry, 5th Edn., 2012, PHI Learning Pvt. Ltd.
- Computer Programming in Fortran 77". V. Rajaraman (Publisher: PHI).
- LaTeX–A Document Preparation System", Leslie Lamport (Second Edition, Addison-Wesley, 1994).
- Gnuplot in action: understanding data with graphs, Philip K Janert, (Manning 2010)
- Schaum's Outline of Theory and Problems of Programming with Fortran, S Lipsdutz and A

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

Poe, 1986Mc-Graw Hill Book Co.

- Computational Physics: An Introduction, R.C. Verma, et al. New Age International Publishers, New Delhi(1999)
- A first course in Numerical Methods, U.M. Ascher and C. Greif, 2012, PHI Learning
- Elementary Numerical Analysis, K.E. Atkinson, 3 rd Edn., 2007, Wiley India Edition.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

Or

SEC-2: Basic Instrumentation Skills Credits 02

SEC2T: Basic of Measurement	Credit 01
Basic of Measurement	
Instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects. Multimeter: Principles of measurement of dc voltage and dc current, ac voltage, ac current and resistance. Specifications of a multimeter and their significance.	
Electronic Voltmeter	
Advantage over conventional multimeter for voltage measurement with respect to input impedance and sensitivity. Principles of voltage, measurement (block diagram only). Specifications of an electronic Voltmeter/ Multimeter and their significance. AC millivoltmeter: Type of AC millivoltmeters: Amplifier-rectifier, and rectifier- amplifier. Block diagram ac millivoltmeter, specifications and their significance.	
Cathode Ray Oscilloscope	
Block diagram of basic CRO. Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only – no mathematical treatment), brief discussion on screen phosphor, visual persistence & chemical composition. Time base operation, synchronization. Front panel controls. Specifications of a CRO and their significance. Use of CRO for the measurement of voltage (dc and ac frequency, time period. Special features of dual trace, introduction to digital oscilloscope, probes. Digital storage Oscilloscope: Block diagram and principle of working.	
Signal Generators and Analysis Instruments	
Block diagram, explanation and specifications of low frequency signal generators. Pulse generator, and function generator. Brief idea for testing, specifications. Distortion factor meter, wave analysis.	
Impedance Bridges & Q-Meters	
Block diagram of bridge: working principles of basic (balancing type) RLC bridge. Specifications of RLC bridge. Block diagram & working principles of a Q- Meter. Digital LCR bridges.	
Digital Instruments	
Principle and working of digital meters. Comparison of analog & digital instruments. Characteristics of a digital meter. Working principles of digital voltmeter.	
Digital Multimeter	
Block diagram and working of a digital multimeter. Working principle of time interval, frequency and period measurement using universal counter/ frequency counter, time- base stability,	

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

accuracy and resolution.

SEC2P: Practical **Credit 01**

A: The test of lab skills will be of the following test items

1. Use of an oscilloscope.
2. CRO as a versatile measuring device.
3. Circuit tracing of Laboratory electronic equipment,
4. Use of Digital multimeter/VTVM for measuring voltages
5. Circuit tracing of Laboratory electronic equipment,
6. Winding a coil / transformer.
7. Study the layout of receiver circuit.
8. Trouble shooting a circuit
9. Balancing of bridges

B: Laboratory Exercises

1. To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.
2. To observe the limitations of a multimeter for measuring high frequency voltage and currents.
3. To measure Q of a coil and its dependence on frequency, using a Q- meter.
4. Measurement of voltage, frequency, time period and phase angle using CRO.
5. Measurement of time period, frequency, average period using universal counter/ frequency counter.
6. Measurement of rise, fall and delay times using a CRO.
7. Measurement of distortion of a RF signal generator using distortion factor meter.
8. Measurement of R, L and C using a LCR bridge/ universal bridge.

C: Open Ended Experiments

1. Using a Dual Trace Oscilloscope

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

2. Converting the range of a given measuring instrument (voltmeter, ammeter)

Reference Books

- A text book in Electrical Technology - B L Theraja - S Chand and Co.
- Performance and design of AC machines - M G Say ELBS Edn.
- Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
- Logic circuit design, Shimon P. Vingron, 2012, Springer.
- Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
- Electronic Devices and circuits, S. Salivahanan & N. S. Kumar, 3rd Ed., 2012, Tata Mc-Graw Hill
- Electronic circuits: Handbook of design and applications, U. Tietze, Ch. Schenk, 2008, Springer
- Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson India

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

Or

SEC-2: Renewable Energy and Energy Harvesting Credits 02

SEC2T: Renewable Energy and Energy Harvesting Credit 01
Fossil fuels and Alternate Sources of energy
Fossil fuels and nuclear energy, their limitation, need of renewable energy, non-conventional energy sources. An over view of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity.
Solar energy
Solar energy, its importance, storage of solar energy, solar pond, non-convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems.
Wind Energy harvesting
Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies.
Ocean Energy
Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy, Osmotic Power, Ocean Bio-mass.
Geothermal Energy
Geothermal Resources, Geothermal Technologies
Hydro Energy
Hydropower resources, hydropower technologies, environmental impact of hydro power sources.
Piezoelectric Energy harvesting
Introduction, Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, Piezoelectric parameters and modeling piezoelectric generators, Piezoelectric energy harvesting applications, Human power

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

Electromagnetic Energy Harvesting

1. Linear generators, physics mathematical models, recent applications
2. Carbon captured technologies, cell, batteries, power consumption
3. Environmental issues and Renewable sources of energy, sustainability.

SEC2P: Practical **Credit 01**

Demonstrations and Experiments

1. Demonstration of Training modules on Solar energy, wind energy, etc.
2. Conversion of vibration to voltage using piezoelectric materials
3. Conversion of thermal energy into voltage using thermoelectric modules.

Reference Books

- Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi
- Solar energy - M P Agarwal - S Chand and Co. Ltd.
- Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd.
- Godfrey Boyle, "Renewable Energy, Power for a sustainable future", 2004, Oxford University Press, in association with The Open University.
- Dr. P Jayakumar, Solar Energy: Resource Assesment Handbook, 2009
- J.Balfour, M.Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).
- http://en.wikipedia.org/wiki/Renewable_energy

Or

SEC-2: Applied Optics Credits 02

SEC2T: Applied Optics **Credit 01**

1: Sources and Detectors

Lasers, Spontaneous and stimulated emissions, Theory of laser action, Einstein's coefficients, Light amplification, Characterization of laser beam, He-Ne laser, Semiconductor lasers.

2: Fourier Optics

Concept of Spatial frequency filtering, Fourier transforming property of a thin lens

Fourier Transform Spectroscopy (FTS) is a powerful method for measuring emission and absorption spectra, with wide application in atmospheric remote sensing, NMR spectrometry and

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

forensic science.

3: Holography

Basic principle and theory: coherence, resolution, Types of holograms, white light reflection hologram, application of holography in microscopy, interferometry, and character recognition.

4: Photonics: Fibre Optics

Optical fibres and their properties, Principal of light propagation through a fibre, The numerical aperture, Attenuation in optical fibre and attenuation limit, Single mode and multimode fibres, Fibre optic sensors: Fibre Bragg Grating

SEC2P: Practical **Credit 01**

A: Experiments on Lasers:

1. Determination of the grating radial spacing of the Compact Disc (CD) by reflection using He-Ne or solid state laser.
2. To find the width of the wire or width of the slit using diffraction pattern obtained by a He-Ne or solid state laser.
3. To find the polarization angle of laser light using polarizer and analyzer
4. Thermal expansion of quartz using laser

B: Experiments on Semiconductor Sources and Detectors

1. V-I characteristics of LED
2. Study the characteristics of solid state laser
3. Study the characteristics of LDR
4. Photovoltaic Cell
5. Characteristics of IR sensor

C: Experiments on Fourier Optics:

1. **Fourier optic and image processing**
    a. Optical image addition/subtraction
    b. Optical image differentiation
    c. Fourier optical filtering
    d. Construction of an optical 4f system
2. **Fourier Transform Spectroscopy**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

To study the interference pattern from a Michelson interferometer as a function of mirror separation in the interferometer. The resulting interferogram is the Fourier transform of the power spectrum of the source. Analysis of experimental interferograms allows one to determine the transmission characteristics of several interference filters. Computer simulation can also be done.

D: Experiments on Holography and interferometry

1. Recording and reconstructing holograms
2. Constructing a Michelson interferometer or a Fabry Perot interferometer
3. Measuring the refractive index of air
4. Constructing a Sagnac interferometer
5. Constructing a Mach-Zehnder interferometer
6. White light Hologram

E: Experiments on Photonics: Fibre Optics

1. To measure the numerical aperture of an optical fibre
2. To study the variation of the bending loss in a multimode fibre
3. To determine the mode field diameter (MFD) of fundamental mode in a single-mode fibre by measurements of its far field Gaussian pattern
4. To measure the near field intensity profile of a fibre and study its refractive index profile
5. To determine the power loss at a splice between two multimode fibre

Reference Books

- Optical Electronic, A.K. Ghatak & K. Thyagrajan
- Fundamental of optics, F. A. Jenkins & H. E. White, 1981, Tata McGraw hill.
- LASERS: Fundamentals & applications, K.Thyagrajan & A.K.Ghatak, 2010, Tata McGraw Hill
- Fibre optics through experiments, M.R.Shenoy, S.K.Khijwania, et.al. 2009, Viva Books
- Nonlinear Optics, Robert W. Boyd, (Chapter-I), 2008, Elsevier.
- Optics, Karl Dieter Moller, Learning by computing with model examples, 2007, Springer.
- Optical Systems and Processes, Joseph Shamir, 2009, PHI Learning Pvt. Ltd.
- Optoelectronic Devices and Systems, S.C. Gupta, 2005, PHI Learning Pvt. Ltd.
- Optical Physics, A.Lipson, S.G.Lipson, H.Lipson, 4th Edn., 1996, Cambridge Univ. Press

Generic Elective (GE)
[Interdisciplinary for other department]

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

GE-4: Electricity and Magnetism Credits 06

GE4T: Electricity and Magnetism Credits 04

Vector Analysis

Review of vector algebra (Scalar and Vector product), gradient, divergence, Curl and their significance, Vector Integration, Line, surface and volume integrals of Vector fields, Gauss-divergence theorem and Stoke's theorem of vectors (statement only).

Electrostatics

Electrostatic Field, electric flux, Gauss's theorem of electrostatics. Applications of Gauss theorem- Electric field due to point charge, infinite line of charge, uniformly charged spherical shell and solid sphere, plane charged sheet, charged conductor. Electric potential as line integral of electric field, potential due to a point charge, electric dipole, uniformly charged spherical shell and solid sphere. Calculation of electric field from potential. Capacitance of an isolated spherical conductor. Parallel plate, spherical and cylindrical condenser. Energy per unit volume in electrostatic field. Dielectric medium, Polarisation, Displacement vector. Gauss's theorem in dielectrics. Parallel plate capacitor completely filled with dielectric.

Magnetism

Magnetostatics: Biot-Savart's law and its applications- straight conductor, circular coil, solenoid carrying current. Divergence and curl of magnetic field. Magnetic vector potential. Ampere's circuital law.

Magnetic properties of materials: Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Brief introduction of dia-, para-and ferro- magnetic materials.

Electromagnetic Induction

Faraday's laws of electromagnetic induction, Lenz's law, self and mutual inductance, L of single coil, M of two coils. Energy stored in magnetic field.

Maxwell`s equations and Electromagnetic wave propagation

Equation of continuity of current, Displacement current, Maxwell's equations, Poynting vector, energy density in electromagnetic field, electromagnetic wave propagation through vacuum and isotropic dielectric medium, transverse nature of EM waves, polarization.

Reference Books

- Electricity and Magnetism, Edward M. Purcell, 1986, McGraw-Hill Education
- Electricity & Magnetism, J.H. Fewkes & J.Yarwood. Vol. I, 1991, Oxford Univ. Press
- Electricity and Magnetism, D C Tayal, 1988, Himalaya Publishing House.
- University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
- D.J.Griffiths, Introduction to Electrodynamics, 3rd Edn, 1998, Benjamin Cummings.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

GE4P: Electricity and Magnetism Lab Credits 02

Electricity and Magnetism

List of Practical

1. To use a Multimeter for measuring
    a. Resistances
    b. AC and DC Voltages
    c. DC Current
    d. Checking electrical fuses.
2. Ballistic Galvanometer:
    a. Measurement of charge and current sensitivity
    b. Measurement of CDR
    c. Determine a high resistance by Leakage Method
    d. To determine Self Inductance of a Coil by Rayleigh's Method.
3. To compare capacitances using De'Sauty's bridge.
4. Measurement of field strength B and its variation in a Solenoid (Determine dB/dx)
5. To study the Characteristics of a Series RC Circuit.
6. To study a series LCR circuit LCR circuit and determine its
    a. Resonant frequency
    b. Quality factor
7. To study a parallel LCR circuit and determine its:
    a. Anti-resonant frequency and
    b. Quality factor Q
8. To determine a Low Resistance by Carey Foster's Bridge.
9. To verify the Thevenin and Norton theorems
10. To verify the Superposition, and Maximum Power Transfer Theorems

Reference Books

- Advanced Practical Physics for students, B.L.Flint & H.T.Worsnop, 1971, Asia Publishing House.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed.2011, Kitab Mahal
- Engineering Practical Physics, S.Panigrahi & B.Mallick,2015, Cengage Learning India Pvt. Ltd.

Or

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

GE-4: Digital, Analog Circuits and Instrumentation Credits 06

GE4T: Digital, Analog Circuits and Instrumentation Credits 04

Digital Circuits

Difference between Analog and Digital Circuits. Binary Numbers. Decimal to Binary and Binary to Decimal Conversion, AND, OR and NOT Gates (Realization using Diodes and Transistor). NAND and NOR Gates as Universal Gates. XOR and XNOR Gates.

De Morgan's Theorems. Boolean Laws. Simplification of Logic Circuit using Boolean Algebra. Fundamental Products. Minterms and Maxterms. Conversion of a Truth Table into an Equivalent Logic Circuit by (1) Sum of Products Method and (2) Karnaugh Map

Binary Addition. Binary Subtraction using 2's Complement Method). Half Adders and Full Adders and Subtractors, 4-bit binary Adder-Subtractor.

Semiconductor Devices and Amplifiers

Semiconductor Diodes: P and N type semiconductors. Barrier Formation in PN Junction Diode. Qualitative Idea of Current Flow Mechanism in Forward and Reverse Biased Diode. PN junction and its characteristics. Static and Dynamic Resistance. Principle and structure of (1) LEDs, (2) Photodiode, (3) Solar Cell

Bipolar Junction transistors: n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Active, Cutoff & Saturation regions Current gains α and β. Relations between α and β. Load Line analysis of Transistors. DC Load line & Q- point. Voltage Divider Bias Circuit for CE Amplifier. H-parameter, Equivalent Circuit. Analysis of single-stage CE amplifier using hybrid Model. Input & output Impedance. Current, Voltage and Power gains. Class A, B & C Amplifiers.

Operational Amplifiers (Black Box approach)

Characteristics of an Ideal and Practical Op-Amp (IC 741), Open-loop and closed- loop Gain. CMRR, concept of Virtual ground. Applications of Op-Amps: (1) Inverting and non-inverting Amplifiers, (2) Adder, (3) Subtractor, (4) Differentiator, (5) Integrator, (6) Zero crossing detector.

Sinusoidal Oscillators: Barkhausen's Criterion for Self-sustained Oscillations. Determination of Frequency of RC Oscillator

Instrumentations

Introduction to CRO: Block Diagram of CRO. Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference.

Power Supply: Half-wave Rectifiers. Centre-tapped and Bridge Full-wave Rectifiers Calculation of Ripple Factor and Rectification Efficiency, Basic idea about capacitor filter, Zener Diode and Voltage Regulation.

Timer IC: IC 555 Pin diagram and its application as Astable and Monostable Multivibrator.

Reference Books

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

- Integrated Electronics, J. Millman and C.C. Halkias, 1991, Tata Mc-Graw Hill.
- Electronic devices & circuits, S. Salivahanan & N.S. Kumar, 2012, Tata Mc-Graw Hill
- Microelectronic Circuits, M.H. Rashid, 2nd Edn., 2011, Cengage Learning.
- Modern Electronic Instrumentation and Measurement Tech., Helfrick and Cooper, 1990, PHI Learning
- Digital Principles and Applications, A.P. Malvino, D.P. Leach and Saha, 7th Ed., 2011, Tata McGraw Hill
- Microelectronic circuits, A.S. Sedra, K.C. Smith, A.N. Chandorkar, 2014, 6th Edn., Oxford University Press.
- Fundamentals of Digital Circuits, A. Anand Kumar, 2nd Edition, 2009, PHI Learning Pvt. Ltd.
- OP-AMP & Linear Digital Circuits, R.A. Gayakwad, 2000, PHI Learning Pvt. Ltd.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

GE4P: Digital, Analog Circuits and Instruments Lab Credits 02

Digital, Analog Circuits and Instruments

List of Practical

1. To measure (a) Voltage, and (b) Frequency of a periodic waveform using CRO
2. To verify and design AND, OR, NOT and XOR gates using NAND gates.
3. To minimize a given logic circuit.
4. Half adder, Full adder and 4-bit Binary Adder.
5. Adder-Subtractor using Full Adder I.C.
6. To design an astable multivibrator of given specifications using 555 Timer.
7. To design a monostable multivibrator of given specifications using 555 Timer.
8. To study IV characteristics of PN diode, Zener and Light emitting diode
9. To study the characteristics of a Transistor in CE configuration.
10. To design a CE amplifier of given gain (mid-gain) using voltage divider bias.
11. To design an inverting amplifier of given gain using Op-amp 741 and study its frequency response.
12. To design a non-inverting amplifier of given gain using Op-amp 741 and study its Frequency Response.
13. To study Differential Amplifier of given I/O specification using Op-amp.
14. To investigate a differentiator made using op-amp.
15. To design a Wien Bridge Oscillator using an op-amp.

Reference Books

- Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1994, Mc-Graw Hill.
- Electronics: Fundamentals and Applications, J.D. Ryder, 2004, Prentice Hall.
- OP-Amps & Linear Integrated Circuit, R.A. Gayakwad, 4th Edn, 2000, Prentice Hall.
- Electronic Principle, Albert Malvino, 2008, Tata Mc-Graw Hill.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:46:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons4.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Physics [Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 11		C11T: Quantum Mechanics and applications	Core Course-11	4	0	0	6	75
		- Lab		0	0	4		
CC- 12		C12T: Solid State Physics	Core Course-12	4	0	0	6	75
		- Lab		0	0	4		
DSE-1		**DSE1T**: TBD	Discipline Specific Electives -1	5/4	1/0	0/4	6	75
DSE-2		**DSE2T:** TBD	Discipline Specific Electives -2	5/4	1/0	0/4	6	75
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC** - Core Course, **TBD** - To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Semester-V

List of Core Course (CC)

CC-11: Quantum Mechanics and Applications
CC-12: Solid State Physics

Discipline Specific Electives (DSE)

DSE-1: Advanced Mathematical Physics - I
Or
DSE-1: Classical Dynamics
Or
DSE-1: Applied Dynamics
Or
DSE-1: Atmospheric Physics

DSE-2:Nuclear and Particle Physics
Or
DSE-2: Astronomy and Astrophysics
Or
DSE-2: Physics of Earth
Or
DSE-2: Advanced Mathematical Physics - II

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

SEMESTER –V

Core Courses (CC)

CC-11: Quantum Mechanics and Applications Credits 06

C11T: Quantum Mechanics and Applications Credits 04

Course Contents :

Schrodinger equation:

Time dependent Schrodinger equation and dynamical evolution of a quantumstate; Properties of Wave Function. Interpretation of Wave Function Probability and probability current densities in three dimensions; Conditions for Physical Acceptability of Wave Functions. Normalization. Linearity and Superposition Principles. Eigenvalues and Eigenfunctions. Position, momentum and Energyoperators; commutator of position and momentum operators; Expectation values of position and momentum.Wave Function of a Free Particle.

Time independent Schrodinger equation-Hamiltonian, stationary states and energy eigenvalues; expansion of anarbitrary wave function as a linear combination of energy eigen functions; General solution of the time dependent Schrodinger equation interms of linear combinations of stationary states; Application to spread of Gaussian wave-packet for a free particle in one dimension; wave packets, Fourier transforms and momentum space wave function; Position-momentum uncertainty principle.

General discussion of bound states in an arbitrary potential

Continuity of wave function, boundary condition and emergence of discrete energy levels; application to one-dimensional problem-square well potential; Quantum mechanics of simple harmonic oscillator-energy levels and energy eigenfunctions using Frobenius method; Hermitepolynomials; ground state, zero point energy & uncertainty principle.

Quantum theory of hydrogen-like atoms:

Time independent Schrodinger equation in spherical polar coordinates; separation of variables for second order partial differential equation; angularmomentum operator & quantum numbers; Radial wave functions from Frobenius method; shapes of the probability densities for ground & first excited states; Orbital angula rmomentum quantum numbers l and m;s,p,d,..shells.

Atoms in Electric & Magnetic Fields:

Electron angular momentum. Space quantization. Electron Spinand Spin Angular Momentum. Larmor's Theorem. Spin Magnetic Moment. Stern-Gerlach Experiment. Zeeman Effect: Electron Magnetic Moment and Magnetic Energy, Gyromagnetic Ratio and Bohr Magneton.

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Atoms in External Magnetic Fields:-Normal and Anomalous ZeemanEffect. Paschen Back and Stark Effect (QualitativeDiscussiononly).

Many electron atoms:

Pauli′s Exclusion Principle. Symmetric & Antisymmetric WaveFunctions. Periodictable. Finestructure. Spinorbit coupling. Spectral Notations for Atomic States. Total angular momentum.Vector Model. Spin-orbit coupling in atoms - L- S and J-J couplings. Hund′sRule. Term symbols. Spectra of Hydrogen and Alkali Atoms (Na etc.).

Suggested Readings :

1. ATextbook ofQuantum Mechanics, P.M. Mathews and K.Venkatesan, 2ndEd.,2010, Mc Graw Hill

2. Quantum Mechanics, Robert Eisberg and Robert Resnick, 2ndEdn.,2002,Wiley.

3. Quantum Mechanics, LeonardI. Schiff, 3rdEdn. 2010,TataMcGrawHill.

4. Quantum Mechanics, G. Aruldhas, 2ndEdn. 2002, PHILearningofIndia.

5. Quantum Mechanics, Bruce Cameron Reed, 2008, JonesandBartlettLearning.

6. Quantum Mechanics: Foundations & Applications, Arno Bohm, 3rdEdn., 1993,Springer

7. Quantum Mechanics for Scientists & Engineers, D.A.B.Miller, 2008, Cambridge University Press

Additional Books for Reference

1. Quantum Mechanics, Eugen Merzbacher, 2004, John Wiley and Sons, Inc.

2. Introduction to Quantum Mechanics, D.J. Griffith, 2nd Ed.2005,Pearson Education

3. Quantum Mechanics, Walter Greiner, 4th Edn., 2001, Springer

C11P: Quantum Mechanics and Applications Lab Credits 02

List of Practicals

1. Solve the s-wave Schrodinger equation for the ground state and the first excited state of the hydrogen atom:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{h^2}[V(r) - E] \text{ where } V(r) = -\frac{e^2}{r}$$

S wave Schrodinger equation for tnhe ground state and the first excited state of the

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

hydrogen atom : Here, m is the reduced mass of the electron. Obtain the energy eigenvalues and plot the corresponding wavefunctions. Remember that the ground state energy of the hydrogen atom is ≈ -13.6 eV. Take e = 3.795 (eVÅ)1/2 , ħc = 1973 (eVÅ) and m = 0.511x10 eV/c2 .

2. Solve the s-wave radial Schrodinger equation for an atom:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{h^2}[V(r) - E]$$

where m is the reduced mass of the system (which can be chosen to be the mass of an electron), for the screened coulomb potential

$$V(r) = \frac{e^2}{r}e^{-r/a}$$

Find the energy (in eV) of the ground state of the atom to an accuracy of three significant digits. Also, plot the corresponding wavefunction. Take e = 3.795 (eVÅ)1/2 , m = 0.511x106 eV/c2 , and a = 3 Å, 5 Å, 7 Å. In these units ħc = 1973 (eVÅ). The ground state energy is expected to be above -12 eV in all three cases.

3. Solve the s-wave radial Schrodinger equation for a particle of mass m:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{h^2}[V(r) - E]$$

For the anharmonic oscillator potential

$$V(r) = \frac{1}{2}kr^2 + \frac{1}{3}br^3$$

for the ground state energy (in MeV) of particle to an accuracy of three significant digits. Also, plot the corresponding wave function. Choose m = 940 MeV/c^2 , k = 100 MeV fm^{-2}, b = 0, 10, 30 MeV fm^{-3}In these units, cħ = 197.3 MeV fm. The ground state energy I expected to lie between 90 and 110 MeV for all three cases.

4. Solve the s-wave radial Schrodinger equation for the vibrations of hydrogen molecule:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2\mu}{h^2}[V(r) - E]$$

Where μ is the reduced mass of the two-atom system for the Morse potential

$$V(r) = D(e^{-2\alpha r'} - e^{-\alpha r'}), r' = \frac{r - r_0}{r}$$

Find the lowest vibrational energy (in MeV) of the molecule to an accuracy of three significant digits. Also plot the corresponding wave function.
Take m= 940 x 10^6eV/C^2, D=0.755501eV, α=1.44, r_0=0.131349 Å

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Laboratory based experiments:

5. Study of Electron spin resonance- determine magnetic field as a function of the resonance frequency
6. Study of Zeeman effect: with external magnetic field; Hyperfine splitting
7. To show the tunneling effect in tunnel diode using I-V characteristics.
8. Quantum efficiency of CCDs

Suggested Readings :

1. Schaum's outline of Programming with C++. J. Hubbard, 2000, Mc Graw-Hill Publication
2. Numerical Recipes in C: The Art of Scientific Computing, W.H. Press et al., 3rd Edn., 2007, Cambridge University Press.
3. An introduction to computational Physics, T. Pang, 2nd Edn.,2006, Cambridge Univ. Press
4. Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific & Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández.2014 Springer.
5. Scilab (A Free Software to Matlab) : H. Ramchandran, A.S. Nair. 2011 S. Chand & Co.
6. A Guide to MATLAB, B.R. Hunt, R.L. Lipsman, J.M. Rosenberg, 2014, 3rd Edn., Cambridge University Press
7. Scilab Image Processing: L.M.Surhone.2010 Beta script Publishing

CC-12: Solid State Physics — Credits 06

C12T: Solid State Physics — Credits 04

Course Contents :

Crystal Structure:

Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors. Lattice with a Basis−Central and Non-Central Elements. Unit Cell. Miller Indices. Reciprocal Lattice. Types of Lattices. Brillouin Zones. Diffraction of X-rays by Crystals. Bragg′s Law. Atomic and Geometrical Factor.

Elementary Lattice Dynamics:

Lattice Vibrations and Phonons: Linear Monoatomic and Diatomic Chains. Acoustical and Optical Phonons. Qualitative Description of the Phonon Spectrumin Solids. Dulong and Petit′sLaw, Einstein and Debye theories of specific heat of solids.T^3 law

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

MagneticPropertiesofMatter:

Dia-, Para-, Ferri- and Ferromagnetic Materials. Classical Langevin Theory of dia − and Paramagnetic Domains. Quantum Mechanical Treatment of Paramagnetism. Curie′s law, Weiss′s Theory of Ferromagnetism and Ferromagnetic Domains. Discussion of B-H Curve. Hysteresis and Energy Loss.

Dielectric Properties of Materials:

Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons, TO modes.

Ferro electric Properties of Materials:

Structural phase transition, Classification of crystals, Piezo electric effect, Pyro electric effect, Ferro electric effect, Electrostrictive effect, Curie-Weiss Law, Ferroelectric domains, PE hysteresis loop.

Elementary band theory: Kronig Penny model. Band Gap. Conductor, Semiconductor (PandNtype) and insulator. Conductivity of Semiconductor, mobility, Hall Effect. Measurement of conductivity (04 probe method) & Hall coefficient.

Superconductivity: Experimental Results. Critical Temperature. Critical magnetic field. Meissner effect. Type Iand type II Superconductors, London′s Equation and Penetration Depth. Isotopeeffect. Idea of BCS theory (Noderivation)

Suggested Readings:

1. Introduction to Solid State Physics, Charles Kittel, 8th Edition, 2004, Wiley India Pvt. Ltd.
2. Elements of Solid State Physics, J.P. Srivastava, 4th Edition, 2015, Prentice-Hall of India
3. Introduction to Solids, Leonid V. Azaroff, 2004, Tata Mc-Graw Hill
4. Solid State Physics, N.W. Ashcroft and N.D. Mermin, 1976, Cengage Learning
5. Solid-state Physics, H. Ibach and H. Luth, 2009, Springer
6. Solid State Physics, Rita John, 2014, McGraw Hill
7. Elementary Solid State Physics, 1/e M. Ali Omar, 1999, Pearson India
8. Solid State Physics, M.A. Wahab, 2011, Narosa Publications

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

C12P: Solid State Physics Lab — Credits 02

List of Practicals

1. Measurement of susceptibility of paramagnetic solution (Quinck`s Tube Method)
2. To measure the Magnetic susceptibility of Solids.
3. To determine the Coupling Coefficient of a Piezoelectric crystal.
4. To measure the Dielectric Constant of a dielectric Materials with frequency
5. To determine the complex dielectric constant and plasma frequency of metal using Surface Plasmon resonance (SPR)
6. To determine the refractive index of a dielectric layer using SPR
7. To study the PE Hysteresis loop of a Ferroelectric Crystal.
8. To draw the BH curve of Fe using Solenoid & determine energy loss from Hysteresis.
9. To measure the resistivity of a semiconductor (Ge) with temperature by four-probe method (room temperature to 150 ^{o} C) and to determine its band gap.
10. To determine the Hall coefficient of a semiconductor sample.

Suggested Readings :

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
3. A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
4. Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India.

Department Specific Electives (DSE)

DSE-1: Advanced Mathematical Physics - I — **Credits 06**
DSE1T: Advanced Mathematical Physics - I — **Credits 04**

Course Contents:

Laplace Transform

Laplace Transform (LT) of Elementary functions. Properties of LTs: Change of Scale Theorem, Shifting Theorem. LTs of 1st and 2nd order Derivatives and Integrals of Functions, Derivatives and Integrals of LTs. LT of Unit Step function, Dirac Delta function, Periodic Functions. Convolution Theorem. Inverse LT. Application of Laplace Transforms to 2nd order Differential

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Equations: Damped Harmonic Oscillator, Simple Electrical Circuits, Coupled differential equations of 1st order. Solution of heat flow along infinite bar using Laplace transform.

Linear Vector Spaces

Abstract Systems. Binary Operations and Relations. Introduction to Groups and Fields. Vector Spaces and Subspaces. Linear Independence and Dependence of Vectors. Basis and Dimensions of a Vector Space. Change of basis. Homomorphism and Isomorphism of Vector Spaces. Linear Transformations. Algebra of Linear Transformations. Non-singular Transformations. Representation of Linear Transformations by Matrices.

Inner products. Gram-Schmidt orthogonalization. Orthogonal and unitary transformations and their matrix representations.

Cartesian Tensors

Transformation of Co-ordinates. Einstein's Summation Convention. Relation between Direction Cosines. Tensors. Algebra of Tensors. Sum, Difference and Product of Two Tensors. Contraction. Quotient Law of Tensors. Symmetric and Anti- symmetric Tensors. Invariant Tensors: Kronecker and Alternating Tensors. Association of Antisymmetric Tensor of Order Two and Vectors. Vector Algebra and Calculus using Cartesian Tensors: Scalar and Vector Products, Scalar and Vector Triple Products. Differentiation. Gradient, Divergence and Curl of Tensor Fields. Vector Identities. Tensorial Formulation of Analytical Solid Geometry: Equation of a Line. Angle Between Lines. Projection of a Line on another Line. Condition for Two Lines to be Coplanar. Foot of the Perpendicular from a Point on a Line. Rotation Tensor (No Derivation). Isotropic Tensors. Tensorial Character of Physical Quantities. Moment of Inertia Tensor. Stress and Strain Tensors: Symmetric Nature. Elasticity Tensor. Generalized Hooke's Law.

General Tensors

Transformation of Co-ordinates. Minkowski Space. Contravariant & Covariant Vectors. Contravariant, Covariant and Mixed Tensors. Kronecker Delta and Permutation Tensors. Algebra of Tensors. Sum, Difference & Product of Two Tensors. Contraction. Quotient Law of Tensors. Symmetric and Anti-symmetric Tensors. Metric Tensor.

Suggested Readings:

1. Mathematical Tools for Physics, James Nearing, 2010, Dover Publications
2. Mathematical Methods for Physicists, G.B. Arfken, H.J. Weber, and F.E. Harris, 1970, Elsevier.
3. Modern Mathematical Methods for Physicists and Engineers, C.D. Cantrell, 2011, Cambridge University Press
4. Introduction to Matrices and Linear Transformations, D.T. Finkbeiner, 1978, Dover Pub.

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

5. Linear Algebra, W. Cheney, E.W.Cheney & D.R.Kincaid, 2012, Jones & Bartlett Learning
6. Mathematics for Physicists, Susan M. Lea, 2004, Thomson Brooks/Cole
7. Mathematical Methods for Physicis & Engineers, K.F.Riley, M.P.Hobson, S.J.Bence, 3rd Ed., 2006, Cambridge University Press

DSE1P: Advanced Mathematical Physics - I Lab **Credits 02**

List of Practical

1. Linear algebra:

a) Multiplication of two 3 x 3 matrices.

b) Eigenvalue and eigenvectors of

$$\begin{matrix} 2 & 1 & 1 \\ 1 & 3 & 2 \\ 3 & 1 & 4 \end{matrix}; \quad \begin{matrix} 1 \\ +i \\ 3-4i \end{matrix} \quad \begin{matrix} -i & 3+4i \\ 2 & 4 \\ 4 & 3 \end{matrix}; \quad \begin{matrix} 2 \\ +i \\ -2i \end{matrix} \quad \begin{matrix} -i & 2i \\ 4 & 3 \\ 3 & 5 \end{matrix}$$

2. Orthogonal polynomials as eigen functions of Hermitian differential operators.

3. Determination of the principal axes of moment of inertia through diagonalization.

4. Vector space of wave functions in Quantum Mechanics: Position and momentum differential operators and their commutator, wave functions for stationary states as eigen functions of Hermitian differential operator.

5. Lagrangian formulation in Classical Mechanics with constraints.

6. Study of geodesics in Euclidean and other spaces (surface of a sphere, etc).

7. Estimation of ground state energy and wave function of a quantum system.

Suggested Readings:

1. Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández. 2014 Springer
2. Scilab by example: M. Affouf, 2012,
3. Scilab Image Processing: L.M.Surhone. 2010, Betascript Pub.,

Or

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

DSE-1: Classical Dynamics **Credits 06**

DSE1T: Classical Dynamics

Course Contents:

Classical Mechanics of Point Particles
Review of Newtonian Mechanics; Application to the motion of a charge particle in external electric and magnetic fields- motion in uniform electric field, magnetic field- gyroradius and gyrofrequency, motion in crossed electric and magnetic fields. Generalized coordinates and velocities,
Recap of Lagrangian and Hamiltonian mechanics. Applications: Hamiltonian for a harmonic oscillator, solution of Hamilton's equation for Simple Harmonic Oscillations; particle in a central force field- conservation of angular momentum and energy. Effective potential. The Laplace-Runge-Lenz vector.

Small Amplitude Oscillations
Minima of potential energy and points of stable equilibrium, expansion of the potential energy around a minimum, small amplitude oscillations about the minimum, normal modes of oscillations example of N identical masses connected in a linear fashion to (N -1) - identical springs.

Special Theory of Relativity
Postulates of Special Theory of Relativity. Lorentz Transformations. Minkowski space. The invariant interval, light cone and world lines. Space-time diagrams. Time-dilation, length contraction and twin paradox. Four-vectors: space-like, time-like and light-like. Four-velocity and acceleration. Metric and alternating tensors. Four-momentum and energy-momentum relation. Doppler effect from a four-vector perspective. Concept of four-force. Conservation of four-momentum. Relativistic kinematics. Application to two-body decay of an unstable particle.

Fluid Dynamics
Density ρ and pressure P in a fluid, an element of fluid and its velocity, continuity equation and mass conservation, stream-lined motion, laminar flow, Poiseuille's equation for flow of a liquid through a pipe, Navier-Stokes equation, qualitative description of turbulence, Reynolds number.

Suggested Readings:

1. Classical Mechanics, H.Goldstein, C.P. Poole, J.L. Safko, 3rd Edn. 2002, Pearson Education.
2. Mechanics, L. D. Landau and E. M. Lifshitz, 1976, Pergamon.
3. Classical Electrodynamics, J.D. Jackson, 3rd Edn., 1998, Wiley.
4. The Classical Theory of Fields, L.D Landau, E.M Lifshitz, 4th Edn., 2003, Elsevier.
5. Introduction to Electrodynamics, D.J. Griffiths, 2012, Pearson Education.
6. Classical Mechanics, P.S. Joag, N.C. Rana, 1st Edn., McGraw Hall.
7. Classical Mechanics, R. Douglas Gregory, 2015, Cambridge University Press.

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

8. Classical Mechanics: An introduction, Dieter Strauch, 2009, Springer.
9. Solved Problems in classical Mechanics, O.L. Delange and J. Pierrus, 2010, Oxford Press

Or

DSE-1: Applied Dynamics **Credits 06**

DSE1T: Applied Dynamics **Credits 04**

Course Contents:

Introduction to Dynamical systems:

Definition of a continuous first order dynamical system. The idea of phase space, flows and trajectories. Simple mechanical systems as first order dynamical systems: the free particle, particle under uniform gravity, simple and damped harmonic oscillator. Sketching flows and trajectories in phase space; sketching variables as functions of time, relating the equations and pictures to the underlying physical intuition.

Other examples of dynamical systems –
In Biology: Population models e.g. exponential growth and decay, logistic growth, species competition, predator-prey dynamics, simple genetic circuits.

In Chemistry: Rate equations for chemical reactions e.g. auto catalysis, bistability In Economics: Examples from game theory.

Illustrative examples from other disciplines.

Fixed points, attractors, stability of fixed points, basin of attraction, notion of qualitative analysis of dynamical systems, with applications to the above examples.

Computing and visualizing trajectories on the computer using software packages. Discrete dynamical systems. The logistic map as an example.

Introduction to Chaos and Fractals:

Examples of 2-dimensional billiard, Projection of the trajectory on momentum space. Sinai Billiard and its variants. Computational visualization of trajectories in the Sinai Billiard. Randomization and ergodicity in the divergence of nearby phase space trajectories, and dependence of time scale of divergence on the size of obstacle. Electron motion in mesoscopic conductors as a chaotic billiard problem. Other examples of chaotic systems; visualization of their trajectories on the computer.

Self-similarity and fractal geometry: Fractals in nature – trees, coastlines, earthquakes, etc. Need for fractal dimension to describe self-similar structure. Deterministic fractal vs. self-similar fractal structure. Fractals in dynamics – Serpinski gasket and DLA. Chaos in nonlinear finite-

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

difference equations- Logistic map: Dynamics from time series. Parameter dependence- steady, periodic and chaos states. Cobweb iteration. Fixed points. Defining chaos- aperiodic, bounded, deterministic and sensitive dependence on initial conditions. Period- Doubling route to chaos.

Nonlinear time series analysis and chaos characterization: Detecting chaos from return map. Power spectrum, autocorrelation, Lyapunov exponent, correlation dimension.

Elementary Fluid Dynamics:

Importance of fluids: Fluids in the pure sciences, fluids in technology. Study of fluids: Theoretical approach, experimental fluid dynamics, computational fluid dynamics. Basic physics of fluids: The continuum hypothesis- concept of fluid element or fluid parcel; Definition of a fluid- shear stress; Fluid properties- viscosity, thermal conductivity, mass diffusivity, other fluid properties and equation of state; Flow phenomena- flow dimensionality, steady and unsteady flows, uniform & non-uniform flows, viscous & inviscid flows, incompressible & compressible flows, laminar and turbulent flows, rotational and irrotational flows, separated & unseparated flows. Flow visualization - streamlines, pathlines, Streaklines.

Suggested Readings:

1. Nonlinear Dynamics and Chaos, S.H. Strogatz, Levant Books, Kolkata, 2007
2. Understanding Nonlinear Dynamics, Daniel Kaplan and Leon Glass, Springer.
3. An Introduction to Fluid Dynamics, G.K.Batchelor, Cambridge Univ. Press, 2002
4. Fluid Mechanics, 2nd Edition, L. D. Landau and E. M. Lifshitz, Pergamon Press, Oxford, 1987.

DSE1P: Applied Dynamics Lab **Credits 02**

Laboratory/Computing and visualizing trajectories using software such as Maple, Octave, XPPAUT based on Applied Dynamics problems like:

1. To determine the coupling coefficient of coupled pendulums.
2. To determine the coupling coefficient of coupled oscillators.
3. To determine the coupling and damping coefficient of damped coupled oscillator.
4. To study population models e.g. exponential growth and decay, logistic growth, species competition, predator-prey dynamics, simple genetic circuits.
5. To study rate equations for chemical reactions e.g. auto catalysis, bistability.
6. To study examples from game theory.
7. Computational visualization of trajectories in the Sinai Billiard.
8. Computational visualization of trajectories Electron motion in mesoscopic conductors as a chaotic billiard problem.
9. Computational visualization of fractal formations of Deterministic fractal.
10. Computational visualization of fractal formations of self-similar fractal.
11. Computational visualization of fractal formations of Fractals in nature – trees, coastlines, earthquakes.
12. Computational Flow visualization - streamlines, pathlines, Streaklines

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Suggested Readings:

1. Nonlinear Dynamics and Chaos, Steven H. Strogatz, Levant Books, Kolkata, 2007
2. Understanding Nonlinear Dynamics, Daniel Kaplan and Leon Glass, Springer.
3. An Introduction to Fluid Dynamics, G.K.Batchelor, Cambridge Univ. Press, 2002
4. Fluid Mechanics, 2nd Edn, L.D.Landau & E.M. Lifshitz, Pergamon Press, Oxford, 1987
5. Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández. 2014 Springer

Or

DSE-1: Atmospheric Physics — Credits 06

DSE1T: Atmospheric Physics — Credits 04

Course Contents:

General features of Earth's atmosphere:
Thermal structure of the Earth's Atmosphere, Ionosphere, Composition of atmosphere, Hydrostatic equation, Potential temperature, Atmospheric Thermodynamics, Greenhouse effect and effective temperature of Earth, Local winds, monsoons, fogs, clouds, precipitation, Atmospheric boundary layer, Sea breeze and land breeze. Instruments for meteorological observations, including RS/RW, meteorological processes and different systems, fronts, Cyclones and anticyclones, thunderstorms.

Atmospheric Dynamics:
Scale analysis, Fundamental forces, Basic conservation laws, The Vectorial form of the momentum equation in rotating coordinate system, scale analysis of equation of motion, Applications of the basic equations, Circulations and vorticity, Atmospheric oscillations, Quasi biennial oscillation, annual and semi-annual oscillations, Mesoscale circulations, The general circulations, Tropical dynamics.

Atmospheric Waves:
Surface water waves, wave dispersion, acoustic waves, buoyancy waves, propagation of atmospheric gravity waves (AGWs) in a nonhomogeneous medium, Lamb wave, Rossby waves and its propagation in three dimensions and in sheared flow, wave absorption, non-linear consideration

Atmospheric Radar and Lidar:
Radar equation and return signal, Signal processing and detection, Various type of atmospheric radars, Application of radars to study atmospheric phenomena, Lidar and its applications, Application of Lidar to study atmospheric phenomenon. Data analysis tools and techniques.

Atmospheric Aerosols:

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Spectral distribution of the solar radiation, Classification and properties of aerosols, Production and removal mechanisms, Concentrations and size distribution, Radiative and health effects, Observational techniques for aerosols, Absorption and scattering of solar radiation, Rayleigh scattering and Mie scattering, Bouguert-Lambert law, Principles of radiometry, Optical phenomena in atmosphere, Aerosol studies using Lidars.

Suggested Readings:

1. Fundamental of Atmospheric Physics – Murry L Salby; Academic Press, Vol 61, 1996
2. The Physics of Atmosphere – John T. Houghton; Cambridge University press; 3rd edn. 2002.
3. An Introduction to dynamic meteorology – James R Holton; Academic Press, 2004
4. Radar for meteorological and atmospheric observations – S Fukao and K Hamazu, Springer Japan, 2014

DSE1P: Atmospheric Physics Lab **Credits 02**

C++ based simulations experiments based on Atmospheric Physics problems like

1. Numerical Simulation for atmospheric waves using dispersion relations
   a. Atmospheric gravity waves (AGW)
   b. Kelvin waves
   c. Rossby waves, and mountain waves
2. Offline and online processing of radar data
   a. VHF radar,
   b. X-band radar, and
   c. UHF radar
3. Offline and online processing of LIDAR data
4. Radiosonde data and its interpretation in terms of atmospheric parameters using vertical profiles in different regions of the globe.
5. Handling of satellite data and plotting of atmospheric parameters using radio occultation technique
6. Time series analysis of temperature using long term data over metropolitan cities in India – an approach to understand the climate change

Suggested Readings:

1. Fundamental of Atmospheric Physics – Murry L Salby; Academic Press, Vol 61, 1996
2. The Physics of Atmosphere – J.T. Houghton; Cambridge Univ. Press; 3rd edn. 2002.
3. An Introduction to dynamic meteorology – James R Holton; Academic Press, 2004
4. Radar for meteorological and atmospheric observations – S Fukao and K Hamazu, Springer Japan, 2014

DSE-2:Nuclear and Particle Physics Credits 06

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

DSE2T:Nuclear and Particle Physics

Course Contents :

General Properties of Nuclei :

Constituents of nucleus and their Intrinsic properties, quantitative facts about mass, radii, charge density (matter density), binding energy, average binding energy and its variation with mass number, main features of binding energy versus mass number curve, N/A plot, angular momentum, parity, magnetic moment, electric moments, nuclear excites states.

Nuclear Models :

Liquid drop model approach, semi empirical mass formula and significance of its various terms, condition of nuclear stability, two nucleon separation energies, Fermi gas model (degenerate fermion gas, nuclear symmetry potential in Fermi gas), evidence for nuclear shell structure, nuclear magic numbers, basic assumption of shell model, concept of mean field, residual interaction, concept of nuclear force.

Radioactivity decay :

(a) Alpha decay: basics of α-decay processes, theory of α- emission, Gamow factor, Geiger Nuttall law, α-decay spectroscopy. (b) β-decay: energy kinematics for β-decay, positron emission, electron capture, neutrino hypothesis. (c) Gamma decay: Gamma rays emission & kinematics, internal conversion.

Nuclear Reactions :

Types of Reactions, Conservation Laws, kinematics of reactions, Q-value, reaction rate, reaction cross section, Concept of compound and direct Reaction, resonance reaction, Coulomb scattering (Rutherford scattering).

Interaction of Nuclear Radiation with matter :

Energy loss due to ionization (Bethe- Block formula), energy loss of electrons, Cerenkov radiation. Gamma ray interaction through matter, photoelectric effect, Compton scattering, pair production, neutron interaction with matter.

Detector for Nuclear Radiations :

Gas detectors: estimation of electric field, mobility of particle, for ionization chamber and GM Counter. Basic principle of Scintillation Detectors and construction of photo-multiplier tube (PMT). Semiconductor Detectors (Si and Ge) for charge particle and photon detection (concept of charge carrier and mobility), neutron detector.

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Particle Accelerators :

Accelerator facility available in India: Van-de Graaff generator (Tandem accelerator), Linear accelerator, Cyclotron, Synchrotrons.

Particle physics :

Particle interactions; basic features, types of particles and its families. Symmetries and Conservation Laws: energy and momentum, angular momentum, parity, baryon number, Lepton number, Isospin, Strangeness and charm, concept of quark model, color quantum number and gluons.

Suggested Readings :

1. Introductory nuclear Physics by Kenneth S. Krane (Wiley India Pvt. Ltd., 2008).
2. Concepts of nuclear physics by Bernard L. Cohen. (Tata Mcgraw Hill, 1998).
3. Introduction to the physics of nuclei & particles, R.A. Dunlap. (Thomson Asia, 2004).
4. Introduction to High Energy Physics, D.H. Perkins, Cambridge Univ. Press
5. Introduction to Elementary Particles, D. Griffith, John Wiley & Sons
6. Quarks and Leptons, F. Halzen and A.D. Martin, Wiley India, New Delhi
7. Basic ideas and concepts in Nuclear Physics - An Introductory Approach by K. Heyde (IOP- Institute of Physics Publishing, 2004).
8. Radiation detection and measurement, G.F. Knoll (John Wiley & Sons, 2000).
9. Physics and Engineering of Radiation Detection, Syed Naeem Ahmed (Academic Press, Elsevier, 2007).
10. Theoretical Nuclear Physics, J.M. Blatt & V.F.Weisskopf (Dover Pub.Inc., 1991).

Or

DSE-2: Astronomy and Astrophysics Credits 06

DSE2T: Astronomy and Astrophysics

Course Contents :

Astronomical Scales :

Astronomical Distance, Mass and Time, Scales, Brightness, Radiant Flux and Luminosity, Measurement of Astronomical Quantities Astronomical Distances, Stellar Radii, Masses of Stars, Stellar Temperature. Basic concepts of positional astronomy: Celestial Sphere, Geometry of a Sphere, Spherical Triangle,Astronomical Coordinate Systems, Geographical Coordinate Systems, Horizon System, Equatorial System, Diurnal Motion of the Stars, Conversion of

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Coordinates. Measurement of Time, Sidereal Time, Apparent Solar Time, Mean Solar Time, Equation of Time, Calendar. Basic Parameters of Stars: Determination of Distance by Parallax Method; Brightness, Radiant Flux and Luminosity, Apparent and Absolute magnitude scale, Distance Modulus; Determination of Temperature and Radius of a star; Determination of Masses from Binary orbits; Stellar Spectral Classification, Hertzsprung-Russell Diagram.

Astronomical techniques :

Basic Optical Definitions for Astronomy (Magnification Light Gathering Power, Resolving Power and Diffraction Limit, Atmospheric Windows), Optical Telescopes (Types of Reflecting Telescopes, Telescope Mountings, Space Telescopes, Detectors and Their Use with Telescopes (Types of Detectors, detection Limits with Telescopes).

Physical principles :

Gravitation in Astrophysics (Virial Theorem, Newton versus Einstein), Systems in Thermodynamic Equilibrium.

The sun and solar family :

The sun (Solar Parameters, Solar Photosphere, Solar Atmosphere, Chromosphere. Corona, Solar Activity, Basics of Solar Magneto-hydrodynamics. Helioseismology). The solar family (Solar System: Facts and Figures, Origin of the Solar System: The Nebular Model, Tidal Forces and Planetary Rings, Extra-Solar Planets.

Stellar spectra and classification Structure (Atomic Spectra Revisited, Stellar Spectra, Spectral Types and Their Temperature Dependence, Black Body Approximation, H R Diagram, Luminosity Classification).

The milky way :

Basic Structure and Properties of the Milky Way, Nature of Rotation of the Milky Way (Differential Rotation of the Galaxy and Oort Constant, Rotation Curve of the Galaxy and the Dark Matter, Nature of the Spiral Arms), Stars and Star Clusters of the Milky Way, Properties of and around the Galactic Nucleus.

Galaxies :

Galaxy Morphology, Hubble's Classification of Galaxies, Elliptical Galaxies (The Intrinsic Shapes of Elliptical, de Vaucouleurs Law, Stars and Gas). Spiral and Lenticular Galaxies (Bulges, Disks, Galactic Halo) The Milky Way Galaxy, Gas and Dust in the Galaxy, Spiral Arms.

Large scale structure & expanding universe :

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Cosmic Distance Ladder (An Example from Terrestrial Physics, Distance Measurement using Cepheid Variables), Hubble's Law (Distance- Velocity Relation), Clusters of Galaxies (Virial theorem and Dark Matter).

Suggested Readings :

1. Modern Astrophysics, B.W. Carroll & D.A. Ostlie, Addison-Wesley Publishing Co.
2. Introductory Astronomy and Astrophysics, M. Zeilik and S.A. Gregory,4th Edition, Saunders College Publishing.
3. The physical universe: An introduction to astronomy, F.Shu, Mill Valley: University Science Books.
4. Fundamental of Astronomy (Fourth Edition), H. Karttunen et al. Springer
5. Astro Physics a modern perspective, K.S. Krishnasamy, Reprint, New Age International (p) Ltd, New Delhi,2002.
6. An introduction to Astro physics, Baidyanath Basu, Second printing, Prentice -Hall of India Private limited, New Delhi, 2001.
7. Textbook of Astronomy and Astrophysics with elements of cosmology, V.B. Bhatia, Narosa Publication.

Or

DSE-2: Physics of Earth **Credits 06**

DSE2T: Physics of Earth

Course Contents:

The Earth and the Universe

Origin of universe, creation of elements and earth. A Holistic understanding of our dynamic planet through Astronomy, Geology, Meteorology and Oceanography. Introduction to various branches of Earth Sciences.

General characteristics and origin of the Universe. The Milky Way galaxy, solar system, Earth's orbit and spin, the Moon's orbit and spin. The terrestrial and Jovian planets. Meteorites & Asteroids. Earth in the Solar system, origin, size, shape, mass, density, rotational and revolution parameters and its age.

Energy and particle fluxes incident on the Earth.

The Cosmic Microwave Background.

Structure

The Solid Earth: Mass, dimensions, shape and topography, internal structure, magnetic field, geothermal energy. How do we learn about Earth's interior?

The Hydrosphere: The oceans, their extent, depth, volume, chemical composition. River systems.

The Atmosphere: variation of temperature, density and composition with altitude, clouds.

The Cryosphere: Polar caps and ice sheets. Mountain glaciers.

The Biosphere: Plants and animals. Chemical composition, mass. Marine and land organisms.

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Dynamical Processes

The Solid Earth: Origin of the magnetic field. Source of geothermal energy. Convection in Earth's core and production of its magnetic field. Mechanical layering of the Earth. Introduction to geophysical methods of earth investigations. Concept of plate tectonics; sea-floor spreading and continental drift. Geodynamic elements of Earth: Mid Oceanic Ridges, trenches, transform faults and island arcs. Origin of oceans, continents, mountains and rift valleys. Earthquake and earthquake belts. Volcanoes: types products and distribution.
The Hydrosphere: Ocean circulations. Oceanic current system and effect of coriolis forces. Concepts of eustasy, tend– air-sea interaction; wave erosion and beach processes. Tides. Tsunamis.
The Atmosphere: Atmospheric circulation. Weather and climatic changes. Earth's heat budget. Cyclones.
Climate: Earth's temperature and greenhouse effect. Paleoclimate and recent climate changes. The Indian monsoon system.
Biosphere: Water cycle, Carbon cycle, Nitrogen cycle, Phosphorous cycle. The role of cycles in maintaining a steady state.

Evolution
Nature of stratigraphic records, Standard stratigraphic time scale and introduction to the concept of time in geological studies. Introduction to geochronological methods in their application in geological studies. History of development in concepts of uniformitarianism, catastrophism and neptunism. Law of superposition and faunal succession. Introduction to the geology and geomorphology of Indian subcontinent.
Time line of major geological and biological events.
Origin of life on Earth.
Role of the biosphere in shaping the environment.
Future of evolution of the Earth and solar system: Death of the Earth.

Disturbing the Earth - Contemporary dilemmas

1. Human population growth.
2. Atmosphere: Greenhouse gas emissions, climate change, air pollution.
3. Hydrosphere: Fresh water depletion.
4. Geosphere: Chemical effluents, nuclear waste.
5. Biosphere: Biodiversity loss. Deforestation. Robustness and fragility of ecosystems.

Suggested Readings:

1. Planetary Surface Processes, H. Jay Melosh, Cambridge University Press, 2011.
2. Consider a Spherical Cow: A course in environmental problem solving, John Harte. University Science Books
3. Holme's Principles of Physical Geology. 1992. Chapman & Hall.
4. Emiliani, C, 1992. Planet Earth, Cosmology, Geology and the Evolution of Life and Environment. Cambridge University Press.

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Or

DSE-2: Advanced Mathematical Physics - II **Credits 06**

DSE2T: Advanced Mathematical Physics - II

Course Contents:

Calculus of Variations:

Variational Calculus: Recapitulation of the Variational Principle, Euler-Lagrange's Equations of Motion Euler angles, spherical top and symmetric top. Symmetry and conservation laws. Canonical Pair of Variables. Definition of Generalized Force: Definition of Hamiltonian (Legendre Transformation). Hamilton's Principle. Poisson Brackets and their properties. Canonical transformations. Action-angle variables for simple systems.

Group Theory

Review of sets, Mapping and Binary Operations, Relation, Types of Relations.

Groups: Elementary properties of groups, uniqueness of solution, Subgroup, Centre of a group, Co-sets of a subgroup, cyclic group, Permutation/Transformation. Homomorphism and Isomorphism of group. Normal and conjugate subgroups, Completeness and Kernel.

Some special groups with operators. Matrix Representations: Reducible and Irreducible representations. Schur's lemma. Orthogonality theorems. Character tables and their uses. Application to small vibrations.

Advanced Probability Theory:

Fundamental Probability Theorems. Conditional Probability, Bayes' Theorem, Repeated Trials, Binomial and Multinomial expansions. Random Variables and probability distributions, Expectation and Variance, Special Probability distributions: The binomial distribution, The poisson distribution, Continuous distribution: The Gaussian (or normal) distribution, The principle of least squares.

Suggested Readings:

1. Mathematical Methods for Physicists: Weber and Arfken, 2005, Academic Press.
2. Mathematical Methods for Physicists: A Concise Introduction: Tai L. Chow, 2000, Cambridge Univ. Press.
3. Elements of Group Theory for Physicists by A. W. Joshi, 1997, John Wiley.
4. Group Theory and its Applications to Physical Problems by Morton Hamermesh, 1989, Dover

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

5. Introduction to Mathematical Physics: Methods & Concepts: Chun Wa Wong, 2012, Oxford University Press
6. Introduction to Mathematical Probability, J. V. Uspensky, 1937, Mc Graw-Hill.

Downloaded from Vidyasagar University by 47.11.205.38 on 04 November 2022 : 10:46:30; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons5_120919.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Physics [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 13		**C13T:** Electromagnetic Theory	Core Course-13	4	0	0	6	75
		- **Lab**		0	0	4		
CC- 14		**C14T**: Statistical Mechanics	Core Course-14	4	0	0	6	75
		- **Lab**		0	0	4		
DSE-3		**TBD**	Discipline Specific Electives -3	4 0	0 0	0 4	6	75
DSE-4		**TBD**	Discipline Specific Electives -4				4/5 2/1	75
Semester Total							**24**	**300**

L= Lecture, **T**= Tutorial, **P** = Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

Semester-VI

List of Core Course (CC)

CC-13: Electromagnetic Theory

CC-14: Statistical Mechanics

Discipline Specific Electives (DSE)

DSE-3: Medical Physics
Or
DSE-3: Nano Materials and Applications
Or
DSE-3 Communication Electronics

DSE-4: Digital Signal Processing
Or
DSE-4: Biological Physics
Or
DSE-4: Experimental Techniques

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

SEMESTER –VI

Core Courses (CC)

CC-13: Electromagnetic Theory — Credits 06

CC13T: Electromagnetic Theory — Credits 04

Course Contents:

Maxwell Equations

Maxwell's equations. Displacement Current. Vector and Scalar Potentials. Gauge Transformations: Lorentz and Coulomb Gauge. Boundary Conditions at Interface between Different Media. Wave Equations. Plane Waves in Dielectric Media. Poynting Theorem and Poynting Vector. Electromagnetic (EM) Energy Density. Physical Concept of Electromagnetic Field Energy Density, Momentum Density and Angular Momentum Density.

EM Wave Propagation in Unbounded Media

Plane EM waves through vacuum and isotropic dielectric medium, transverse nature of plane EM waves, refractive index and dielectric constant, wave impedance. Propagation through conducting media, relaxation time, skin depth. Wave propagation through dilute plasma, electrical conductivity of ionized gases, plasma frequency, refractive index, skin depth, application to propagation through ionosphere.

EM Wave in Bounded Media

Boundary conditions at a plane interface between two media. Reflection & Refraction of plane waves at plane interface between two dielectric media-Laws of Reflection & Refraction. Fresnel's Formulae for perpendicular & parallel polarization cases, Brewster's law. Reflection &Transmission coefficients. Total internal reflection, evanescent waves. Metallic reflection (normal Incidence).

Polarization of Electromagnetic Waves

Description of Linear, Circular and Elliptical Polarization. Propagation of E.M. Waves in Anisotropic Media. Symmetric Nature of Dielectric Tensor. Fresnel's Formula. Uniaxial and Biaxial Crystals. Light Propagation in Uniaxial Crystal. Double Refraction. Polarization by Double Refraction. Nicol Prism. Ordinary & extraordinary refractive indices. Production & detection of Plane, Circularly and Elliptically Polarized Light. Phase Retardation Plates: Quarter-Wave and Half-Wave Plates. Babinet Compensator and its Uses. Analysis of Polarized Light.

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

Rotatory Polarization: Optical Rotation. Biot's Laws for Rotatory Polarization. Fresnel's Theory of optical rotation. Calculation of angle of rotation. Experimental verification of Fresnel's theory. Specific rotation. Laurent's half-shade polarimeter.

Wave guides

Planar optical wave guides. Planar dielectric wave guide. Condition of continuity at interface. Phase shift on total reflection. Eigenvalue equations. Phase and group velocity of guided waves. Field energy and Power transmission.

Optical Fibres

Numerical Aperture. Step and Graded Indices (Definitions Only). Single and Multiple Mode Fibres (Concept and Definition Only).

Suggested Readings:

1. Introduction to Electrodynamics, D.J. Griffiths, 3rd Ed., 1998, Benjamin Cummings.
2. Optics, E. Hecht, 2016, Pearson.
3. Elements of Electromagnetics, M.N.O. Sadiku, 2001, Oxford University Press.
4. Introduction to Electromagnetic Theory, T.L. Chow, 2006, Jones & Bartlett Learning
5. Fundamentals of Electromagnetics, M.A.W. Miah, 1982, Tata McGraw Hill
6. Electromagnetic field Theory, R.S. Kshetrimayun, 2012, Cengage Learning
7. Engineering Electromagnetic, Willian H. Hayt, 8th Edition, 2012, McGraw Hill.
8. Electromagnetic Field Theory for Engineers & Physicists, G. Lehner, 2010, Springer

Additional Books for Reference

1. Electromagnetic Fields & Waves, P.Lorrain & D.Corson, 1970, W.H.Freeman & Co.
2. Electromagnetics, J.A. Edminster, Schaum Series, 2006, Tata McGraw Hill.
3. Electromagnetic field theory fundamentals, B. Guru and H. Hiziroglu, 2004,Cambridge University Press

C13P: Electromagnetic Theory (Lab) **Credits 02**

List of Practical:

1. To verify the law of Malus for plane polarized light.

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

2. To determine the specific rotation of sugar solution using Polarimeter.
3. To analyze elliptically polarized Light by using a Babinet's compensator.
4. To study dependence of radiation on angle for a simple Dipole antenna.
5. To determine the wavelength and velocity of ultrasonic waves in a liquid (Kerosene Oil, Xylene, etc.) by studying the diffraction through ultrasonic grating.
6. To study the reflection, refraction of microwaves.
7. To study Polarization and double slit interference in microwaves.
8. To determine the refractive index of liquid by total internal reflection using Wollaston's air-film.
9. To determine the refractive Index of (1) glass and (2) a liquid by total internal reflection using a Gaussian eyepiece.
10. To study the polarization of light by reflection and determine the polarizing angle for air-glass interface.
11. To verify the Stefan`s law of radiation and to determine Stefan's constant.
12. To determine the Boltzmann constant using V-I characteristics of PN junction diode.

Suggested Readings:

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practical, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
4. Electromagnetic Field Theory for Engineers & Physicists, G. Lehner, 2010, Springer

CC-14: Statistical Mechanics — Credits 06

CC14T: Statistical Mechanics — Credits 04

Course Contents:

Classical Statistical Mechanics

Macrostate & Microstate, Elementary Concept of Ensemble, Microcanonical ensemble, Phase Space, Entropy and Thermodynamic Probability, Canonical ensemble, Partition Function,

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

Thermodynamic Functions of an Ideal Gas, Classical Entropy Expression, Gibbs Paradox, Sackur Tetrode equation, Law of Equipartition of Energy (with proof) – Applications to Specific Heat and its Limitations, Thermodynamic Functions of a Two-Energy Levels System, Negative Temperature. Grand canonical ensemble and chemical potential.

Classical Theory of Radiation

Properties of Thermal Radiation. Blackbody Radiation. Pure temperature dependence. Kirchhoff's law. Stefan-Boltzmann law: Thermodynamic proof. Radiation Pressure. Wien's Displacement law. Wien's Distribution Law. Saha's Ionization Formula. Rayleigh-Jean's Law. Ultraviolet Catastrophe.

Quantum Theory of Radiation

Spectral Distribution of Black Body Radiation. Planck's Quantum Postulates. Planck's Law of Blackbody Radiation: Experimental Verification. Deduction of (1) Wien's Distribution Law, (2) Rayleigh-Jeans Law, (3) Stefan-Boltzmann Law, (4) Wien's Displacement law from Planck's law.

Bose-Einstein Statistics:

B-E distribution law, Thermodynamic functions of a strongly Degenerate Bose Gas, Bose Einstein condensation, properties of liquid He (qualitative description), Radiation as a photon gas and Thermodynamic functions of photon gas. Bose derivation of Planck's law.

Fermi-Dirac Statistics:

Fermi-Dirac Distribution Law, Thermodynamic functions of a Completely and strongly Degenerate Fermi Gas, Fermi Energy, Electron gas in a Metal, Specific Heat of Metals, Relativistic Fermi gas, White Dwarf Stars, Chandrasekhar Mass Limit.

Suggested Readings:

1. Statistical Mechanics, R.K. Pathria, Butterworth Heinemann: 2nd Ed.,1996, Oxford University Press.
2. Statistical Physics, Berkeley Physics Course, F. Reif, 2008, Tata McGraw-Hill
3. Statistical and Thermal Physics, S. Lokanathan and R.S. Gambhir. 1991, Prentice Hall
4. Thermodynamics, Kinetic Theory and Statistical Thermodynamics, Francis W. Sears and Gerhard L. Salinger, 1986, Narosa.
5. Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009, Springer
6. An Introduction to Statistical Mechanics & Thermodynamics, R.H. Swendsen, 2012, Oxford Univ. Press

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

7. Statistical Mechanics – an elementary outline, A. Lahiri, 2008, Universities Press

C14P: Statistical Mechanics (Lab) **Credits 02**

List of Practical:

1. Computational analysis of the behavior of a collection of particles in a box that satisfy Newtonian mechanics and interact via the Lennard-Jones potential, varying the total number of particles N and the initial conditions:
   a) Study of local number density in the equilibrium state (i) average; (ii) fluctuations.
   b) Study of transient behavior of the system (approach to equilibrium).
   c) Relationship of large N and the arrow of time.
   d) Computation of the velocity distribution of particles for the system and comparison with the Maxwell velocity distribution.
   e) Computation and study of mean molecular speed and its dependence on particle mass.
   f) Computation of fraction of molecules in an ideal gas having speed near the most probable speed.
2. Computation of the partition function Z(□) for examples of systems with a finite number of single particle levels (e.g., 2 level, 3 level, etc.) and a finite number of non-interacting particles N under Maxwell-Boltzmann, Fermi-Dirac and Bose- Einstein statistics:
   a) Study of how Z(□), average energy <E>, energy fluctuation □E, specific heat at constant volume C_v, depend upon the temperature, total number of particles N and the spectrum of single particle states.
   b) Ratios of occupation numbers of various states for the systems considered above
   c) Computation of physical quantities at large and small temperature T and comparison of various statistics at large and small temperature T.
3. Plot Planck's law for Black Body radiation and compare it with Raleigh-Jeans Law at high temperature and low temperature.
4. Plot Specific Heat of Solids (a) Dulong-Petit law, (b) Einstein distribution function, (c) Debye distribution function for high temperature and low temperature and compare them for these two cases.
5. Plot the following functions with energy at different temperatures

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

a) Maxwell-Boltzmann distribution

b) Fermi-Dirac distribution

c) Bose-Einstein distribution

Suggested Readings:

1. Elementary Numerical Analysis, K.E. Atkinson, 3rd edn. 2007, Wiley India Edition.
2. Statistical Mechanics, R.K. Pathria, Butterworth Heinemann: 2nd Ed., 1996, Oxford University Press.
3. Introduction to Modern Statistical Mechanics, D. Chandler, Oxford University Press, 1987.
4. Thermodynamics, Kinetic Theory and Statistical Thermodynamics, Francis W. Sears and Gerhard L. Salinger, 1986, Narosa.
5. Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009, Springer.
6. Statistical and Thermal Physics with computer applications, Harvey Gould and Jan Tobochnik, Princeton University Press, 2010.
7. Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández. 2014 Springer.

Discipline Specific Electives (DSE)

DSE-3: Medical Physics — Credits 06

DSE3T: Medical Physics — Credits 04

Course Contents:

Physics of the Body-I

Basic Anatomical Terminology: Standard Anatomical Position, Planes. Familiarity with terms like- Superior, Inferior, Anterior, Posterior, Medial, Lateral, Proximal and Distal. **Mechanics of the body:** Skeleton, forces, and body stability. Muscles and dynamics of body movement. Physics of Locomotors Systems: joints and movements, Stability and Equilibrium. **Energy household of the body:** Energy balance in the body, Energy consumption of the body, Heat losses of the body, Thermal Regulation. **Pressure system of body:** Physics of breathing, Physics of cardiovascular system.

Physics of the Body-II

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

Acoustics of the body: Nature and characteristics of sound, Production of speech, Physics of the ear, Diagnostics with sound and ultrasound. **Optical system of the body:** Physics of the eye. **Electrical system of the body:** Physics of the nervous system, Electrical signals and information transfer.

Physics of Diagnostic and Therapeutic Systems-I (X-Rays)

X Ray: Electromagnetic spectrum, production of x-rays, x-ray spectra, Brehmsstrahlung, Characteristic x-ray. **X-ray tubes & types:** Coolidge tube, x-ray tube design, tube cooling stationary mode, Rotating anode x-ray tube, Tube rating, quality and intensity of x-ray. X-ray generator circuits, half wave and full wave rectification, filament circuit, kilo voltage circuit. Single and three phase electric supply. Power ratings. Types of X-Ray Generator, high frequency generator, exposure timers and switches, HT cables.

Radiation Physics

Radiation units exposure, absorbed dose, units: rad, grey, relative biological effectiveness, effective dose- Rem & Sievert, inverse square law. Interaction of radiation with matter Compton & photoelectric effect, linear attenuation coefficient. **Radiation Detectors:** ionization (Thimble chamber, condenser chamber), chamber. Geiger Muller counter, Scintillation counters and Solid State detectors, TFT.

Medical Imaging Physics

Evolution of Medical Imaging, X-ray diagnostics and imaging, Physics of nuclear magnetic resonance (NMR), NMR imaging, MRI Radiological imaging, Ultrasound imaging, Physics of Doppler with applications and modes, Vascular Doppler. **Radiography:** Filters, grids, cassette, X-ray film, film processing, fluoroscopy. **Computed tomography scanner**- principle and function, display, generations, mammography. Thyroid uptake system and Gamma camera (Only Principle, function and display).

Radiation Oncology Physics

External Beam Therapy (Basic Idea): Telecobalt, Conformal Radiation Therapy (CRT), 3DCRT, IMRT, Image Guided Radiotherapy, EPID, Rapid Arc, Proton Therapy, Gamma Knife, Cyber Knife. **Contact Beam Therapy (Basic Idea):** Brachytherapy- LDR and HDR, Intra Operative Brachytherapy. Radiotherapy, kilo voltage machines, deep therapy machines, Telecobalt machines, Medical linear accelerator. Basics of Teletherapy units, deep X-ray, Telecobalt units, Radiation protection, external beam characteristics, dose maximum and build up – bolus, percentage depth dose, tissue maximum ratio and tissue phantom ratio, Planned target Volume and Gross Tumour Volume.

Radiation and Radiation Protection

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

Principles of radiation protection, protective materials-radiation effects, somatic, genetic stochastic and deterministic effect. **Personal monitoring devices:** TLD film badge, pocket dosimeter, OSL dosimeter. Radiation dosimeter. Natural radioactivity, Biological effects of radiation, Radiation monitors. Steps to reduce radiation to Patient, Staff and Public. Dose Limits for Occupational workers and Public. AERB: Existence and Purpose.

Physics of Diagnostic and Therapeutic Systems- II

Diagnostic nuclear medicine: Radiopharmaceuticals for radioisotope imaging, Radioisotope imaging equipment, Single photon and positron emission tomography. **Therapeutic nuclear medicine:** Interaction between radiation and matter Dose and isodose in radiation treatment. Medical Instrumentation: Basic Ideas of Endoscope and Cautery, Sleep Apnea and Cpap Machines, Ventilator and its modes.

Suggested Readings:

1. Medical Physics, J.R. Cameron and J.G.Skofronick, Wiley (1978)
2. Basic Radiological Physics Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi (2003)
3. Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins (1990)
4. Physics of the human body, Irving P. Herman, Springer (2007).
5. Physics of Radiation Therapy : F M Khan - Williams and Wilkins, 3rd edition (2003)
6. The essential physics of Medical Imaging: Bushberg, Seibert, Leidholdt and Boone Lippincot Williams and Wilkins, Second Edition (2002)
7. Handbook of Physics in Diagnostic Imaging: R.S.Livingstone: B.I. Publication Pvt Ltd.
8. The Physics of Radiology-H E Johns and Cunningham.

DSE3P: Medical Physics (Lab) **Credits 02**

List of Practical:

1. Understanding the working of a manual Hg Blood Pressure monitor and measure the Blood Pressure.
2. Understanding the working of a manual optical eye-testing machine and to learn eye-testing procedure.

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

3. Correction of Myopia (short sightedness) using a combination of lenses on an optical bench/breadboard.
4. Correction of Hypermetropia/Hyperopia (long sightedness) using a combination of lenses on an optical bench/breadboard.
5. To learn working of Thermoluminescent dosimeter (TLD) badges and measure the background radiation.
6. Familiarization with Geiger-Muller (GM) Counter and to measure background radiation.
7. Familiarization with Radiation meter and to measure background radiation.
8. Familiarization with the Use of a Vascular Doppler.

Suggested Readings:

1. Basic Radiological Physics, Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi (2003)
2. Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins (1990)
3. Physics of Radiation Therapy : F M Khan - Williams and Wilkins, 3rd edition (2003)
4. The essential physics of Medical Imaging: Bushberg, Seibert, Leidholdt and Boone Lippincot Williams and Wilkins, Second Edition (2002)
5. Handbook of Physics in Diagnostic Imaging: Roshan S. Livingstone: B. I. Publications Pvt Ltd.
6. The Physics of Radiology-H E Johns and Cunningham.

Or

DSE-3: Nano Materials and Applications — Credits 06

DSE3T: Nano Materials and Applications — Credits 04

Course Contents:

Nanoscale Systems

Length scales in physics, Nanostructures: 1D, 2D and 3D nanostructures (nanodots, thin films, nanowires, nanorods), Band structure and density of states of materials at nanoscale, Size Effects in nano systems, Quantum confinement: Applications of Schrodinger equation- Infinite potential well,

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

potential step, potential box, quantum confinement of carriers in 3D, 2D, 1D nanostructures and its consequences.

Synthesis of Nanostructure Materials

Top down and Bottom up approach, Photolithography. Ball milling. Gas phase condensation. Vacuum deposition. Physical vapor deposition (PVD): Thermal evaporation, E-beam evaporation, Pulsed Laser deposition. Chemical vapor deposition (CVD). Sol-Gel. Electro deposition. Spray pyrolysis. Hydrothermal synthesis. Preparation through colloidal methods. MBE growth of quantum dots.

Characterization

X-Ray Diffraction. Optical Microscopy. Scanning Electron Microscopy. Transmission Electron Microscopy. Atomic Force Microscopy. Scanning Tunneling Microscopy.

Optical Properties

Coulomb interaction in nanostructures. Concept of dielectric constant for nanostructures and charging of nanostructure. Quasi-particles and excitons. Excitons in direct and indirect band gap semiconductor nanocrystals. Quantitative treatment of quasi-particles and excitons, charging effects. Radiative processes: General formalization-absorption, emission and luminescence. Optical properties of heterostructures and nanostructures.

Electron Transport

Carrier transport in nanostrucutures. Coulomb blockade effect, thermionic emission, tunneling and hoping conductivity. Defects and impurities: Deep level and surface defects.

Applications

Applications of nanoparticles, quantum dots, nanowires and thin films for photonic devices (LED, solar cells). Single electron transfer devices (no derivation). CNT based transistors. Nanomaterial Devices: Quantum dots heterostructure lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots -magnetic data storage. Micro Electromechanical Systems (MEMS), Nano Electromechanical Systems (NEMS).

Suggested Readings:

1. C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).
2. S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publishing Company).
3. K.K. Chattopadhyay and A. N. Banerjee, Introduction to Nanoscience and Technology (PHI Learning Private Limited).
4. Richard Booker, Earl Boysen, Nanotechnology (John Wiley and Sons).

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

5. M. Hosokawa, K. Nogi, M. Naita, T. Yokoyama, Nanoparticle Technology Handbook (Elsevier, 2007).
6. Introduction to Nanoelectronics, V.V. Mitin, V.A. Kochelap and M.A. Stroscio, 2011, Cambridge University Press.
7. Bharat Bhushan, Springer Handbook of Nanotechnology (Springer-Verlag, Berlin, 2004).

DSE3B: Nano Materials and Applications (Lab) **Credits 02**

List of Practical:

1. Synthesis of metal nanoparticles by chemical route.
2. Synthesis of semiconductor nanoparticles.
3. Surface Plasmon study of metal nanoparticles by UV-Visible spectrophotometer.
4. XRD pattern of nanomaterials and estimation of particle size.
5. To study the effect of size on color of nanomaterials.
6. To prepare composite of CNTs with other materials.
7. Growth of quantum dots by thermal evaporation.
8. Prepare a disc of ceramic of a compound using ball milling, pressing and sintering, and study its XRD.
9. Fabricate a thin film of nanoparticles by spin coating (or chemical route) and study transmittance spectra in UV-Visible region.
10. Prepare a thin film capacitor and measure capacitance as a function of temperature or frequency.
11. Fabricate a PN diode by diffusing Al over the surface of N-type Si and study its V-I characteristic.

Suggested Readings:

1. C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).
2. S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publishing Company).

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

3. K.K. Chattopadhyay and A.N. Banerjee, Introduction to Nanoscience & Technology (PHI Learning Private Limited).
4. Richard Booker, Earl Boysen, Nanotechnology (John Wiley and Sons).

Or

DSE-3: Communication Electronics — Credits 06

DSE3T: Communication Electronics — Credits 04

Course Contents:

Electronic communication

Introduction to communication – means and modes. Need for modulation. Block diagram of an electronic communication system. Brief idea of frequency allocation for radio communication system in India (TRAI). Electromagnetic communication spectrum, band designations and usage. Channels and base-band signals. Concept of Noise, signal-to-noise (S/N) ratio.

Analog Modulation

Amplitude Modulation, modulation index and frequency spectrum. Generation of AM (Emitter Modulation), Amplitude Demodulation (diode detector), Concept of Single side band generation and detection. Frequency Modulation (FM) and Phase Modulation (PM), modulation index and frequency spectrum, equivalence between FM and PM, Generation of FM using VCO, FM detector (slope detector), Qualitative idea of Super heterodyne receiver.

Analog Pulse Modulation

Channel capacity, sampling theorem, Basic Principles- PAM, PWM, PPM, modulation and detection technique for PAM only, Multiplexing.

Digital Pulse Modulation

Need for digital transmission, Pulse Code Modulation, Digital Carrier Modulation Techniques, Sampling, Quantization and Encoding. Concept of Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Binary Phase Shift Keying (BPSK).

Introduction to Communication and Navigation systems:

Satellite Communication - Introduction, need, geosynchronous satellite orbits geostationary satellite advantages of geostationary satellites. Satellite visibility, transponders (C - Band), path loss, ground station, simplified block diagram of earth station. Uplink and downlink.

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

Mobile Telephony System – Basic concept of mobile communication, frequency bands used in mobile communication, concept of cell sectoring and cell splitting, SIM number, IMEI number, need for data encryption, architecture (block diagram) of mobile communication network, idea of GSM, CDMA, TDMA and FDMA technologies, simplified block diagram of mobile phone handset, 2G, 3G and 4G concepts (qualitative only).

GPS navigation system (qualitative idea only).

Suggested Readings:

1. Electronic Communications, D. Roddy and J. Coolen, Pearson Education India.
2. Advanced Electronics Communication Systems- Tomasi, 6th edition, Prentice Hall.
3. Electronic Communication systems, G. Kennedy, 3rd Edn, 1999, Tata McGraw Hill.
4. Principles of Electronic communication systems – Frenzel, 3rd edition, McGraw Hill
5. Communication Systems, S. Haykin, 2006, Wiley India
6. Electronic Communication system, Blake, Cengage, 5th edition.
7. Wireless communications, Andrea Goldsmith, 2015, Cambridge University Press

DSE3P: Communication Electronics (Lab) **Credits 02**

List of Practical

1. To design an Amplitude Modulator using Transistor.
2. To study envelope detector for demodulation of AM signal.
3. To study FM - Generator and Detector circuit.
4. To study AM Transmitter and Receiver.
5. To study FM Transmitter and Receiver.
6. To study Time Division Multiplexing (TDM).
7. To study Pulse Amplitude Modulation (PAM).
8. To study Pulse Width Modulation (PWM).
9. To study Pulse Position Modulation (PPM).
10. To study ASK, PSK and FSK modulators.

Suggested Readings:

1. Electronic Communication systems, G. Kennedy, 1999, Tata McGraw Hill.

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

2. Electronic Communication system, Blake, Cengage, 5th edition.

DSE-4: Digital Signal Processing — Credits 06

DSE4T: Digital Signal Processing — Credits 04

Course Contents:

Discrete-Time Signals and Systems

Classification of Signals, Transformations of the Independent Variable, Periodic and Aperiodic Signals, Energy and Power Signals, Even and Odd Signals, Discrete-Time Systems, System Properties. Impulse Response, Convolution Sum; Graphical Method; Analytical Method, Properties of Convolution; Commutative; Associative; Distributive; Shift; Sum Property System Response to Periodic Inputs, Relationship Between LTI System Properties and the Impulse Response; Causality; Stability; Invertibility, Unit Step Response.

Discrete-Time Fourier Transform

Fourier Transform Representation of Aperiodic Discrete-Time Signals, Periodicity of DTFT, Properties; Linearity; Time Shifting; Frequency Shifting; Differencing in Time Domain; Differentiation in Frequency Domain; Convolution Property. **The z-Transform:** Bilateral (Two-Sided) z-Transform, Inverse z-Transform, Relationship Between z-Transform and Discrete-Time Fourier Transform, z-plane, Region-of-Convergence; Properties of ROC, Properties; Time Reversal; Differentiation in the z-Domain; Power Series Expansion Method (or Long Division Method); Analysis and Characterization of LTI Systems; Transfer Function and Difference-Equation System. Solving Difference Equations.

Filter Concepts

Phase Delay and Group delay, Zero-Phase Filter, Linear-Phase Filter, Simple FIR Digital Filters, Simple IIR Digital Filters, All pass Filters, Averaging Filters, Notch Filters.

Discrete Fourier Transform

Frequency Domain Sampling (Sampling of DTFT), The Discrete Fourier Transform (DFT) and its Inverse, DFT as a Linear transformation, Properties; Periodicity; Linearity; Circular Time Shifting; Circular Frequency Shifting; Circular Time Reversal; Multiplication Property; Parseval's Relation, Linear Convolution Using the DFT (Linear Convolution Using Circular Convolution), Circular Convolution as Linear Convolution with aliasing.

Fast Fourier Transform

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

Direct Computation of the DFT, Symmetry and Periodicity Properties of the Twiddle factor (WN), Radix-2 FFT Algorithms; Decimation-In-Time (DIT) FFT Algorithm; Decimation-In-Frequency (DIF) FFT Algorithm, Inverse DFT Using FFT Algorithms.

Realization of Digital Filters

Non Recursive and Recursive Structures, Canonic and Non Canonic Structures, Equivalent Structures (Transposed Structure), FIR Filter structures; Direct-Form; Cascade-Form; Basic structures for IIR systems; Direct-Form I.

Finite Impulse Response Digital Filter: Advantages and Disadvantages of Digital Filters, Types of Digital Filters: FIR and IIR Filters; Difference Between FIR and IIR Filters, Desirability of Linear-Phase Filters, Frequency Response of Linear-Phase FIR Filters, Impulse Responses of Ideal Filters, Windowing Method; Rectangular; Triangular; Kaiser Window, FIR Digital Differentiators.

Infinite Impulse Response Digital Filter: Design of IIR Filters from Analog Filters, IIR Filter Design by Approximation of Derivatives, Backward Difference Algorithm, Impulse Invariance Method.

Suggested Readings:

1. Digital Signal Processing, Tarun Kumar Rawat, 2015, Oxford University Press, India
2. Digital Signal Processing, S. K. Mitra, McGraw Hill, India.
3. Modern Digital and Analog Communication Systems, B.P. Lathi, 1998, 3rd Edn. Oxford University Press.
4. Fundamentals of Digital Signal processing using MATLAB, R.J. Schilling and S.L. Harris, 2005, Cengage Learning.
5. Fundamentals of signals and systems, P.D. Cha and J.I. Molinder, 2007, Cambridge University Press.
6. Digital Signal Processing Principles Algorithm & Applications, J.G. Proakis and D.G. Manolakis, 2007, 4th Edn., Prentice Hall.

DSE4P: Digital Signal Processing (Lab) **Credits 02**

List of Practical

Simulations experiments based problems like:

1. Write a program to generate and plot the following sequences: (a) Unit sample sequence $\delta(n)$, (b) unit step sequence u(n), (c) ramp sequence r(n) , (d) real valued exponential sequence $x(n) = (0.8)^n u(n)$ for $0 \leq n \leq 50$

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

2. Write a program to compute the convolution sum of a rectangle signal (or gate function) with itself or N=5

$$x(n) = rect\left(\frac{n}{2N}\right) = \Pi\left(\frac{n}{2N}\right) = \begin{cases} 1 & -N \le n \le N \\ 0 & otherwise \end{cases}$$

3. An LTI system is specified by the difference equation

$$y(n) = 0.8y(n - 1) + x(n)$$

   a. Determine $H(e^{jw})$

   b. Calculate and plot the steady state response $y_{ss}(n)$ to

$$x(n) = \cos(0.5\pi n)u(n)$$

4. Given a casual system

$$y(n) = 0.9y(n - 1) + x(n)$$

   a. Find H(z) and sketch its pole-zero plot

   b. Plot the frequency response $IH(e^{jw})I$ and $<H(e^{jw})$

5. Design a digital filter to eliminate the lower frequency sinusoid of x(t) = sin 7t + sin 200t. The sampling frequency is fs = 500 Hz. Plot its pole zero diagram, magnitude response, input and output of the filter.

6. Let *x(n)* be a 4-point sequence:

$$x(n) = \underset{\uparrow}{\{1,1,1,1\}} = \begin{cases} 1 & 0 \le n \le 3 \\ 0 & otherwise \end{cases}$$

   Compute the DTFT $x(e^{jw})$ and plot its magnitude

   a. Compute and plot the 4 point DFT of x(n).

   b. Compute and plot the 8 point DFT of x(n) (by appending 4 zeros).

   c. Compute and plot the 16 point DFT of x(n) (by appending 12 zeros).

7. Let x(n) and h(n) be the two 4-point sequences,

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

$$x(n) = \underset{\uparrow}{\{1,2,2,1\}}$$

$$h(n) = \underset{\uparrow}{\{1,-1,-1,1\}}$$

Write a program to compute their linear convolution using circular convolution.

8. Using a rectangular window, design a FIR low-pass filter with a pass-band gain of unity, cut off frequency of 1000 Hz and working at a sampling frequency of 5 KHz. Take the length of the impulse response as 17.
9. Design an FIR filter to meet the following specifications: pass band edge F_p = 2 KHz stop band edge Fs = 5 KHz Pass band attenuation A_p = 2 dB Stop band attenuation A_s = 42 dB Sampling frequency F_s = 20 KHz
10. The frequency response of a linear phase digital differentiator is given by

$$Hd\ (e^{jw}) = jwe^{-jrw} \qquad |w| \leq \pi$$

Using a Hamming window of length M = 21, design a digital FIR differentiator. Plot the amplitude response.

Suggested Readings:

1. Digital Signal Processing, Tarun Kumar Rawat, Oxford University Press, India.
2. A Guide to MATLAB, B.R. Hunt, R.L. Lipsman, J.M. Rosenberg, 2014, 3rd Edn., Cambridge University Press
3. Fundamentals of Digital Signal processing using MATLAB, R.J. Schilling and S.L. Harris, 2005, Cengage Learning.
4. Digital Signal Processing, S. K. Mitra, McGraw Hill, India.
5. Fundamentals of signals and systems, P.D. Chaand J.I. Molinder, 2007, Cambridge University Press.
6. Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández. 2014 Springer

Or

DSE-4: Biological Physics **Credits 06**

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

DSE4T: Biological Physics **Credits 06**

Course Contents:

Overview

The boundary, interior and exterior environment of living cells. Processes: exchange of matter and energy with environment, metabolism, maintenance, reproduction, evolution. Self-replication as a distinct property of biological systems. Time scales and spatial scales. Universality of microscopic processes and diversity of macroscopic form. Types of cells. Multicellularity. Allometric scaling laws.

Molecules of life

Metabolites, proteins and nucleic acids. Their sizes, types and roles in structures and processes. Transport, energy storage, membrane formation, catalysis, replication, transcription, translation, signaling.

Typical populations of molecules of various types present in cells, their rates of production and turnover. Energy required to make a bacterial cell.

Simplified mathematical models of transcription and translation, small genetic circuits and signaling pathways. Random walks and applications to biology. Mathematical models to be studied analytically and computationally.

The complexity of life

At the level of a cell: The numbers of distinct metabolites, genes and proteins in a cell. Complex networks of molecular interactions: metabolic, regulatory and signaling networks. Dynamics of metabolic networks; the stoichiometric matrix. Living systems as complex organizations; systems biology. Models of cellular dynamics. The implausibility of life based on a simplified probability estimate, and the origin of life problem.

At the level of a multicellular organism: Numbers and types of cells in multicellular organisms. Cell types as distinct attractors of a dynamical system. Stem cells and cellular differentiation. Pattern formation and development.

Brain structure: neurons and neural networks. Brain as an information processing system. Associative memory models. Memories as attractors of the neural network dynamics.

At the level of an ecosystem and the biosphere: Food webs. Feedback cycles and self - sustaining ecosystems.

Evolution

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

The mechanism of evolution: variation at the molecular level, selection at the level of the organism. Models of evolution. The concept of genotype-phenotype map. Examples.

Suggested Readings:

1. Physics in Molecular Biology; Kim Sneppen & Giovanni Zocchi (CUP 2005)
2. Biological Physics: Energy, Information, Life; Philip Nelson (W H Freeman & Co, NY, 2004)
3. Physical Biology of the Cell (2nd Edition), Rob Phillips et al (Garland Science, Taylor & Francis Group, London & NY, 2013)
4. An Introduction to Systems Biology; Uri Alon (Chapman and Hall/CRC, Special Indian Edition, 2013)
5. Evolution; M. Ridley (Blackwell Publishers, 2009, 3rd edition)

Or

DSE-4: Experimental Techniques **Credits 06**

DSE4T: Experimental Techniques **Credits 04**

Course Contents:

Measurements

Accuracy and precision. Significant figures. Error and uncertainty analysis. Types of errors: Gross error, systematic error, random error. Statistical analysis of data (Arithmetic mean, deviation from mean, average deviation, standard deviation, chi-square) and curve fitting. Guassian distribution.

Signals and Systems

Periodic and aperiodic signals. Impulse response, transfer function and frequency response of first and second order systems. Fluctuations and Noise in measurement system. S/N ratio and Noise figure. Noise in frequency domain. Sources of Noise: Inherent fluctuations, Thermal noise, Shot noise, 1/f noise.

Shielding and Grounding

Methods of safety grounding. Energy coupling. Grounding. Shielding: Electrostatic shielding. Electromagnetic Interference.

Transducers &industrial instrumentation (working principle, efficiency, applications)

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

Static and dynamic characteristics of measurement Systems. Generalized performance of systems, Zero order first order, second order and higher order systems. Electrical, Thermal and Mechanical systems. Calibration. Transducers and sensors. Characteristics of Transducers. Transducers as electrical element and their signal conditioning. Temperature transducers: RTD, Thermistor, Thermocouples, Semiconductor type temperature sensors (AD590, LM35, LM75) and signal conditioning. Linear Position transducer: Strain gauge, Piezoelectric. Inductance change transducer: Linear variable differential transformer (LVDT), Capacitance change transducers. Radiation Sensors: Principle of Gas filled detector, ionization chamber, scintillation detector.

Digital Multimeter

Comparison of analog and digital instruments. Block diagram of digital multimeter, principle of measurement of I, V, C. Accuracy and resolution of measurement.

Impedance Bridges and Q-meter

Block diagram and working principles of RLC Bridge. Q - meter and its working operation. Digital LCR bridge.

Vacuum Systems

Characteristics of vacuum: Gas law, Mean free path. Application of vacuum. Vacuum system-Chamber, Mechanical pumps, Diffusion pump & Turbo Modular pump, Pumping speed, Pressure gauges (Pirani, Penning, ionization).

Suggested Readings:

1. Measurement, Instrumentation and Experiment Design in Physics and Engineering,
2. M. Sayer and A. Mansingh, PHI Learning Pvt. Ltd.
3. Experimental Methods for Engineers, J.P. Holman, McGraw Hill
4. Introduction to Measurements and Instrumentation, A.K. Ghosh, 3rd Edition, PHI Learning Pvt. Ltd.
5. Transducers and Instrumentation, D.V.S. Murty, 2nd Edition, PHI Learning Pvt. Ltd.
6. Instrumentation Devices and Systems, C.S. Rangan, G.R. Sarma, V.S.V. Mani, Tata McGraw Hill
7. Principles of Electronic Instrumentation, D. Patranabis, PHI Learning Pvt. Ltd.
8. Electronic circuits: Handbook of design & applications, U.Tietze, Ch.Schenk, Springer.

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

DSE4P: Experimental Techniques (Lab) **Credits 02**

List of Practical

1. Determine output characteristics of a LVDT & measure displacement using LVDT
2. Measurement of Strain using Strain Gauge.
3. Measurement of level using capacitive transducer.
4. To study the characteristics of a Thermostat and determine its parameters.
5. Study of distance measurement using ultrasonic transducer.
6. Calibrate Semiconductor type temperature sensor (AD590, LM35, or LM75)
7. To measure the change in temperature of ambient using Resistance Temperature Device (RTD).
8. Create vacuum in a small chamber using a mechanical (rotary) pump and measure the chamber pressure using a pressure gauge.
9. Comparison of pickup of noise in cables of different types (co-axial, single shielded, double shielded, without shielding) of 2m length, understanding of importance of grounding using function generator of mV level & an oscilloscope.
10. To design and study the Sample and Hold Circuit.
11. Design and analyze the Clippers and Clampers circuits using junction diode
12. To plot the frequency response of a microphone.
13. To measure Q of a coil and influence of frequency, using a Q-meter.

Suggested Readings:

1. Electronic circuits: Handbook of design and applications, U. Tietze and C. Schenk, 2008, Springer.
2. Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1990, Mc-Graw Hill.
3. Measurement, Instrumentation and Experiment Design in Physics & Engineering, M. Sayer and A. Mansingh, 2005, PHI Learning.

****

Downloaded from Vidyasagar University by 47.11.163.203 on 05 September 2020 : 12:19:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physics_hons6_Revised.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B Sc (General)
in

Physics
Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.37.216.194 on 29 Jun 2023 11:26:35 +05:30 (Copyright Vidyasagar University)
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Physics

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Mechanics - **Lab**	6	4-0-4	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
		Semester - I : Total			**20**				**275**
	II	SEMESTER-II							
		Core-4 (DSC-1B)		Electricity and Magnetism - **Lab**	6	4-0-4	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.37.216.194 on 29 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	**III**	**SEMESTER-III**					**CA**	**ESE**	**TOTAL**
		Core-7 (DSC-1C)		Thermal Physics and Statistical Mechanics - **Lab**	6	4-0-4	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 3 : Total			**20**				**275**
	IV	**SEMESTER-IV**							
		Core-10 (DSC-1D)		Waves and Optics - **Lab**	6	4-0-4	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 4 : Total			**20**				**275**

Downloaded from Vidyasagar University by 103.37.216.194 on 29 Jun 2022 11:26:35 C, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Physics)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 5 : Total			**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Physics)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 6 : Total			**20**				**275**
		Total in all semester:			**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.37.216.194 on 29 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_Revised.pdf

List of Core and Elective Courses

Core Courses (CC)

DSC-1A: Mechanics
DSC-1B: Electricity and Magnetism
DSC-1C: Thermal Physics and Statistical
DSC-1D: Waves and Optics

Discipline Specific Electives (DSE)

DSE-1: Elements of Modern Physics
Or
DSE-1: Mathematical Physics
Or
DSE-1: Quantum Mechanics
Or
DSE-1: Medical Physics

DSE-2: Solid State Physics
Or
DSE-2: Digital and Analog Circuits and Instrumentation
Or
DSE-2: Nuclear & Particle Physics

Skill Enhancement Course (SEC)

SEC-1: Physics Workshop Skill
Or
SEC-1: Computational Physics

SEC-2: Electrical Circuits and Network Skills
Or
SEC-2: Basic Instrumentation Skills

SEC-3: Renewable Energy and Energy Harvesting

SEC-4: Weather Forecasting

Or
SEC -4: Radiation Safety

Or
SEC-4: Applied Optics

Downloaded from Vidyasagar University by 103.79.216.194 on 09 Jun 2023 11:16:35 C, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Core Courses (CC)

DSC-1A(CC-1): Mechanics **Credits 06**

DSC1AT: Mechanics **Credits 04**

Course Contents

Vectors: Vector algebra. Scalar and vector products. Derivatives of a vector with respect to a parameter.

Ordinary Differential Equations:1st order homogeneous differential equations. 2nd order homogeneous differential equations with constant coefficients.

Laws of Motion: Frames of reference. Newton's Laws of motion. Dynamics of a system of particles. Centre of Mass.

Momentum and Energy: Conservation of momentum. Work and energy. Conservation of energy. Motion of rockets.

Rotational Motion: Angular velocity and angular momentum. Torque. Conservation of angular momentum.

Gravitation: Newton's Law of Gravitation. Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant). Kepler's Laws (statement only). Satellite in circular orbit and applications. Geosynchronous orbits. Weightlessness. Basic idea of global positioning system (GPS).

Oscillations: Simple harmonic motion. Differential equation of SHM and its solutions. Kinetic and Potential Energy, Total Energy and their time averages. Damped oscillations.

Elasticity: Hooke's law - Stress-strain diagram - Elastic moduli-Relation between elastic constants - Poisson's Ratio-Expression for Poisson's ratio in terms of elastic constants - Work done in stretching and work done in twisting a wire - Twisting couple on a cylinder - Determination of Rigidity modulus by static torsion – Torsional pendulum-Determination of Rigidity modulus and moment of inertia - q, η and σ by Searles method

Special Theory of Relativity: Constancy of speed of light. Postulates of Special Theory of elativity. Length contraction. Time dilation. Relativistic addition of velocities.

Suggested Readings:

- University Physics. FW Sears, MW Zemansky and HD Young13/e, 1986. Addison-Wesley
- Mechanics Berkeley Physics course,v.1: Charles Kittel, et. Al. 2007, Tata McGraw-Hill.
- Physics – Resnick, Halliday & Walker 9/e, 2010, Wiley
- Engineering Mechanics, Basudeb Bhattacharya, 2nd edn., 2015, Oxford University Press
- University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

DSC 1AP: Mechanics (Practical) **Credits 02**

Practical:

1. Measurements of length (or diameter) using vernier caliper, screw gauge and travelling microscope.
2. To determine the Height of a Building using a Sextant.
3. To determine the Moment of Inertia of a Flywheel.
4. To determine the Young's Modulus of a Wire by Optical Lever Method.
5. To determine the Modulus of Rigidity of a Wire by Maxwell's needle.
6. To determine the Elastic Constants of a Wire by Searle's method.
7. To determine g by Bar Pendulum.
8. To determine g by Kater's Pendulum.
9. To determine **g** and velocity for a freely falling body using Digital Timing Technique
10. To study the Motion of a Spring and calculate (a) Spring Constant (b) Value of g

Suggested readings:

- Advanced Practical Physics for students, B.L.Flint and H.T.Worsnop, 1971, Asia Publishing House.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
- Engineering Practical Physics, S.Panigrahi & B.Mallick,2015, Cengage Learning India Pvt. Ltd.
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

DSC-1B(CC-2): Electricity and Magnetism **Credits 06**

DSC1BT: Electricity and Magnetism **Credits 04**

Course Contents

Vector Analysis: Review of vector algebra (Scalar and Vector product), gradient, divergence, Curl and their significance, Vector Integration, Line, surface and volume integrals of Vector fields, Gauss-divergence theorem and Stoke's theorem of vectors (statement only).

Electrostatics: Electrostatic Field, electric flux, Gauss's theorem of electrostatics. Applications of Gauss theorem - Electric field due to point charge, infinite line of charge, uniformly charged spherical shell and solid sphere, plane charged sheet, charged conductor. Electric potential as line integral of electric field, potential due to a point charge, electric ipole, uniformly charged spherical shell and solid sphere. Calculation of electric field from potential. Capacitance of an isolated spherical conductor. Parallel plate, spherical and cylindrical condenser. Energy per unit volume in electrostatic field. Dielectric medium, Polarisation, Displacement vector. Gauss's theorem in dielectrics.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Parallel plate capacitor completely filled with dielectric.

Magnetism:
Magnetostatics: Biot-Savart's law & its applications- straight conductor, circular coil, solenoid carrying current. Divergence and curl of magnetic field. Magnetic vector potential. Ampere's circuital law. Magnetic properties of materials: Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Brief introduction of dia-, para- and ferro-magnetic materials.

Electromagnetic Induction: Faraday's laws of electromagnetic induction, Lenz's law, self and mutual inductance, L of single coil, M of two coils. Energy stored in magnetic field.

Maxwell`s equations and Electromagnetic wave propagation: Equation of continuity of current, Displacement current, Maxwell's equations, Poynting vector, energy density in electromagnetic field, electromagnetic wave propagation through vacuum and isotropic electric medium, transverse nature of EM waves, polarization.

Suggested Readings:

- Electricity and Magnetism, Edward M. Purcell, 1986, McGraw-Hill Education..
- Electricity and Magnetism, J.H. Fewkes & J. Yarwood. Vol. I, 1991, Oxford Univ. Press.
- Electricity and Magnetism, D C Tayal, 1988, Himalaya Publishing House.
- University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
- D.J. Griffiths, Introduction to Electrodynamics, 3rd Edn, 1998, Benjamin Cummings.

DSC1BP: Electricity and Magnetism **Credits 02**

Practical:

1. To use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current, and (d) checking electrical fuses.

2. Ballistic Galvanometer:
   (i) Measurement of charge and current sensitivity
   (ii) Measurement of CDR
   (iii) Determine a high resistance by Leakage Method
   (iv) To determine Self Inductance of a Coil by Rayleigh's Method .
3. To compare capacitances using De'Sauty's bridge.
4. Measurement of field strength B and its variation in a Solenoid (Determine dB/dx).
5. To study the Characteristics of a Series RC Circuit.
6. To study the a series LCR circuit and determine its (a) Resonant Frequency, (b) Quality Factor
7. To study a parallel LCR circuit and determine its (a) Anti-resonant frequency and (b) Quality factor Q
8. To determine a Low Resistance by Carey Foster's Bridge.
9. To verify the Thevenin and Norton theorem

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 C, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_revised.pdf

10. To verify the Superposition, and Maximum Power Transfer Theorem

Suggested Readings:

- Advanced Practical Physics for students, B.L.Flint & H.T.Worsnop, 1971, Asia Publishing House.
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.
- Engineering Practical Physics, S.Panigrahi & B.Mallick,2015, Cengage Learning India Pvt. Ltd.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

DSC-1C (CC-3): Thermal Physics and Statistical Mechanics **Credits 06**

DSC1CT: Thermal Physics and Statistical Mechanics **Credits 04**

Laws of Thermodynamics:

Thermodynamic Description of system: Zeroth Law of thermodynamics and temperature. First law and internal energy, conversion of heat into work, Various Thermodynamical Processes, Applications of First Law: General Relation between CP & CV, Work Done during Isothermal and Adiabatic Processes, Compressibility & Expansion Coefficient, Reversible & irreversible processes, Second law & Entropy, Carnot's cycle & theorem, Entropy changes in reversible & irreversible processes, Entropy-temperature diagrams, Third law of thermodynamics, Unattainability of absolute zero.

Thermodynamic Potentials: Enthalpy, Gibbs, Helmholtz and Internal Energy functions, Maxwell's relations & applications - Joule-Thompson Effect, Clausius- Clapeyron Equation, Expression for (CP – CV), CP/CV, TdS equations.

Kinetic Theory of Gases: Derivation of Maxwell's law of distribution of velocities and its experimental verification, Mean free path (Zeroth Order), Transport Phenomena: Viscosity, Conduction and Diffusion (for vertical case), Law of equipartition of energy (no derivation) and its applications to specific heat of gases; mono-atomic and diatomic gases.

Theory of Radiation: Blackbody radiation, Spectral distribution, Concept of Energy Density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.

Statistical Mechanics: Phase space, Macrostate and Microstate, Entropy and Thermodynamic probability, Maxwell-Boltzmann law - distribution of velocity - Quantum statistics - Fermi- irac distribution law - electron gas - Bose-Einstein distribution law - photon gas - comparison of three statistics.

Suggested Readings:

- Thermal Physics, S. Garg, R. Bansal and C. Ghosh, 1993, Tata McGraw-Hill.

Downloaded from Vidyasagar University by 103.79.216.194 on 09 Jun 2023 11:16:35 GMT. Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

- A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1969, Indian Press.
- Thermodynamics, Enrico Fermi, 1956, Courier Dover Publications.
- Heat and Thermodynamics, M.W.Zemasky and R. Dittman, 1981, McGraw Hill
- Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W.Sears & G.L.Salinger. 1988, Narosa
- University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
- Thermal Physics, A. Kumar and S.P. Taneja, 2014, R. chand Publications.

DSC1CP: Thermal Physics and Statistical Mechanics (lab) **Credits 02**

Practical:

1. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
2. Measurement of Planck's constant using black body radiation.
3. To determine Stefan's Constant.
4. To determine the coefficient of thermal conductivity of copper by Searle's apparatus.
5. To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.
6. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method.
7. To determine the temperature co-efficient of resistance by Platinum resistance thermometer.
8. To study the variation of thermo emf across two junctions of a thermocouple with temperature.
9. To record and analyze the cooling temperature of an hot object as a function of time using a thermocouple and suitable data acquisition system.
10. To calibrate Resistance Temperature Device (RTD) using Null Method/Off-Balance Bridge

Suggested Readings:

- Advanced Practical Physics for students, B.L.Flint & H.T.Worsnop, 1971, Asia Publishing House.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.
- A Laboratory Manual of Physics for Undergraduate Classes, D.P. Khandelwal, 1985, Vani Publication.

DSC-1D (CC-4): Waves and Optics **Credits 06**

DSC1DT: Waves and Optics **Credits 04**

Course Contents

Downloaded from Vidyasagar University by 103.37.216.194 on 29 June 2023 11:16:35 (UTC). Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Superposition of Two Collinear Harmonic oscillations: Linearity and Superposition Principle. (1) Oscillations having equal frequencies and (2) Oscillations having different frequencies (Beats).

Superposition of Two Perpendicular Harmonic Oscillations: Graphical and Analytical Methods. Lissajous Figures with equal an unequal frequency and their uses.

Waves Motion- General: Transverse waves on a string. Travelling and standing waves on a string. Normal Modes of a string. Group velocity, Phase velocity. Plane waves. Spherical waves, Wave intensity.

Fluids: Surface Tension: Synclastic and anticlastic surface - Excess of pressure - Application to spherical and cylindrical drops and bubbles - variation of surface tension with temperature - Jaegar's method. Viscosity: Viscosity - Rate flow of liquid in a capillary tube - Poiseuille's formula - Determination of coefficient of viscosity of a liquid - Variations of viscosity of a liquid with temperature lubrication. Physics of low pressure - production and measurement of low pressure - Rotary pump - Diffusion pump - Molecular pump - Knudsen absolute gauge - penning and pirani gauge – Detection of leakage.

Sound: Simple harmonic motion - forced vibrations and resonance - Fourier's Theorem - Application to saw tooth wave and square wave - Intensity and loudness of sound - Decibels - Intensity levels - musical notes - musical scale. Acoustics of buildings: Reverberation and time of reverberation - Absorption coefficient - Sabine's formula - measurement of reverberation time - Acoustic aspects of halls and auditoria.

Wave Optics: Electromagnetic nature of light. Definition and Properties of wave front. Huygens Principle.

Interference: Interference: Division of amplitude and division of wavefront. Young's Double Slit experiment. Lloyd's Mirror and Fresnel's Biprism. Phase change on reflection: Stokes' treatment. Interference in Thin Films: parallel and wedge-shaped films. Fringes of equal nclination (Haidinger Fringes); Fringes of equal thickness (Fizeau Fringes). Newton's Rings: measurement of wavelength and refractive index.

Michelson's Interferometer: Idea of form of fringes (no theory needed), Determination of wavelength, Wavelength difference, Refractive index and Visibility of fringes.

Diffraction: Fraunhofer diffraction: Single slit; Double Slit. Multiple slits & Diffraction grating. Fresnel Diffraction: Half-period zones. Zone plate. Fresnel Diffraction pattern of a straight edge, a slit and a wire using half-period zone analysis.

Polarization: Transverse nature of light waves. Plane polarized light – production and analysis. Circular and elliptical polarization.

Suggested Readings:

- Fundamentals of Optics, F A Jenkins and H E White, 1976, McGraw-Hill
- Principles of Optics, B.K. Mathur, 1995, Gopal Printing
- Fundamentals of Optics, H.R. Gulati and D.R. Khanna, 1991, R. Chand Publication

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 GMT. Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

- University Physics. FW Sears, MW Zemansky and HD Young 13/e, 1986. Addison-Wesley

DSC1DP: Waves and Optics (lab) **Credits 02**

Practical:

1. To investigate the motion of coupled oscillators
2. To determine the Frequency of an Electrically Maintained Tuning Fork by Melde's Experiment and to verify λ2 – T Law.
3. To study Lissajous Figures
4. Familiarization with Schuster`s focussing; determination of angle of prism.
5. To determine the Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille's method).
6. To determine the Refractive Index of the Material of a given Prism using Sodium Light.
7. To determine Dispersive Power of the Material of a given Prism using Mercury Light
8. To determine the value of Cauchy Constants of a material of a prism.
9. To determine the Resolving Power of a Prism.
10. To determine wavelength of sodium light using Fresnel Biprism.
11. To determine wavelength of sodium light using Newton's Rings.
12. To determine the wavelength of Laser light using Diffraction of Single Slit.
13. To determine wavelength of (1) Sodium & (2) spectrum of Mercury light using plane diffraction Grating
14. To determine the Resolving Power of a Plane Diffraction Grating.
15. To measure the intensity using photosensor and laser in diffraction patterns of single and double slits.

Suggested Readings:

- Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, 1971, Asia Publishing House.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

Discipline Specific Elective (DSE)

DSE-1: Elements of Modern Physics **Credits 06**

DSE1T: Elements of Modern Physics **Credits 04**

Course Contents

Planck's quantum, Planck's constant and light as a collection of photons; Photo-electric effect and Compton scattering. De Broglie wavelength and matter waves; Davisson-Germer experiment.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Problems with Rutherford model- instability of atoms and observation of discrete atomic spectra; Bohr's quantization rule and atomic stability; calculation of energy levels for hydrogen like atoms and their spectra.

Position measurement- gamma ray microscope thought experiment; Wave-particle duality, Heisenberg uncertainty principle- impossibility of a particle following a trajectory; Estimating minimum energy of a confined particle using uncertainty principle; Energy-time uncertainty principle.

Two slit interference experiment with photons, atoms and particles; linear superposition principle as a consequence; Matter waves and wave amplitude; Schrodinger equation for non-relativistic particles; Momentum and Energy operators; stationary states; physical interpretation of wave function, probabilities and normalization; Probability and probability current densities in one dimension.

One dimensional infinitely rigid box- energy eigenvalues and eigen functions, normalization; Quantum dot as an example; Quantum mechanical scattering and tunnelling in one dimension - across a step potential and across a rectangular potential barrier.

Size and structure of atomic nucleus and its relation with atomic weight; Impossibility of an electron being in the nucleus as a consequence of the uncertainty principle. Nature of nuclear force, NZ graph, semi-empirical mass formula and binding energy.

Radioactivity: stability of nucleus; Law of radioactive decay; Mean life & half-life; α decay; β decay - energy released, spectrum and Pauli's prediction of neutrino; γ - ray emission.

Fission and fusion - mass deficit, relativity and generation of energy; Fission - nature of fragments and emission of neutrons. Nuclear reactor: slow neutrons interacting with Uranium 235; Fusion and thermonuclear reactions.

Suggested Readings:

- Concepts of Modern Physics, Arthur Beiser, 2009, McGraw-Hill
- Modern Physics, John R. Taylor, Chris D. Zafiratos, Michael A.Dubson,2009, PHI Learning
- Six Ideas that Shaped Physics: Particle Behave like Waves, Thomas A. Moore, 2003, McGraw Hill
- Quantum Physics, Berkeley Physics Course Vol.4. E.H. Wichman, 2008, Tata McGraw-Hill Co.
- Modern Physics, R.A. Serway, C.J. Moses, and C.A.Moyer, 2005, Cengage Learning
- Modern Physics, G. Kaur and G.R. Pickrell, 2014, McGraw Hill

DSE1P: Elements of Modern Physics (Practical) **Credits 02**

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30 (Copyright Vidyasagar University)
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Practical:

1. To determine value of Boltzmann constant using V-I characteristic of PN diode.
2. To determine work function of material of filament of directly heated vacuum diode.
3. To determine value of Planck's constant using LEDs of at least 4 different colours.
4. To determine the ionization potential of mercury.
5. To determine the wavelength of H-alpha emission line of Hydrogen atom.
6. To determine the absorption lines in the rotational spectrum of Iodine vapour.
7. To study the diffraction patterns of single and double slits using laser source and measure its intensity variation using Photo-sensor and compare with incoherent source – Na light.
8. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
9. To determine the value of e/m by magnetic focusing.
10. To setup the Millikan oil drop apparatus and determine the charge of an electron.

Suggested Readings:

- Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, 1971, Asia Publishing House.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

Or

DSE-1: Mathematical Physics **Credits 06**

DSE1T: Mathematical Physics **Credits 04**

Course Contents:

Calculus of functions of more than one variable: Partial derivatives, exact and inexact differentials. Integrating factor, with simple illustration. Constrained Maximization using Lagrange Multipliers.

Fourier Series: Periodic functions. Orthogonality of sine and cosine functions, Dirichlet Conditions (Statement only). Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients. Complex representation of Fourier series. Expansion of functions with arbitrary period. Expansion of non-periodic functions over an interval. Even and odd functions and their Fourier expansions. Application. Summing of Infinite Series.

Frobenius Method and Special Functions: Singular Points of Second Order Linear Differential Equations and their importance. Frobenius method and its applications to differential equations. Legendre, Bessel, Hermite and Laguerre Differential Equations.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30 (Copyright Vidyasagar University)
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Properties of Legendre Polynomials: Rodrigues Formula, Orthogonality. Simple recurrence relations.

Some Special Integrals: Beta and Gamma Functions and Relation between them. Expression of Integrals in terms of Gamma Functions. Error Function (Probability Integral).

Partial Differential Equations: Solutions to partial differential equations, using separation of variables: Laplace's Equation in problems of rectangular, cylindrical and spherical symmetry.

Complex Analysis: Brief Revision of Complex Numbers and their Graphical Representation. Euler's formula, De Moivre's theorem, Roots of Complex Numbers. Functions of Complex Variables. Analyticity and Cauchy-Riemann Conditions. Examples of analytic functions. Singular functions: poles and branch points, order of singularity, branch cuts. Integration of a function of a complex variable. Cauchy's Inequality. Cauchy's Integral formula.

Suggested Readings:

- Mathematical Methods for Physicists: Arfken, Weber, 2005, Harris, Elsevier.
- Fourier Analysis by M.R. Spiegel, 2004, Tata McGraw-Hill.
- Mathematics for Physicists, Susan M. Lea, 2004, Thomson Brooks/Cole.
- An Introduction to Ordinary Differential Equations, Earl A Coddington, 1961, PHI Learning.
- Differential Equations, George F. Simmons, 2006, Tata McGraw-Hill.
- Essential Mathematical Methods, K.F. Riley and M.P. Hobson, 2011, Cambridge University Press
- Partial Differential Equations for Scientists and Engineers, S.J. Farlow, 1993, Dover
  Publications.
- Mathematical methods for Scientists and Engineers, D.A. McQuarrie, 2003, Viva Books.

DSE1P: Mathematical Physics (Practical) **Credits 02**

- *Highlights the use of computational methods to solve physical problems*
- *Use of computer language as a tool in solving physics problems (applications)*
- *Students can use anyone operating system Linux or Microsoft Windows*

Topics	**Description with Applications**
Introduction and Overview	Computer architecture and organization, memory and Input/output devices
Basics of scientific computing	Binary and decimal arithmetic, Floating point umbers, algorithms, Sequence, Selection and Repetition, single and double precision arithmetic, underflow & over flow emphasize the importance of making equations in terms of dimensionless variables, Iterative methods

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:55 (Copyright Vidyasagar University)
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Errors and error Analysis	Truncation and round off errors, Absolute and relative errors, Floating point computations.
Review of C & C++ Programming fundamentals	Introduction to Programming, constants, variables and data types, operators and Expressions, I/O statements, scan f and print f, c in and c out, Manipulators for data formatting, Control statements (decision making and looping statements) (*If-statement. If-else Statement. Nested if Structure. Else-if Statement. Ternary Operator. Go to Statement. Switch Statement. Unconditional and Conditional Looping. While-Loop. Do-While Loop. FOR Loop. Break and Continue Statements. Nested Loops*), Arrays (*1D&2D*) and strings, user defined functions, Structures and Unions, Idea of classes and objects
Programs: using C/C++ language	Sum & average of a list of numbers, largest of a given list of numbers and its location in the list, sorting of numbers in ascending-descending order, Binary search
Random number generation	Area of circle, area of square, volume of sphere, value of pi (**π**)
Solution of Algebraic and ranscendental equations by Bisection, Newton Raphson and Secant methods	Solution of linear and quadratic equation, solving $\alpha = \tan a; I = I_0 \left(\frac{\sin a}{a}\right)^2$ in optics
Interpolation by Newton Gregory Forward and Backward difference formula, Error estimation of linear interpolation	Evaluation of trigonometric functions e.g. *sin θ, cos θ, tan θ, etc*
Numerical differentiation (Forward and Backward difference formula) and Integration (Trapezoidal and Simpson rules), Monte Carlo method	Given Position with equidistant time data to calculate velocity and acceleration and vice-versa. Find the area of B-H Hysteresis loop
Solution of Ordinary Differential Equations (ODE) First order Differential equation Euler, modified Euler and Runge-Kutta (RK) second and fourth order methods	First order differential equation ➢ Radioactive decay ➢ Current in RC, LC circuits with DC source ➢ Newton's law of cooling ➢ Classical equations of motion ➢ Attempt following problems using RK 4 order method: ➢ Solve the coupled differential equations $\frac{dx}{dt} = y + x - \frac{x^3}{3}; \frac{dy}{dx} = -x$ For four initial conditions X(0)=0,y(0)= -1,-2,-3,-4. Plot x vs y for each of the four initial conditions on the same screen for $0 \leq t \leq 15$

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

	The differential equation describing the motion of a pendulum is $\frac{d^2}{dt_2}$ = - sin(ϑ)The pendulum is released from rest at an angular displacement α, i. e. $\vartheta(0) = \alpha \; and \; \vartheta'(0) = 0$. Solve the equation for α = 0.1, 0.5 and 1.0 and plot ϑ as a function of time in the range $0 \leq t \leq 8\pi$. Also plot the analytic solution valid for small ϑ (sin(ϑ) = ϑ

Suggested Readings:

- Introduction to Numerical Analysis, S.S. Sastry, 5th Edn., 2012, PHI Learning Pvt. Ltd.
- Schaum's Outline of Programming with C++. J.Hubbard, 2000, McGraw-Hill Publications.
- Numerical Recipes in C++: The Art of Scientific Computing, W.H. Pressetal., 3rdEdn., 2007, Cambridge University Press.
- A first course in Numerical Methods, Uri M. Ascher and Chen Greif, 2012, PHI Learning
- Elementary Numerical Analysis, K.E. Atkinson, 3rd edn. , 2007, Wiley India Edition.
- Numerical Methods for Scientists and Engineers, R.W. Hamming, 1973, Courier Dover Pub.
- An Introduction to Computational Physics, T. Pang, 2ndEdn., 2006, Cambridge Univ. Press

Or

DSE-1: Quantum Mechanics **Credits 06**

DSE1T: Quantum Mechanics **Credits 04**

Course Contents:

Time dependent Schrodinger equation: Time dependent Schrodinger equation and dynamical evolution of a quantum state; Properties of Wave Function. Interpretation of Wave Function Probability and probability current densities in three dimensions; Conditions for Physical Acceptability of Wave Functions. Normalization. Linearity and Superposition Principles. Eigen values and Eigen functions. Position, momentum & Energy operators; commutator of position and momentum operators; Expectation values of position and momentum. Wave Function of a Free Particle.

Time independent Schrodinger equation-Hamiltonian, stationary states and energy eigen values; expansion of an arbitrary wave function as a linear combination of energy eigen functions; General solution of the time dependent Schrodinger equation in terms of linear combinations of stationary states; Application to the spread of Gaussian wave packet for a free particle in one dimension; wave packets, Fourier transforms and momentum space wave function; Position-momentum uncertainty principle.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30 (Copyright Vidyasagar University)
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_Revised.pdf

General discussion of bound states in an arbitrary potential- continuity of wave function, boundary condition and emergence of discrete energy levels; application to one-dimensional problem- square well potential; Quantum mechanics of simple harmonic oscillator-energy levels and energy eigen functions using Frobenius method.

Quantum theory of hydrogen-like atoms: time independent Schrodinger equation in spherical polar coordinates; separation of variables for the second order partial differential equation; angular momentum operator and quantum numbers; Radial wave functions from Frobenius method; Orbital angular momentum quantum numbers l and m; s, p, d,.. shells (idea only)

Atoms in Electric and Magnetic Fields:- Electron Angular Momentum. Space Quantization. Electron Spin and Spin Angular Momentum. Larmor's Theorem. Spin Magnetic Moment. Stern-Gerlach Experiment. Zeeman Effect: Electron Magnetic Moment and Magnetic Energy, Gyromagnetic Ratio and Bohr Magneton.

Atoms in External Magnetic Fields : - Normal and Anomalous Zeeman Effect.

Many electron atoms:- Pauli's Exclusion Principle. Symmetric and Antisymmetric Wave Functions. Periodic table. Fine structure. Spin orbit coupling. Spectral Notations for Atomic States. Total Angular Momentum. Vector Model. Spin-orbit coupling in atoms-L-S and J-J couplings.

Suggested Readings:

- A Text book of Quantum Mechanics, P.M. Mathews & K. Venkatesan, 2nd Ed., 2010, McGraw Hill
- Quantum Mechanics, Robert Eisberg and Robert Resnick, 2nd Edn., 2002, Wiley.
- Quantum Mechanics, Leonard I. Schiff, 3rd Edn. 2010, Tata McGraw Hill.
- Quantum Mechanics, G. Aruldhas, 2ndEdn. 2002, PHI Learning of India.
- Quantum Mechanics, Bruce Cameron Reed, 2008, Jones and Bartlett Learning.
- Quantum Mechanics for Scientists & Engineers, D.A.B. Miller, 2008, Cambridge University Press

Additional Books for Reference

- Quantum Mechanics, Eugen Merzbacher, 2004, John Wiley and Sons, Inc.
- Introduction to Quantum Mechanics, David J. Griffith, 2nd Ed. 2005, Pearson Education
- Quantum Mechanics, Walter Greiner, 4thEdn., 2001, Springer

DSE1P: Quantum Mechanics (Practical) **Credits 02**

Practical:

Use C/C++/Scilab for solving the following problems based on Quantum Mechanics like

1. Solve the s-wave Schrodinger equation for the ground state and the first excited

Downloaded from Vidyasagar University by 103.79.216.194 on 09 Jun 2023 11:16:35 GMT. Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_Revised.pdf

state of the hydrogen atom:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{n^2}[v(r) - E] \; where \; V(r) = \frac{e^2}{r}$$

Here, m is the reduced mass of the electron. Obtain the energy eigenvalues and plot the corresponding wavefunctions. Remember that the ground state energy of the hydrogen atom is ≈ -13.6 eV. Take e = 3.795 (eVÅ)1/2, ħc = 1973 (eVÅ) and m = 0.511x106eV/c2.

2. Solve the s-wave radial Schrodinger equation for an atom:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{n^2}[v(r) - E]$$

Where m is the reduced mass of the system (which can be chosen to be the mass of an electron), for the screened coulomb potential

$$V(r) = -\frac{e^2}{r}e^{-r/a}$$

Find the energy (in eV) of the ground state of the atom to an accuracy of three significant digits. Also, plot the corresponding wavefunction. Take e = 3.795 (eVÅ)1/2, m = 0.511x106eV/c2 , and a = 3Å, 5Å, 7Å. In these units ħc = 1973 (eVÅ). The ground state energy is expected to be above -12 eV in all three cases.

3. Solve the s-wave radial Schrodinger equation for a particle of mass m:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{n^2}[v(r) - E]$$

For the anharmonic oscillator potential

$$V(r) = \frac{1}{2}kr^2 + \frac{1}{3}br^3$$

for the ground state energy (in MeV) of the particle to an accuracy of three significant digits. Also, plot the corresponding wave function. Choose m = 940 MeV/c2, k = 100 MeV fm-2, b = 0, 10, 30 MeV fm-3 In these units, cħ = 197.3 MeV fm. The ground state energy I expected to lie between 90 and 110 MeV for all three cases.

4. Solve the s-wave radial Schrodinger equation for the vibrations of hydrogen molecule:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2^u}{n^2}[V(r) - E]$$

where μ is the reduced mass of the two-atom system for the Morse potential

$$V(r) = D\,(e^{-2ar'} - e^{-ar'}), \quad r' = \frac{r - r_0}{r}$$

Find the lowest vibrational energy (in MeV) of the molecule to an accuracy of three significant digits. Also plot the corresponding wave function. Take: m = 940x106eV/C2, D = 0.755501 eV, α = 1.44, ro = 0.131349 Å

Laboratory based experiments:

5. Study of Electron spin resonance- determine magnetic field as a function of the resonance frequency
6. Study of Zeeman effect : with external magnetic field; Hyperfine splitting

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_revised.pdf

7. To study the quantum tunnelling effect with solid state device, e.g. tunnelling current in backward diode or tunnel diode.

Suggested Readings:

- Schaum's Outline of Programming with C++. J. Hubbard, 2000, McGraw-Hill Publications.
- Numerical Recipes in C: The Art of Scientific Computing, W.H.Press et al., 3rd Edn., 2007, Cambridge University Press.
- Elementary Numerical Analysis, K.E.Atkinson, 3rd edn. , 2007, Wiley India Edition.
- A Guide to MATLAB, B.R. Hunt, R.L. Lipsman, J.M. Rosenberg, 2014, 3rd Edn., Cambridge University Press
- Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández.2014 Springer
- Scilab by example: M. Affouf 2012 ISBN: 978-1479203444
- Scilab (A Free Software to Matlab): H. Ramchandran, A.S. Nair. 2011 S. Chand and Company, New Delhi
- Scilab Image Processing: Lambert M. Surhone. 2010 Betascript Publishing
- Quantum Mechanics, Leonard I. Schiff, 3rdEdn. 2010, Tata McGraw Hill.
- Quantum Mechanics, Bruce Cameron Reed, 2008, Jones and Bartlett Learning.

Or

DSE-1: Medical Physics **Credits 06**

DSE1T: Medical Physics **Credits 04**

Course Contents:

Physics of the Body-I

Basic Anatomical Terminology: Standard Anatomical Position, Planes. Familiarity with terms like- Superior, Inferior, Anterior, Posterior, Medial, Lateral, Proximal and Distal.

Mechanics of the body: Skeleton, forces, and body stability. Muscles and dynamics of body movement. Physics of Locomotors Systems: joints and movements, Stability and Equilibrium.

Energy household of the body: Energy balance in the body, Energy consumption of the body, Heat losses of the body, Thermal Regulation.

Pressure system of body: Physics of breathing, Physics of cardiovascular system.

Physics of the Body-II

Acoustics of the body: Nature and characteristics of sound, Production of speech, Physics of the ear, Diagnostics with sound and ultrasound.

Downloaded from Vidyasagar University by 103.37.216.194 on 29 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_Revised.pdf

Optical system of the body: Physics of the eye.

Electrical system of the body: Physics of the nervous system, Electrical signals and information transfer.

Physics of diagnostic and therapeutic systems-I

X-Rays: Electromagnetic spectrum, production of x-rays, x-ray spectra, Brehmsstrahlung, Characteristic x-ray.

X-ray tubes & types: Coolidge tube, x-ray tube design, tube cooling stationary mode, Rotating anode x-ray tube, Tube rating, quality and intensity of x-ray. X-ray generator circuits, half wave and full wave rectification, filament circuit, kilo voltage circuit, types of X-Ray Generator, high frequency generator, exposure timers and switches, HT cables, HT generation.

Radiation Physics:

Radiation units exposure, absorbed dose, units: rad, gray, relative biological effectiveness, effective dose, inverse square law. Interaction of radiation with matter Compton & photoelectric effect, Rem & Sievert, linear attenuation coefficient.

Radiation Detectors:

Thimble chamber, condenser chambers, Geiger Muller counter, Scintillation counters and Solid State detectors, ionization chamber, Dosimeters, survey methods, area monitors, TLD, Semiconductor detectors.

Medical Imaging Physics:

Evolution of Medical Imaging, X-ray diagnostics and imaging, Physics of nuclear magnetic resonance (NMR), NMR imaging, MRI Radiological imaging, Ultrasound imaging, Physics of Doppler with applications and modes, Vascular Doppler.

Radiography: Filters, grids, cassette, X-ray film, film processing, fluoroscopy.

Computed Tomography Scanner- principle & function, display, generations, mammography. Thyroid uptake system and Gamma camera (Only Principle, function and display).

Radiation Oncology Physics:

External Beam Therapy (Basic Idea): Tele-cobalt, Conformal Radiation Therapy (CRT), 3DCRT, IMRT, Image Guided Radiotherapy, EPID, Rapid Arc, Proton Therapy, Gamma Knife, Cyber Knife.

Contact Beam Therapy (Basic Idea): Brachytherapy-LDR and HDR, Intra Operative Brachytherapy. Radiotherapy, kilo voltage machines, deep therapy machines, Telecobalt machines, Medical linear accelerator. Basics of Teletherapy units, deep x-ray, Telecobalt units, medical linear accelerator, Radiation protection,

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

external beam characteristics, dose maximum and build up – bolus, percentage depth dose, tissue maximum ratio and tissue phantom ratio, Planned target Volume and Gross Tumour Volume.

Radiation and Radiation Protection:

Principles of radiation protection, protective materials-radiation effects, somatic, genetic stochastic and deterministic effect.

Personal monitoring devices: TLD film badge, pocket dosimeter, OSL dosimeter. Radiation dosimeter. Natural radioactivity, Biological effects of radiation, Radiation monitors**.** Steps to reduce radiation to Patient, Staff and Public. Dose Limits for occupational workers and Public.

AERB: Existence and Purpose.

Physics of Diagnostic and Therapeutic Systems - II

Diagnostic nuclear medicine: Radiopharmaceuticals for radioisotope imaging, Radioisotope imaging equipment, Single photon and positron emission tomography.

Therapeutic nuclear medicine: Interaction between radiation and matter Dose and isodose in radiation treatment.

Medical Instrumentation: Basic Ideas of Endoscope and Cautery, Sleep Apnoea and Cpap Machines, Ventilator and its modes.

Suggested Readings:

- Medical Physics, J.R. Cameron and J.G. Skofronick, Wiley .
- Basic Radiological Physics Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi.
- Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins.
- Physics of Radiation Therapy: F M Khan - Williams and Wilkins, Third edition.
- Physics of the human body, Irving P. Herman, Springer.
- The essential physics of Medical Imaging: Bushberg, Seibert, Leidholdt and Boone Lippincot Williams and Wilkins, 2nd edn.
- Handbook of Physics in Diagnostic Imaging: R.S. Livingstone: B.I. Publication Pvt Ltd.
- The Physics of Radiology-H E Johns and Cunningham.

DSE1P: Medical Physics (Practical) **Credits 02**

Practical:

1. Understanding the working of a manual Hg Blood Pressure monitor and measure the Blood Pressure.

Downloaded from Vidyasagar University by 103.37.216.194 on 29 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

2. Understanding the working of a manual optical eye-testing machine and to learn eye-testing.
3. Correction of Myopia (short sightedness) using a combination of lenses on an optical bench/breadboard.
4. Correction of Hypermetropia/Hyperopia (long sightedness) using a combination of lenses on an optical bench/breadboard.
5. To learn working of Thermoluminescent dosimeter (TLD) badges and measure the background radiation.
6. Familiarization with Geiger-Muller (GM) Counter and to measure background radiation.
7. Familiarization with Radiation meter and to measure background radiation.
8. Familiarization with the Use of a Vascular Doppler.

Suggested Readings:

- Basic Radiological Physics Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi .
- Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins .
- Physics of Radiation Therapy: F M Khan - Williams and Wilkins, Third edition .
- The essential physics of Medical Imaging: Bushberg, Seibert, Leidholdt and Boone Lippincot Williams and Wilkins, Second Edition .
- The Physics of Radiology-H E Johns and Cunningham.
- Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, Asia Publishing House.
- Handbook of Physics in Diagnostic Imaging: Roshan S. Livingstone: B. I. Publications Pvt Ltd.
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, Kitab Mahal, New Delhi.

DSE-2: Solid State Physics **Credits 06**

DSE2T: Solid State Physics **Credits 04**

Course Contents:

Crystal Structure: Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors. Lattice with a Basis – Central and Non-Central Elements. Unit Cell. Mille Indices. Reciprocal Lattice. Types of Lattices. Brillouin Zones. Diffraction of X-rays by Crystals. Bragg's Law. Atomic and Geometrical Factor.

Elementary Lattice Dynamics: Lattice Vibrations and Phonons: Linear Monoatomic and Diatomic Chains. Acoustical and Optical Phonons. Qualitative Description of the Phonon Spectrum in Solids. Dulong and Petit's Law, Einstein and Debye theories of specific heat of solids. T3 law

Magnetic Properties of Matter: Dia-, Para-, Ferri- and Ferromagnetic Materials. Classical Langevin Theory of dia – and Paramagnetic Domains. Quantum Mechanical Treatment of Paramagnetism. Curie's law, Weiss's Theory of Ferromagnetism and

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:55 (Copyright Vidyasagar University)
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Ferromagnetic Domains. Discussion of B-H Curve. Hysteresis and Energy Loss.

Dielectric Properties of Materials: Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons.

Elementary band theory: Kronig Penny model. Band Gaps. Conductors, Semiconductors and insulators. P and N type Semiconductors. Conductivity of Semiconductors, mobility, Hall Effect, Hall coefficient.

Superconductivity: Experimental Results. Critical Temperature. Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth. Isotope effect.

Suggested Readings:

- Introduction to Solid State Physics, Charles Kittel, 8th Ed., 2004, Wiley India Pvt. Ltd.
- Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India
- Introduction to Solids, Leonid V. Azaroff, 2004, Tata Mc-Graw Hill
- Solid State Physics, Neil W. Ashcroft and N. David Mermin, 1976, Cengage Learning
- Solid State Physics, Rita John, 2014, McGraw Hill
- Solid-state Physics, H. Ibach and H Luth, 2009, Springer
- Elementary Solid State Physics, 1/e M. Ali Omar, 1999, Pearson India
- Solid State Physics, M.A. Wahab, 2011, Narosa Publications

DSE2P: Solid State Physics (Practical) **Credits 02**

Practical:

1. Measurement of susceptibility of paramagnetic solution (Quinck`s Tube Method)
2. To measure the Magnetic susceptibility of Solids.
3. To determine the Coupling Coefficient of a Piezoelectric crystal.
4. To measure the Dielectric Constant of a dielectric Materials with frequency
5. To determine the complex dielectric constant and plasma frequency of metal using Surface Plasmon resonance (SPR)
6. To determine the refractive index of a dielectric layer using SPR
7. To study the PE Hysteresis loop of a Ferroelectric Crystal.
8. To draw the BH curve of iron using a Solenoid and determine the energy loss from Hysteresis.
9. To measure the resistivity of a semiconductor (Ge) crystal with temperature by four probe method (from room temperature to 150 ^{o} C) and to determine its band gap.
10. To determine the Hall coefficient of a semiconductor sample.

Suggested Readings:

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 GMT. Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

- Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing ouse.
- Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Ed., 2011, Kitab Mahal, New Delhi
- Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India.

Or

DSE-2: Digital and Analog Circuits and Instrumentation **Credits 06**

DSE2T: Digital and Analog Circuits and Instrumentation **Credits 04**

Course Contents

UNIT-1: Digital Circuits

Difference between Analog and Digital Circuits. Binary Numbers. Decimal to Binary and Binary to Decimal Conversion, AND, OR and NOT Gates (Realization using Diodes and Transistor). NAND and NOR Gates as Universal Gates. XOR and XNOR Gates. De Morgan's Theorems. Boolean Laws. Simplification of Logic Circuit using Boolean Algebra. Fundamental Products. Minterms and Maxterms. Conversion of a Truth Table into an Equivalent Logic Circuit by (1) Sum of Products Method and (2) Karnaugh Map. Binary Addition. Binary Subtraction using 2's Complement Method).Half Adders and Full Adders and Subtractors, 4-bit binary Adder-Subtractor.

UNIT-2: Semiconductor Devices and Amplifiers

Semiconductor Diodes: p and n type semiconductors. Barrier Formation in PN Junction Diode. Qualitative Idea of Current Flow Mechanism in Forward and Reverse Biased Diode. PN junction and its characteristics. Static and Dynamic Resistance. Principle and structure of (1) LEDs (2) Photodiode (3) Solar Cell.

Bipolar Junction transistors: n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Active, Cut off, and Saturation Regions. Current gains α and β. Relations between α and β. Load Line analysis of Transistors. DC Load line and Q point. Voltage divider Bias Circuit for CE Amplifier. h-parameter Equivalent Circuit. Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance. Current, Voltage and Power Gains. Class A, B, and C Amplifiers.

UNIT-3: Operational Amplifiers (Black Box approach):

Characteristics of an Ideal and Practical Op-Amp (IC 741), Open-loop& Closed-loop Gain. CMRR, concept of Virtual ground. Applications of Op-Amps: (1) Inverting and Non-inverting Amplifiers, (2) Adder, (3) Sub tractor, (4) Differentiator, (5) Integrator, (6) Zero Crossing Detector.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 GMT. Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Sinusoidal Oscillators: Barkhausen's Criterion for Self-sustained Oscillations. Determination of Frequency of RC Oscillator

UNIT-4: Instrumentations

Introduction to CRO: Block Diagram of CRO. Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference. Power Supply: Half-wave Rectifiers. Centre-tapped and Bridge Full-wave Rectifiers Calculation of Ripple Factor and Rectification Efficiency, Basic idea about capacitor filter, Zener Diode and Voltage Regulation

Timer IC: IC 555 Pin diagram and its application as Astable & Monostable Multivibrator

Suggested Readings:

- Integrated Electronics, J. Millman and C.C. Halkias, Tata Mc-Graw Hill.
- Electronic devices and circuits, S. Salivahanan and N. Suresh Kumar, Tata Mc-Graw Hill.
- Microelectronic Circuits, M.H. Rashid, 2nd , Cengage Learning.
- Modern Electronic Instrumentation & Measurement Tech., elfrick & Cooper, PHI Learning
- Digital Principles & Applications, A.P. Malvino, D.P. Leach & Saha, 7th Ed., Tata McGraw Hill
- Microelectronic circuits, A.S. Sedra, K.C. Smith, A.N. Chandorkar, 6th Edn., Oxford University Press.
- Fundamentals of Digital Circuits, A. Anand Kumar, 2nd Edition, PHI Learning Pvt. Ltd.
- OP-AMP and Linear Digital Circuits, R.A. Gayakwad, PHI Learning Pvt. Ltd.

DSE2P: Digital and Analog Circuits and Instrumentation (Practical) Credits 02

Practical:

1. To measure (a) Voltage, and (b) Frequency of a periodic waveform using a CRO
2. To verify and design AND, OR, NOT and XOR gates using NAND gates.
3. To minimize a given logic circuit.
4. Half adder, Full adder and 4-bit Binary Adder.
5. Adder-Sub tractor using Full Adder I.C.
6. To design an astable multivibrator of given specifications using 555 Timer.
7. To design a monostable multivibrator of given specifications using 555 Timer.
8. To study IV characteristics of PN diode, Zener and Light emitting diode
9. To study the characteristics of a Transistor in CE configuration.
10. To design a CE amplifier of a given gain (mid-gain) using voltage divider bias.
11. To design an inverting amplifier of given gain using Op-amp 741 and study its frequency response.
12. To design a non-inverting amplifier of given gain using Op-amp 741 and study its Frequency Response.
13. To study a precision Differential Amplifier of given I/O specification using Opamp.
14. To investigate the use of an op-amp as a Differentiator
15. To design a Wien Bridge Oscillator using an op-amp.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 GMT
Copyright: Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_Revised.pdf

Suggested Readings:

- Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, Mc-Graw Hill.
- Electronics: Fundamentals and Applications, J.D. Ryder, Prentice Hall.
- OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, Prentice Hall.
- Electronic Principle, Albert Malvino, Tata Mc-Graw Hill.

Or

DSE-2: Nuclear & Particle Physics **Credits 06**

DSE-2T: Nuclear & Particle Physics **Credits 06 (05+01)**

Course Contents:

General Properties of Nuclei: Constituents of nucleus and their Intrinsic properties, quantitative facts about size, mass, charge density (matter energy), binding energy, average binding energy and its variation with mass number, main features of binding energy versus mass number curve, N/A plot, angular momentum, parity, magnetic moment, electric moments, nuclear excites states.

Nuclear Models: Liquid drop model approach, semi empirical mass formula and significance of various terms, condition of nuclear stability. Two nucleon separation energies, Fermi gas model (degenerate fermion gas, nuclear symmetry potential in Fermi gas), evidence for nuclear shell structure, nuclear magic numbers, basic assumption of shell model, concept of mean field, residual interaction, concept of nuclear force.

Radioactivity decay:(a) Alpha decay: basics of α-decay processes, theory of α- emission, Gamow factor, Geiger Nuttall law, α-decay spectroscopy. (b) β - decay: energy kinematics for β-decay, positron emission, electron capture, neutrino hypothesis. (c) Gamma decay: Gamma rays emission & kinematics, internal conversion.

Nuclear Reactions: Types of Reactions, Conservation Laws, kinematics of reactions, Q-value, reaction rate, reaction cross section, Concept of compound and direct reaction, resonance reaction, Coulomb scattering (Rutherford scattering).

Interaction of Nuclear Radiation with matter: Energy loss due to ionization (Bethe-Block formula), energy loss of electrons, Cerenkov radiation, Gamma ray interaction through matter, photoelectric effect, Compton scattering, pair production, neutron interaction with matter.

Detector for Nuclear Radiations: Gas detectors: estimation of electric field, mobility of particle, for ionization chamber and GM Counter. Basic principle of Scintillation Detectors and construction of photo-multiplier tube (PMT). Semiconductor Detectors (Si & Ge) for charge particle and photon detection (concept of charge carrier and mobility).

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Particle Accelerators: Accelerator facility available in India: Van-de Graaff generator (Tandem accelerator), Linear accelerator, Cyclotron, Synchrotrons.

Particle physics: Particle interactions; basic features, types of particles and its families. Symmetries and Conservation Laws: energy and momentum, angular momentum, parity, baryon number, Lepton number, Isospin, Strangeness and charm, concept of quark model, color quantum number and gluons.

Suggested Readings:

- Introductory nuclear Physics by Kenneth S. Krane (Wiley India Pvt. Ltd., 2008).
- Concepts of nuclear physics by Bernard L. Cohen. (Tata Mcgraw Hill, 1998).
- Introduction to the physics of nuclei & particles, R.A. Dunlap. (Thomson Asia, 2004)
- Introduction to Elementary Particles, D. Griffith, John Wiley & Sons
- Quarks and Leptons, F. Halzen and A.D. Martin, Wiley India, New Delhi
- Basic ideas and concepts in Nuclear Physics - An Introductory Approach by K. Heyde (IOP- Institute of Physics Publishing, 2004).
- Radiation detection and measurement, G.F. Knoll (John Wiley & Sons, 2000).
- Theoretical Nuclear Physics, J.M. Blatt & V.F.Weisskopf (Dover Pub.Inc., 1991)

Skill Enhancement Course (SEC)

SEC-1: Physics Workshop Skill **Credits 02**

SEC1T: Physics Workshop Skill

Course Contents:

Introduction:

Measuring units. conversion to SI and CGS. Familiarization with meter scale, Vernier calliper, Screw gauge and their utility. Measure the dimension of a solid block, volume of cylindrical beaker/glass, diameter of a thin wire, thickness of metal sheet, etc. Use of Sextant to measure height of buildings, mountains, etc.

Mechanical Skill:

Concept of workshop practice. Overview of manufacturing methods: casting, foundry, machining, forming and welding. Types of welding joints and welding defects. Common materials used for manufacturing like steel, copper, iron, metal sheets, composites and alloy, wood. Concept of machine processing, introduction to common machine tools like lathe, shaper, drilling, milling and surface machines. Cutting tools, lubricating oils. Cutting of a metal sheet using blade. Smoothening of cutting edge of sheet using file. Drilling of holes of different diameter in metal sheet and wooden block. Use of bench vice and tools for fitting. Make funnel using metal sheet.

Electrical and Electronic Skill:

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Use of Multimeter. Soldering of electrical circuits having discrete components (R, L, C, diode) and ICs on PCB. Operation of oscilloscope. Making regulated power supply. Timer circuit, Electronic switch using transistor and relay.

Introduction to prime movers:

Mechanism, gear system, wheel, Fixing of gears with motor axel. Lever mechanism, Lifting of heavy weight using lever. braking systems, pulleys, working principle of power generation systems. Demonstration of pulley experiment.

Suggested Readings:

- A text book in Electrical Technology - B L Theraja – S. Chand and Company.
- Performance and design of AC machines – M.G. Say, ELBS Edn.
- Mechanical workshop practice, K.C. John, PHI Learning Pvt. Ltd.
- Workshop Processes, Practices and Materials, Bruce J Black 3rd Edn., Editor Newnes
- New Engineering Technology, Lawrence Smyth/Liam Hennessy, The Educational Company of Ireland .

Or

SEC-1: Computational Physics **Credits 02**

SEC-1T: Computational Physics **Credit 01**

Course Contents:

Introduction:

Importance of computers in Physics, paradigm for solving physics problems for solution**.** Usage of linux as an Editor.

Algorithms and Flowcharts:

Algorithm: Definition, properties and development. Flowchart: Concept of flowchart, symbols, guidelines, types. Examples: Cartesian to Spherical Polar Coordinates, Roots of Quadratic Equation, Sum of two matrices, Sum and Product of a finite series, calculation of sin (x) as a series, algorithm for plotting (1) lissajous figures and (2) trajectory of a projectile thrown at an angle with the horizontal.

Scientific Programming:

Some fundamental Linux Commands (Internal and External commands). Development of FORTRAN, Basic elements of FORTRAN: Character Set, Constants and their types, Variables and their types, Keywords, Variable Declaration and concept of instruction and program. Operators: Arithmetic, Relational, Logical and assignment Operators. Expressions: Arithmetic, Relational, Logical, Character and Assignment Expressions. Fortran Statements: I/O Statements (unformatted/formatted) Executable and Non-Executable Statements, Layout of Fortran Program, Format of writing Program and concept of coding, Initialization and Replacement Logic. Examples from physics problems.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 GMT. Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Control Statements:

Types of Logic (Sequential, Selection, Repetition), Branching Statements (Logical IF, Arithmetic IF, Block IF, Nested Block IF, SELECT CASE and ELSE IF Ladder statements), Looping Statements (DO-CONTINUE, DO-ENDDO, DOWHILE, Implied and Nested DO Loops), Jumping Statements (Unconditional GOTO, Computed GOTO, Assigned GOTO) Subscripted Variables (Arrays: Types of Arrays, DIMENSION Statement, Reading and Writing Arrays), Functions and Subroutines (Arithmetic Statement Function, Function Subprogram and Subroutine), RETURN, CALL, COMMON and EQUIVALENCE Statements), Structure, Disk I/O Statements, open a file, writing in a file, reading from a file. Examples from physics problems.

Programming:

1. Exercises on syntax on usage of FORTRAN
2. Usage of GUI Windows, Linux Commands, familiarity with DOS commands and working in an editor to write sources codes in FORTRAN.
3. To print out all natural even/ odd numbers between given limits.
4. To find maximum, minimum and range of a given set of numbers.
5. Calculating Euler number using exp(x) series evaluated at x=1

Scientific word processing:

Introduction to LaTeX:

TeX/LaTeX word processor, preparing a basic LaTeX file, Document classes, preparing an input file for LaTeX, Compiling LaTeX File, LaTeX tags for creating different environments, Defining LaTeX commands and environments, changing the type style, Symbols from other languages.

Equation representation: Formulae and equations, Figures and other floating bodies, Lining in olumns- Tabbing and tabular environment, Generating table of contents, bibliography and citation, Making an index and glossary, List making environments, Fonts, Picture environment and colors, errors.

Visualization: Introduction to graphical analysis and its limitations. Introduction to Gnuplot. importance of visualization of computational and computational data, basic Gnuplot commands: simple plots, plotting data from a file, saving and exporting, multiple data sets per file, physics with Gnuplot (equations, building functions, user defined variables and unctions), Understanding data with Gnuplot

SEC-1P: Practical **Credit 01**

Hands on exercises:

1. To compile a frequency distribution and evaluate mean, standard deviation etc.
2. To evaluate sum of finite series and the area under a curve.
3. To find the product of two matrices
4. To find a set of prime numbers and Fibonacci series.

Downloaded from Vidyasagar University by 103.37.216.194 on 29 Jun 2023 11:16:35 GMT. Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

5. To write program to open a file and generate data for plotting using Gnu plot.
6. Plotting trajectory of a projectile projected horizontally.
7. Plotting trajectory of a projectile projected making an angle with the horizontally.
8. Creating an input Gnuplot file for plotting a data and saving the output for seeing on the screen. Saving it as an eps file and as a pdf file.
9. To find the roots of a quadratic equation.
10. Motion of a projectile using simulation and plot the output for visualization.
11. Numerical solution of equation of motion of simple harmonic oscillator and plot the outputs for visualization.
12. Motion of particle in a central force field and plot the output for visualization.

Suggested Readings:

- Introduction to Numerical Analysis, S.S. Sastry, 5th Edn., 2012, PHI Learning Pvt. Ltd.
- Computer Programming in Fortran 77". V. Rajaraman (Publisher: PHI).
- LaTeX–A Document Preparation System", Leslie Lamport (Second Edition, Addison-Wesley, 1994).
- Gnuplot in action: understanding data with graphs, Philip K Janert, (Manning 2010)
- Schaum's Outline of Theory and Problems of Programming with Fortran, S Lipsdutz and A Poe, 1986Mc-Graw Hill Book Co.
- Computational Physics: An Introduction, R. C. Verma, et al. New Age International Publishers, New Delhi.
- A first course in Numerical Methods, U.M. Ascher and C. Greif, 2012, PHI Learning
- Elementary Numerical Analysis, K.E. Atkinson, 3rd edn., 2007, Wiley India Edition.

SEC-2: Electrical Circuits and Network Skills **Credits 02**

SEC2T: Electrical Circuits and Network Skills

Course Contents:

Basic Electricity Principles:
Voltage, Current, Resistance, and Power. Ohm's law. Series, parallel, and series-parallel combinations. AC Electricity and DC Electricity. Familiarization with multimeter, voltmeter and ammeter.

Understanding Electrical Circuits:
Main electric circuit elements and their combination. Rules to analyze DC sourced electrical circuits. Current and voltage drop across the DC circuit elements. Single-phase and three-phase alternating current sources. Rules to analyze AC sourced electrical circuits. Real, imaginary and complex power components of AC source. Power factor. Saving energy and money.

Electrical Drawing and Symbols:

Downloaded from Vidyasagar University by 103.37.216.194 on 29 July 2023 11:16:35 (C) Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_Revised.pdf

Drawing symbols. Blueprints. Reading Schematics. Ladder diagrams. Electrical Schematics. Power circuits. Control circuits. Reading of circuit schematics. Tracking the connections of elements and identify current flow and voltage drop.

Generators and Transformers:
DC Power sources. AC/DC generators. Inductance, capacitance, and impedance. Operation of transformers.

Electric Motors:
Single-phase, three-phase & DC motors. Basic design. Interfacing DC or AC sources to control heaters & motors. Speed & power of ac motor.

Solid-State Devices:
Resistors, inductors and capacitors. Diode and rectifiers. Components in Series or in shunt. Response of inductors and capacitors with DC or AC sources

Electrical Protection:
Relays. Fuses and disconnect switches. Circuit breakers. Overload devices. Ground-fault protection. Grounding and isolating. Phase reversal. Surge protection. Interfacing DC or AC sources to control elements (relay protection device)

Electrical Wiring:
Different types of conductors and cables. Basics of wiring-Star and delta connection. Voltage drop and losses across cables and conductors. Instruments to measure current, voltage, power in DC and AC circuits. Insulation. Solid and stranded cable. Conduit. Cable trays. Splices: wire nuts, crimps, terminal blocks, split bolts, and solder. Preparation of extension board.

Suggested Readings:

- A text book in Electrical Technology - B L Theraja - S Chand & Co.
- A text book of Electrical Technology - A K Theraja
- Performance and design of AC machines - M G Say ELBS Edn.

Or

SEC-2: Basic Instrumentation Skills **Credits 02**

SEC2T: Basic Instrumentation Skills **Credit 01**

Course Contents:

Basic of Measurement: Instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects.

Multimeter: Principles of measurement of dc voltage and dc current, ac voltage, ac current and resistance. Specifications of a multimeter and their significance.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 GMT. Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Electronic Voltmeter: Advantage over conventional multimeter for voltage measurement with respect to input impedance and sensitivity. Principles of voltage, measurement (block diagram only). Specifications of an electronic Voltmeter/ Multimeter and their significance.

AC millivoltmeter: Type of AC millivoltmeters: Amplifier- rectifier, and rectifier-amplifier. Block diagram ac millivoltmeter**,** specifications and their significance.

Cathode Ray Oscilloscope: Block diagram of basic CRO. Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only– no mathematical treatment), brief discussion on screen phosphor, visual persistence & chemical composition. Time base operation, synchronization. Front panel controls. Specifications of a CRO and their significance. Use of CRO for the measurement of voltage (dc and ac frequency, time period. Special features of dual trace, introduction to digital oscilloscope, probes. Digital storage Oscilloscope: Block diagram and principle of working.

Signal Generators and Analysis Instruments: Block diagram, explanation and specifications of low frequency signal generators. pulse generator, and function generator. Brief idea for testing, specifications. Distortion factor meter, wave analysis.

Impedance Bridges & Q-Meters: Block diagram of bridge. working principles of basic (balancing type) RLC bridge. Specifications of RLC bridge. Block diagram & working principles of a Q- Meter. Digital LCR bridges.

Digital Instruments: Principle and working of digital meters. Comparison of analog & digital instruments. Characteristics of a digital meter. Working principles of digital voltmeter.

Digital Multimeter: Block diagram and working of a digital multimeter. Working principle of time interval, frequency and period measurement using universal counter/ frequency counter, time- base stability, accuracy and resolution.

SEC2P: Practical **Credit 01**

The test of lab skills will be of the following test items:

1. Use of an oscilloscope.
2. CRO as a versatile measuring device.
3. Circuit tracing of Laboratory electronic equipment,
4. Use of Digital multimeter/VTVM for measuring voltages
5. Circuit tracing of Laboratory electronic equipment,
6. Winding a coil / transformer.
7. Study the layout of receiver circuit.
8. Trouble shooting a circuit
9. Balancing of bridges

Laboratory Exercises:

1. To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.

Downloaded from Vidyasagar University by 103.79.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_pdf_Revised.pdf

2. To observe the limitations of a multimeter for measuring high frequency voltage and currents.
3. To measure Q of a coil and its dependence on frequency, using a Q- meter.
4. Measurement of voltage, frequency, time period and phase angle using CRO.
5. Measurement of time period, frequency, average period using universal counter/ frequency counter.
6. Measurement of rise, fall and delay times using a CRO.
7. Measurement of distortion of a RF signal generator using distortion factor meter.
8. Measurement of R, L and C using a LCR bridge/ universal bridge.

Open Ended Experiments:

1. Using a Dual Trace Oscilloscope
2. Converting the range of a given measuring instrument (voltmeter, ammeter)

Suggested Readings:

- A text book in Electrical Technology - B L Theraja - S Chand and Co.
- Performance and design of AC machines - M G Say ELBS Edn.
- Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
- Logic circuit design, Shimon P. Vingron, 2012, Springer.
- Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
- Electronic Devices and circuits, S. Salivahanan & N. S.Kumar, 3rd Ed., 2012, Tata Mc-Graw Hill
- Electronic circuits: Handbook of design and applications, U.Tietze, Ch.Schenk, 2008, Springer
- Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson India

SEC-3: Renewable Energy and Energy Harvesting **Credits 02**

SEC3T: Renewable Energy and Energy Harvesting **Credit 01**

Course Contents:

Fossil fuels and Alternate Sources of energy: Fossil fuels and Nuclear Energy, their limitation, need of renewable energy, non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity.

Solar energy: Solar energy, its importance, storage of solar energy, solar pond, non convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems.

Wind Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies.

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

Ocean Energy: Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy, Osmotic Power, Ocean Bio-mass.

Geothermal Energy: Geothermal Resources, Geothermal Technologies.

Hydro Energy: Hydropower resources, hydropower technologies, environmental impact of hydro power sources.

Piezoelectric Energy harvesting: Introduction, Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, Piezoelectric parameters and modelling piezoelectric generators, Piezoelectric energy harvesting applications, Human power

Electromagnetic Energy Harvesting: Linear generators, physics mathematical models, recent applications. Carbon captured technologies, cell, batteries, power consumption Environmental issues and Renewable sources of energy, sustainability.

SEC3P: Practical **Credit 01**

Demonstrations and Experiments

1. Demonstration of training modules on solar energy, wind energy, etc.
2. Conversion of vibration to voltage using piezoelectric materials
3. Conversion of thermal energy into voltage using thermoelectric modules.

Suggested Readings:

- Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi
- Solar energy - M P Agarwal - S Chand and Co. Ltd.
- Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd.
- Godfrey Boyle, “Renewable Energy, Power for a sustainable future”, 2004, Oxford University Press, in association with The Open University.
- Dr. P Jayakumar, Solar Energy: Resource Assesment Handbook, 2009
- J.Balfour, M.Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).
- http://en.wikipedia.org/wiki/Renewable_energy

SEC-4: Weather Forecasting **Credits 02**

SEC4T: Weather Forecasting **Credit 01**

Course Contents:

Introduction to atmosphere: Elementary idea of atmosphere: physical structure and composition; compositional layering of the atmosphere; variation of pressure and temperature with height; air temperature; requirements to measure air temperature;

Downloaded from Vidyasagar University by 103.37.216.194 on 09 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

temperature sensors: types; atmospheric pressure: its measurement; cyclones and anticyclones: its characteristics.

Measuring the weather: Wind; forces acting to produce wind; wind speed direction: units, its direction; measuring wind speed and direction; humidity, clouds and rainfall, radiation: absorption, emission and scattering in atmosphere; radiation laws.

Weather systems: Global wind systems; air masses and fronts: classifications; jet streams; local thunderstorms; tropical cyclones: classification; tornadoes; hurricanes.

Climate and Climate Change: Climate: its classification; causes of climate change; global warming and its outcomes; air pollution; aerosols, ozone depletion, acid rain, environmental issues related to climate.

Basics of weather forecasting: Weather forecasting: analysis and its historical background; need of measuring weather; types of weather forecasting; weather forecasting methods; criteria of choosing weather station; basics of choosing site and exposure; satellites observations in weather forecasting; weather maps; uncertainty and predictability; probability forecasts.

SEC-4P: Practical **Credit 01**

Demonstrations and Experiments:

1. Study of synoptic charts & weather reports, working principle of weather station.
2. Processing and analysis of weather data:
    (a) To calculate the sunniest time of the year.
    (b) To study the variation of rainfall amount and intensity by wind direction.
    (c) To observe the sunniest/driest day of the week.
    (d) To examine the maximum and minimum temperature throughout the year.
    (e) To evaluate the relative humidity of the day.
    (f) To examine the rainfall amount month wise.
3. Exercises in chart reading: Plotting of constant pressure charts, surfaces charts, upper wind charts and its analysis.
4. Formats and elements in different types of weather forecasts/ warning (both aviation and non aviation)

Suggested Readings:

- Aviation Meteorology, I.C. Joshi, 3rd edition 2014, Himalayan Books
- The weather Observers Hand book, Stephen Burt, 2012, Cambridge University Press.
- Meteorology, S.R. Ghadekar, 2001, Agromet Publishers, Nagpur.
- Text Book of Agrometeorology, S.R. Ghadekar, 2005, Agromet Publishers, Nagpur.
- Why the weather, Charls Franklin Brooks, 1924, Chpraman & Hall, London.
- Atmosphere and Ocean, John G. Harvey, 1995, The Artemis Press.

Downloaded from Vidyasagar University by 103.37.216.194 on 29 Jun 2023 11:16:35 +05:30, Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

SEC-4: Radiation Safety **Credits 02**

SEC4T: Radiation Safety **Credit 01**

Course Contents:

Basics of Atomic and Nuclear Physics: Basic concept of atomic structure; X rays characteristic and production; concept of bremsstrahlung and auger electron, The composition of nucleus and its properties, mass number, isotopes of element, spin, binding energy, stable and unstable isotopes, law of radioactive decay, Mean life and half life, basic concept of alpha, beta and gamma decay, concept of cross section and kinematics of nuclear reactions, types of nuclear reaction, Fusion, fission.

Interaction of Radiation with matter:

Types of Radiation- Alpha, Beta, Gamma and Neutron and their sources, sealed and unsealed sources,

Interaction of Photons – Photoelectric effect, Compton Scattering, Pair Production, Linear and Mass Attenuation Coefficients,

Interaction of Charged Particles- Heavy charged particles - Beth-Bloch Formula, Scaling laws, Mass Stopping Power, Range, Straggling, Channeling and Cherenkov radiation. Beta Particles- Collision and Radiation loss (Bremsstrahlung),

Interaction of Neutrons - Collision, slowing down and Moderation.

Radiation detection and monitoring devices:

Radiation Quantities and Units: Basic idea of different units of activity, KERMA, exposure, absorbed dose, equivalent dose, effective dose, collective equivalent dose, Annual Limit of Intake (ALI) and derived Air Concentration (DAC).

Radiation detection: Basic concept and working principle of *gas detectors* (Ionization Chambers, Proportional Counter, Multi-Wire Proportional Counters (MWPC) and Gieger Muller Counter), *Scintillation Detectors* **(**Inorganic and Organic Scintillators), *Solid States Detectors* and *Neutron Detectors, Thermo luminescent Dosimetry.*

Radiation safety management:

Biological effects of ionizing radiation, Operational limits and basics of radiation hazards evaluation and control: radiation protection standards, International Commission on Radiological Protection (ICRP) principles, justification, optimization, limitation, introduction of safety and risk management of radiation. Nuclear waste and disposal management. Brief idea about Accelerator driven Sub-critical system (ADS) for waste management.

Application of nuclear techniques:

Application in medical science (e.g., MRI, PET, Projection Imaging Gamma Camera, radiation therapy), Archaeology, Art, Crime detection, Mining and oil. Industrial Uses: Tracing, Gauging, Material Modification, Sterization, Food preservation.

SEC-4P: Practical **Credit 01**

Experiments:

1. Study the background radiation levels using Radiation meter
   Characteristics of Geiger Muller (GM) Counter:

Downloaded from Vidyasagar University by 103.139.236.194 on 09 Jun 2023 11:15:37 | Copyright Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

2. Study of characteristics of GM tube and determination of operating voltage and plateau
3. length using background radiation as source (without commercial source).
4. Study of counting statistics using background radiation using GM counter.
5. Study of radiation in various materials (e.g. KSO4 etc.). Investigation of possible
6. radiation in different routine materials by operating GM at operating voltage.
7. Study of absorption of beta particles in Aluminum using GM counter.
8. Detection of α particles using reference source & determining its half life using spark counter
9. Gamma spectrum of Gas Light mantle (Source of Thorium)

Suggested Readings:

- W.E. Burcham and M. Jobes – Nuclear and Particle Physics – Longman (1995)
- G.F.Knoll, Radiation detection and measurements.
- Thermoluninescense Dosimetry, Mcknlay, A.F., Bristol, Adam Hilger (Medical Physics Handbook 5)
- W.J. Meredith and J.B. Massey, "Fundamental Physics of Radiology". John Wright and Sons, UK, 1989.
- Why J.R. Greening, "Fundamentals of Radiation Dosimetry", Medical Physics Hand Book Series, No.6, Adam Hilger Ltd., Bristol 1981
- Practical Applications of Radioactivity and Nuclear Radiations, G.C. Lowental and P.L. Airey, Cambridge University Press, U.K., 2001
- A. Martin and S.A. Harbisor, An Introduction to Radiation Protection, John Willey & Sons, Inc. New York, 1981.
- NCRP, ICRP, ICRU, IAEA, AERB Publications.
- W.R. Hendee, "Medical Radiation Physics", Year Book – Medical Publishers Inc. London, 1981

OR

SEC-4: Applied Optics **Credits 02**

SEC4T: Applied Optics **Credit 01**

Course Contents:

Theory includes only qualitative explanation. Minimum five experiments should be performed covering minimum three sections.

a. Sources and Detectors: Lasers, Spontaneous and stimulated emissions, Theory of laser action, Einstein's coefficients, Light amplification, Characterization of laser beam, He-Ne laser, Semiconductor lasers**.**
b. Fourier Optics: Concept of Spatial frequency filtering, Fourier transforming property of a thin lens.
c. Holography: Basic principle and theory: coherence, resolution, Types of holograms, white light reflection hologram, application of holography in microscopy, interferometry, and character recognition
d. Photonics: Fibre Optics: Optical fibres and their properties, Principal of light propagation through a fibre, The numerical aperture, Attenuation in optical fibre and attenuation limit, Single mode and multimode fibres, Fibre optic sensors: Fibre Bragg Grating

Downloaded from Vidyasagar University by 14.139.211.194 on 09 June 2021 : 15:37:55; Copyright : Vidyasagar University
Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:00:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General.pdf
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

SEC4P: Applied Optics (Practical) **Credit 01**

Experiments:

Experiments on Lasers:

a. Determination of the grating radial spacing of the Compact Disc (CD) by reflection using He-Ne or solid state laser.

b. To find the width of the wire or width of the slit using diffraction pattern obtained by a He-Ne or solid state laser.

c. To find the polarization angle of laser light using polarizer and analyzer d. Thermal expansion of quartz using laser

Experiments on Semiconductor Sources and Detectors:

a. V-I characteristics of LED

b. Study the characteristics of solid state laser c. Study the characteristics of LDR

d. Photovoltaic Cell

e. Characteristics of IR sensor

Experiments on Fourier Optics:

a. Fourier optic and image processing

i. Optical image addition/subtraction

ii. Optical image differentiation

iii. Fourier optical filtering

iv. Construction of an optical 4f system

b. Fourier Transform Spectroscopy

Fourier Transform Spectroscopy (FTS) is a powerful method for measuring emission and absorption spectra, with wide application in atmospheric remote sensing, NMR spectrometry and forensic science.

d. Experiments on Holography and interferometry:

1. Recording and reconstructing holograms
2. Constructing a Michelson interferometer or a Fabry Perot interferometer
3. Measuring the refractive index of air
4. Constructing a Sagnac interferometer
5. Constructing a Mach-Zehnder interferometer
6. White light Hologram

e. Experiments on Photonics: Fibre Optics:

a. To measure the numerical aperture of an optical fibre

b. To study the variation of the bending loss in a multimode fibre

c. To determine the mode field diameter (MFD) of fundamental mode in a single- mode fibre by measurements of its far field Gaussian pattern

d. To measure the near field intensity profile of a fibre and study its refractive index profile

e. To determine the power loss at a splice between two multimode fibre

Suggested Readings:

- Fundamental of optics, F. A. Jenkins & H. E. White, 1981, Tata McGraw hill.
- LASERS: Fundamentals & applications, K.Thyagrajan & A.K.Ghatak, 2010, Tata McGraw Hill
- Fibre optics through experiments,M.R.Shenoy, S.K.Khijwania, et.al. 2009, Viva Books

Downloaded from Vidyasagar University by 14.139.211.194 on 09 June 2021 : 15:37:55; Copyright : Vidyasagar University
Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:00:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General.pdf
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

- Nonlinear Optics, Robert W. Boyd, (Chapter-I), 2008, Elsevier.
- Optics, Karl Dieter Moller, Learning by computing with model examples, 2007, Springer
- Optical Systems and Processes, Joseph Shamir, 2009, PHI Learning Pvt. Ltd.
- Optoelectronic Devices and Systems, S.C. Gupta, 2005, PHI Learning Pvt. Ltd.
- Optical Physics, A.Lipson, S.G.Lipson, H.Lipson, 4th Edn., 1996, Cambridge Univ. Press

******

Downloaded from Vidyasagar University by 14.139.211.194 on 09 June 2021 : 15:37:55; Copyright : Vidyasagar University
Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:00:50; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General.pdf
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Physics_General_Revised.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year BSc (HONOURS)
in

Mathematics

Under Choice Based Credit System (CBCS)
w.e.f 2017-2018

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

VIDYASAGAR UNIVERSITY
B Sc (Honours) in Mathematics
[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		C1T: Calculus, Geometry & Differential Equation	6	5-1-0	15	60	75
		Core-2		C2T: Algebra	6	5-1-0	15	60	75
		GE-1		TBD	6	4/5	15	60	75
				TBD		2/1			
		AECC-1		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		C3T: Real Analysis	6	5-1-0	15	60	75
		Core-4		C4T: Differential Equations & Vector calculus	6	5-1-0	15	60	75
		GE-2		TBD	6	4/5	15	60	75
						2/1			
		AECC-2		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		C5T: Theory of Real Functions & Introduction to Metric Space	6	5-1-0	15	60	75
		Core-6		C6T: Group Theory - I	6	5-1-0	15	60	75
		Core-7		C7T: Numerical Methods	6	4-0-0	15	60	75
				CP7: -Lab		0-0-4			
		GE-3		TBD	6	4/5	15	60	75
						2/1			
		SEC-1		**SEC-1:** Object Oriented Programming in C++ **Or SEC-1:** Logic & Sets	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		C8T: Riemann Integration and Series of Functions	6	5-1-0	15	60	75
		Core-9		C9T: Multivariate Calculus	6	5-1-0	15	60	75
		Core-10		C10T: Ring Theory & Linear Algebra	6	5-1-0	15	60	75
		GE-4		TBD	6	4/5	15	60	75
						2/1			
		SEC-2		**SEC-2:** Graph Theory **Or SEC-2:** Computer Graphics **Or SEC-2:** Operating System: Linux	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		C11T: Partial Differential Equations & Applications	6	5-1-0	15	60	75
		Core-12		C12T:Group Theory II	6	5-1-0	15	60	75
		DSE-1		**DSE-1:** Linear Programming **Or DSE-1:** Point Set Topology **Or DSE-1:** Theory of Equations	6		15	60	75
		DSE-2		**DSE-2:** Probability & Statistics **Or DSE-2:** Boolean algebra and Automata Theory **Or DSE-2:** Portfolio Optimization	6		15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		C13T: Metric Spaces and Complex Analysis	6	5-1-0	15	60	75
		Core-14		C14T: Ring Theory & Linear Algebra II	6	5-1-0	15	60	75
		DSE-3		**DSE-3:** Mechanics **Or DSE-3:** Number Theory **Or DSE-3:** Industrial Mathematics	6		15	60	75
		DSE-4		**DSE-4:** Mathematics Modeling **Or DSE-4:** Differential Geometry **Or DSE-4:** Bio Mathematics	6		15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies .

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

List of Core Course (CC)

CC-1: Calculus, Geometry &Differential Equation
CC-2: Algebra
CC-3: Real Analysis
CC-4: Differential Equations & Vector Calculus
CC-5: Theory of Real Functions& Introduction to Metric Space
CC-6: Group Theory 1
CC-7: Numerical Methods
CC-8: Riemann Integration and Series of Functions
CC-9: Multivariate Calculus
CC-10: Ring Theory and Linear Algebra I
CC-11: Partial Differential Equations & Applications
CC-12: Group Theory II
CC-13: Metric Spaces and Complex Analysis
CC-14: Ring Theory and Linear Algebra II

Discipline Specific Electives (DSE)

DSE-1: Linear Programming
Or
DSE-1: Point Set Topology
Or
DSE-1: Theory of Equations

DSE-2: Probability & Statistics
Or
DSE-2: Boolean algebra and Automata Theory
Or
DSE-2: Portfolio Optimization

DSE-3: Mechanics
Or
DSE-3: Number Theory
Or
DSE-3: Industrial Mathematics

DSE-4: Mathematics Modeling
Or
DSE-4: Differential Geometry
Or
DSE-4: Bio Mathematics

Skill Enhancement Course (SEC)

SEC-1: Object Oriented Programming in C++
Or
SEC-1: Logic & Sets
SEC-2: Graph Theory
Or
SEC-2: Computer Graphics
Or
SEC-2: Operating System: Linux

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Generic Electives (GE)

GE-1: Calculus, Geometry & Differential Equation

GE -2 : Algebra

GE-3: Differential Equation & Vector Calculus
Or
GE-3: Group Theory-1
Or
GE-3: Theory of Real Functions & Introduction to Metric Space

GE-4: Numerical Methods
Or
GE-4: Partial Differential Equations & Applications **[**This course must be offered after complete the course **Differential Equations & Vector Calculus (GE-3)]**
Or
GE-4: Ring Theory and Linear Algebra I
Or
GE-4: Multivariate Calculus

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Core Course

CC -1: Calculus, Geometry &Differential Equation **Credits 06**

C1T: Calculus, Geometry &Differential Equation

Unit 1

Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of typee^{ax+b}sinx, e^{ax+b}cosx, $(ax+b)^n$sinx, $(ax+b)^n$cosx, concavity and inflection points, envelopes, asymptotes, curve tracing in cartesian coordinates, tracing in polar coordinates of standard curves, L'Hospital's rule, applications in business, economics and life sciences.

Unit 2

Reduction formulae, derivations and illustrations of reduction formulae of the type ∫sin nx dx, ∫cosnx dx, ∫tan nx dx, ∫sec nx dx, ∫$(\log x)^n$ dx, ∫$\sin^n x \sin^m x$ dx, parametric equations, parameterizing a curve, arc length of a curve, arc length of parametric curves, area under a curve, area and volume of surface of revolution, techniques of sketching conics.

Unit 3

Reflection properties of conics, rotation of axes and second degree equations, classification of conics using the discriminant, polar equations of conics.
Spheres. Cylindrical surfaces. Central conicoids, paraboloids, plane sections ofconicoids, generating lines, classification of quadrics, illustrations of graphingstandard quadric surfaces like cone, ellipsoid.

Unit 4

Differential equations and mathematical models. General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.

Graphical Demonstration (Teaching Aid)

1. Plotting of graphs of functione^{ax+b}, log(ax + b), 1/(ax + b), sin(ax + b), cos(ax + b), |ax + b| and to illustrate the effect of a and b on the graph.
2. Plotting the graphs of polynomial of degree 4 and 5, the derivative graph, the second derivative graph and comparing them.
3. Sketching parametric curves (Eg. trochoid, cycloid, epicycloids, hypocycloid).
4. Obtaining surface of revolution of curves.
5. Tracing of conics in cartesian coordinates/ polar coordinates.
6. Sketching ellipsoid, hyperboloid of one and two sheets, elliptic cone, elliptic, paraboloid, and hyperbolic paraboloid using cartesian coordinates.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Reference Books

- G.B. Thomas and R.L. Finney, Calculus, 9th Ed., Pearson Education, Delhi, 2005.
- M.J. Strauss, G.L. Bradley and K. J. Smith, Calculus, 3rd Ed., Dorling Kindersley (India) P. Ltd. (Pearson Education), Delhi, 2007.
- H. Anton, I. Bivens and S. Davis, Calculus, 7th Ed., John Wiley and Sons (Asia) P. Ltd., Singapore, 2002.
- R. Courant and F. John, Introduction to Calculus and Analysis (Volumes I & II), Springer- Verlag, New York, Inc., 1989.
- S.L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons, India, 2004.
- Murray, D., Introductory Course in Differential Equations, Longmans Green and Co.
- G.F.Simmons, Differential Equations, Tata Mcgraw Hill.
- T. Apostol, Calculus, Volumes I and II.
- S. Goldberg, Calculus and mathematical analysis.

CC-2: Algebra Credits 06

C2T: Algebra

Unit 1

Polar representation of complex numbers, nth roots of unity, De Moivre's theorem for rational indices and its applications.

Theory of equations: Relation between roots and coefficients, transformation ofequation, Descartes rule of signs, cubic and biquadratic equation.

Inequality: The inequality involving AM≥ GM≥ HM, Cauchy-Schwartz inequality.

Unit 2

Equivalence relations. Functions, composition of functions, Invertible functions, one to one correspondence and cardinality of a set. Well-ordering property of positive integers, division algorithm, divisibility and Euclidean algorithm. Congruence relation between integers. Principles of Mathematical induction, statement of Fundamental Theorem of Arithmetic.

Unit 3

Systems of linear equations, row reduction and echelon forms, vector equations, the matrix equation Ax=b, solution sets of linear systems, applications of linear systems, linear independence.

Unit 4

Introduction to linear transformations, matrix of a linear transformation, inverse of a matrix, characterizations of invertible matrices. Subspaces ofR^n, dimension of subspaces of R^n, rank of a matrix, Eigen values, eigen vectors and characteristic equation of a matrix.Cayley-Hamilton theorem and its use in finding the inverseof a matrix.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Reference Books

- TituAndreescu and DorinAndrica, Complex Numbers from A to Z, Birkhauser, 2006.
- Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.
- David C. Lay, Linear Algebra and its Applications, 3rd Ed., Pearson Education Asia, Indian Reprint, 2007.
- K.B. Dutta, Matrix and linear algebra.
- K. Hoffman, R. Kunze, Linear algebra.
- W.S. Burnstine and A.W. Panton, Theory of equations.

CC-3 : Real Analysis Credits 06

C3T : Real Analysis

Unit 1

Review of algebraic and order properties of R, ε-neighborhood of a point in R. Idea of countable sets, uncountable sets and uncountability of R. Bounded above sets, bounded below sets, bounded sets, unbounded sets. Suprema and infima. Completeness property of R and its equivalent properties. The Archimedean property, density of rational (and Irrational) numbers in R, intervals. Limit points of a set, isolated points, open set, closed set, derived set,illustrations of Bolzano-Weierstrass theorem for sets, compact sets in R, Heine-Borel Theorem.

Unit 2

Sequences, bounded sequence, convergent sequence, limit of a sequence, liminf, lim sup. Limit theorems. Monotone sequences, monotone convergence theorem. Subsequences, divergence criteria. Monotone subsequence theorem (statement only), Bolzano Weierstrass theorem for sequences. Cauchy sequence, Cauchy's convergence criterion.

Unit 3

Infinite series, convergence and divergence of infinite series, Cauchy criterion, tests for convergence: comparison test, limit comparison test, ratio test, Cauchy's nth root test, integral test. Alternating series, Leibniz test. Absolute and conditional convergence.

Unit 4

Graphical Demonstration (Teaching aid)

1. Plotting of recursive sequences.
2. Study the convergence of sequences through plotting.
3. Verify Bolzano-Weierstrass theorem through plotting of sequences and hence identify convergent subsequences from the plot.
4. Study the convergence/divergence of in
5. finite series by plotting their sequences of partial sum.
6. Cauchy's root test by plotting nth roots.
7. Ratio test by plotting the ratio of nth and (n+1)th term.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Reference Books

- R.G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 3rd Ed., John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 2002.
- Gerald G. Bilodeau , Paul R. Thie, G.E. Keough, An Introduction to Analysis, 2nd Ed., Jones& Bartlett, 2010.
- Brian S. Thomson, Andrew. M. Bruckner and Judith B. Bruckner, Elementary Real Analysis, Prentice Hall, 2001.
- S.K. Berberian, a First Course in Real Analysis, Springer Verlag, New York, 1994.
- T. Apostol, Mathematical Analysis, Narosa Publishing House
- Courant and John, Introduction to Calculus and Analysis, Vol I, Springer
- W. Rudin, Principles of Mathematical Analysis, Tata McGraw-Hill
- Terence Tao, Analysis I, Hindustan Book Agency, 2006.
- S. Goldberg, Calculus and mathematical analysis.

CC-4: Differential Equations & Vector Calculus Credits 06

C4T: Differential Equations & Vector Calculus

Unit 1

Lipschitz condition and Picard's Theorem (Statement only). General solution of homogeneous equation of second order, principle of super position for homogeneous equation, Wronskian: its properties and applications, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation, method of undetermined coefficients, method of variation of parameters.

Unit 2

Systems of linear differential equations, types of linear systems, differential operators, an operator method for linear systems with constant coefficients,
Basic Theory of linear systems in normal form, homogeneous linear systems with constant coefficients: Two Equations in two unknown functions.

Unit 3

Equilibrium points, Interpretation of the phase plane
Power series solution of a differential equation about an ordinary point, solutionabout a regular singular point.

Unit 4

Triple product, introduction to vector functions, operations with vector-valuedfunctions, limits and continuity of vector functions, differentiation and integration of vector functions.

Unit 5

Graphical demonstration (Teaching aid)

1. Plotting of family of curves which are solutions of second order differential equation.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

2. Plotting of family of curves which are solutions of third order differential equation.

Reference Books

- Belinda Barnes and Glenn R. Fulford, Mathematical Modeling with Case Studies, A Differential Equation Approach using Maple and Matlab, 2nd Ed., Taylor and Francis group, London and New York, 2009.
- C.H. Edwards and D.E. Penny, Differential Equations and Boundary Value problemsComputing and Modeling, Pearson Education India, 2005.
- S.L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons, India, 2004.
- Martha L Abell, James P Braselton, Differential Equations with MATHEMATICA, 3rd Ed., Elsevier Academic Press, 2004.
- Murray, D., Introductory Course in Differential Equations, Longmans Green and Co.
- Boyce and Diprima, Elementary Differential Equations and Boundary Value Problems, Wiley.
- G.F.Simmons, Differential Equations, Tata Mc Graw Hill
- Marsden, J., and Tromba, Vector Calculus, McGraw Hill.
- Maity,K.C. and Ghosh, R.K. Vector Analysis, New Central Book Agency (P) Ltd. Kolkata (India).
- M.R. Speigel, Schaum's outline of Vector Analysis.

CC-5: Theory of Real Functions& Introduction to Metric Space

Credits 06

C5T: Theory of Real Functions& Introduction to Metric Space

Unit 1

Limits of functions (ε - δ approach), sequential criterion for limits, divergence criteria. Limit theorems, one sided limits. Infinite limits and limits at infinity. Continuous functions, sequential criterion for continuity and discontinuity. Algebra of continuous functions. Continuous functions on an interval, intermediate value theorem, location of roots theorem, preservation of intervals theorem. Uniform continuity, non-uniform continuity criteria, uniform continuity theorem.

Unit 2

Differentiability of a function at a point and in an interval, Caratheodory's theorem, algebra of differentiable functions. Relative extrema, interior extremum theorem. Rolle's theorem. Mean value theorem, intermediate value property of derivatives, Darboux's theorem. Applications of mean value theorem to inequalities and approximation of polynomials.

Unit 3

Cauchy's mean value theorem. Taylor's theorem with Lagrange's form of remainder, Taylor's theorem with Cauchy's form of remainder, application of Taylor's theorem to convex functions, relative extrema. Taylor's series and Maclaurin's series expansions of

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

exponential and trigonometric functions, ln (1 + x), 1/(ax + b) and$(x+1)^n$. Application of Taylor's theorem to inequalities.

Unit 4
Metric spaces: Definition and examples. open and closed balls, neighbourhood,open set, interior of a set. Limit point of a set, closed set, diameter of a set, subspaces, dense sets, separable spaces.

Reference Books

- R. Bartle and D.R. Sherbert, Introduction to Real Analysis, John Wiley and Sons, 2003.
- K.A. Ross, Elementary Analysis: The Theory of Calculus, Springer, 2004.
- A. Mattuck, Introduction to Analysis, Prentice Hall, 1999.
- S.R. Ghorpade and B.V. Limaye, a Course in Calculus and Real Analysis, Springer, 2006.
- T. Apostol, Mathematical Analysis, Narosa Publishing House
- Courant and John, Introduction to Calculus and Analysis, Vol II, Springer
- W. Rudin, Principles of Mathematical Analysis, Tata McGraw-Hill
- Terence Tao, Analysis II, Hindustan Book Agency, 2006
- SatishShirali and Harikishan L. Vasudeva, Metric Spaces, Springer Verlag, London, 2006
- S. Kumaresan, Topology of Metric Spaces, 2nd Ed., Narosa Publishing House,2011.
- G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill,2004.

CC-6: Group Theory 1 Credits 06

C6T: Group Theory 1

Unit 1
Symmetries of a square, dihedral groups, definition andexamples of groups including permutation groups and quaternion groups (through matrices), elementary properties of groups.

Unit 2
Subgroups and examples of subgroups, centralizer, normalizer, center of a group, product of two subgroups.

Unit 3
Properties of cyclic groups, classification of subgroups of cyclic groups. Cycle notation for permutations, properties of permutations, even and odd permutations, alternating group, properties of cosets, Lagrange's theorem and consequences including Fermat's Little theorem.

Unit 4
External direct product of a finite number of groups, normal subgroups, factor groups, Cauchy's theorem for finite abelian groups.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Unit 5
Group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms. First, Second and Third isomorphism theorems.

Reference Books

- John B. Fraleigh, A First Course in Abstract Algebra, 7th Ed., Pearson, 2002.
- M. Artin, Abstract Algebra, 2nd Ed., Pearson, 2011.
- Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., Narosa Publishing House, New Delhi, 1999.
- Joseph J. Rotman, An Introduction to the Theory of Groups, 4th Ed., Springer Verlag, 1995.
- I.N. Herstein, Topics in Algebra, Wiley Eastern Limited, India, 1975.
- D.S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of abstract algebra.

CC-7: Numerical Methods — Credits 06

C7T: Numerical Methods — Credits 04

Unit 1
Algorithms. Convergence. Errors: relative, absolute. Round off. Truncation.

Unit 2
Transcendental and polynomial equations: Bisection method, Newton's method, secant method, Regula-falsi method, fixed point iteration, Newton-Raphson method. Rate of convergence of these methods.

Unit 3
System of linear algebraic equations: Gaussian elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis. LU decomposition

Unit 4
Interpolation: Lagrange and Newton's methods. Error bounds. Finite difference operators. Gregory forward and backward difference interpolation.
Numerical differentiation: Methods based on interpolations, methods based on finite differences.

Unit 5
Numerical Integration: Newton Cotes formula, Trapezoidal rule, Simpson's $1/3^{rd}$ rule, Simpsons 3/8th rule, Weddle's rule, Boole's Rule. midpoint rule, Composite trapezoidal rule, composite Simpson's $1/3^{rd}$ rule, Gauss quadrature formula.
The algebraic eigen value problem: Power method.
Approximation: Least square polynomial approximation.

Unit 6
Ordinary differential equations: The method of successive approximations, Euler's method, the modified Euler method, Runge-Kutta methods of orders two and four.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Reference Books

- Brian Bradie, A Friendly Introduction to Numerical Analysis, Pearson Education, India, 2007.
- M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering
- Computation, 6th Ed., New age International Publisher, India, 2007.
- C.F. Gerald and P.O. Wheatley, Applied Numerical Analysis, Pearson Education, India, 2008.
- Uri M. Ascher and Chen Greif, A First Course in Numerical Methods, 7th Ed., PHI Learning Private Limited, 2013.
- John H. Mathews and Kurtis D. Fink, Numerical Methods using Matlab, 4th Ed., PHI Learning Private Limited, 2012.
- Scarborough, James B., Numerical Mathematical Analysis, Oxford and IBH publishing co.
- Atkinson, K. E., An Introduction to Numerical Analysis, John Wiley and Sons, 1978.
- Yashavant Kanetkar, Let Us C , BPB Publications.

C7P: Numerical Methods Lab **Credits 02**

List of practical (using any software)

1. Calculate the sum 1/1 + 1/2 + 1/3 + 1/4 + ----------+ 1/ N.
2. Enter 100 integers into an array and sort them in an ascending order.
3. Solution of transcendental and algebraic equations by
   i) Bisection method
   ii) Newton Raphson method.
   iii) Secant method.
   iv) Regula Falsi method.
4. Solution of system of linear equations
   i) LU decomposition method
   ii) Gaussian elimination method
   iii) Gauss-Jacobi method
   iv) Gauss-Seidel method
5. Interpolation
   i) Lagrange Interpolation
   ii) Newton Interpolation
6. Numerical Integration
   i) Trapezoidal Rule
   ii) Simpson's one third rule
   iii) Weddle's Rule
   iv) Gauss Quadrature
7. Method of finding Eigenvalue by Power method
8. Fitting a Polynomial Function
9. Solution of ordinary differential equations
   i) Euler method
   ii) Modified Euler method
   iii) Runge Kutta method

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Note: For any of the CAS (Computer aided software) Data types-simple data types, floating data types, character data types, arithmetic operators and operator precedence, variables and constant declarations, expressions, input/output, relational operators, logical operators and logical expressions, control statements and loop statements, Arrays should be introduced to the students.

CC-8: Riemann Integration and Series of Functions **Credits 06**

C8T: Riemann Integration and Series of Functions

Unit 1

Riemann integration: inequalities of upper and lower sums, Darbaux integration, Darbaux theorem, Riemann conditions of integrability, Riemann sum and definition of Riemann integral through Riemann sums, equivalence of two definitions. Riemann integrability of monotone and continuous functions, properties of the Riemann integral; definition and integrability of piecewise continuous and monotone functions.

Intermediate Value theorem for Integrals; Fundamental theorem of Integral Calculus.

Unit 2

Improper integrals. Convergence of Beta and Gamma functions.

Unit 3

Pointwise and uniform convergence of sequence of functions. Theorems on continuity, derivability and integrability of the limit function of a sequence of functions. Series of functions;

Theorems on the continuity and derivability of the sum function of a series of functions; Cauchy criterion for uniform convergence and Weierstrass M-Test.

Unit 4

Fourier series: Definition of Fourier coefficients and series, Reimann Lebesgue lemma, Bessel's inequality, Parseval's identity, Dirichlet's condition. Examples of Fourier expansions and summation results for series.

Unit 5

Power series, radius of convergence, Cauchy Hadamard theorem. Differentiation and integration of power series; Abel’s theorem; Weierstrass approximation theorem.

Reference Books

- K.A. Ross, Elementary Analysis, The Theory of Calculus, Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint, 2004.
- R.G. Bartle D.R. Sherbert, Introduction to Real Analysis, 3rd Ed., John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 2002.
- Charles G. Denlinger, Elements of Real Analysis, Jones & Bartlett (Student Edition), 2011.
- S. Goldberg, Calculus and mathematical analysis.
- Santi Narayan, Integral calculus.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

- T. Apostol, Calculus I, II.

CC-9 Multivariate Calculus **Credits 06**

C9T: Multivariate Calculus

Unit 1

Functions of several variables, limit and continuity of functions of two or more variables Partial differentiation, total differentiability and differentiability, sufficient condition for differentiability. Chain rule for one and two independent parameters, directional derivatives, the gradient, maximal and normal property of the gradient, tangent planes, Extrema of functions of two variables, method of Lagrange multipliers, constrained optimization problems

Unit 2

Double integration over rectangular region, double integration over non-rectangular region, Double integrals in polar co-ordinates, Triple integrals, triple integral over a parallelepiped and solid regions. Volume by triple integrals, cylindrical and spherical co-ordinates.Change of variables in double integrals and triple integrals.

Unit 3

Definition of vector field, divergence and curl.
Line integrals, applications of line integrals: mass and work. Fundamental theorem for line integrals, conservative vector fields, independence of path.

Unit 4

Green's theorem, surface integrals, integrals over parametrically defined surfaces. Stoke's theorem, The Divergence theorem.

Reference Books

- G.B. Thomas and R.L. Finney, Calculus, 9th Ed., Pearson Education, Delhi, 2005.
- M.J. Strauss, G.L. Bradley and K. J. Smith, Calculus, 3rd Ed., Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi, 2007.
- E. Marsden, A.J. Tromba and A. Weinstein, Basic Multivariable Calculus, Springer (SIE), Indian reprint, 2005.
- James Stewart, Multivariable Calculus, Concepts and Contexts, 2nd Ed., Brooks /Cole, Thomson Learning, USA, 2001
- T. Apostol, Mathematical Analysis, Narosa Publishing House
- Courant and John, Introduction to Calculus and Analysis, Vol II, Springer
- W. Rudin, Principles of Mathematical Analysis, Tata McGraw-Hill
- Marsden, J., and Tromba, Vector Calculus, McGraw Hill.
- Maity, K.C. and Ghosh, R.K. Vector Analysis, New Central Book Agency (P) Ltd. Kolkata (India).
- Terence Tao, Analysis II, Hindustan Book Agency, 2006
- M.R. Speigel, Schaum's outline of Vector Analysis.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

CC-10: Ring Theory and Linear Algebra I Credits 06

C10T: Ring Theory and Linear Algebra I

Unit 1
Definition and examples of rings, properties of rings, subrings, integral domains and fields, characteristic of a ring. Ideal, ideal generated by a subset of a ring, factor rings, operations on ideals, prime and maximal ideals.

Unit 2
Ring homomorphisms, properties of ring homomorphisms. Isomorphism theorems I, II and III, field of quotients.

Unit 3
Vector spaces, subspaces, algebra of subspaces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces.

Unit 4
Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, algebra of linear transformations. Isomorphisms. Isomorphism theorems, invertibility and isomorphisms, change of coordinate matrix.

Reference Books

- John B. Fraleigh, A First Course in Abstract Algebra, 7th Ed., Pearson, 2002.
- M. Artin, Abstract Algebra, 2nd Ed., Pearson, 2011.
- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, Linear Algebra, 4th Ed., Prentice- Hall of India Pvt. Ltd., New Delhi, 2004.
- Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., Narosa Publishing House, New Delhi, 1999.
- S. Lang, Introduction to Linear Algebra, 2nd Ed., Springer, 2005.
- Gilbert Strang, Linear Algebra and its Applications, Thomson, 2007.
- S. Kumaresan, Linear Algebra- A Geometric Approach, Prentice Hall of India, 1999.
- Kenneth Hoffman, Ray Alden Kunze, Linear Algebra, 2nd Ed., Prentice-Hall of India Pvt. Ltd., 1971.
- D.A.R. Wallace, Groups, Rings and Fields, Springer Verlag London Ltd., 1998.
- D.S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of abstract algebra.

CC-11: Partial Differential Equations & Applications Credits 06

C11T: Partial Differential Equations & Applications

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Unit 1

Partial differential equations – Basic concepts and definitions. Mathematical problems. First- order equations: classification, construction and geometrical interpretation. Method of characteristics for obtaining general solution of quasi linear equations. Canonical forms of first-order linear equations. Method of separation of variables for solving first order partial differential equations.

Unit 2

Derivation of heat equation, wave equation and Laplace equation. Classification of second order linear equations as hyperbolic, parabolic or elliptic. Reduction of second order linear equations to canonical forms.

Unit 3

The Cauchy problem, Cauchy-Kowalewskaya theorem, Cauchy problem of an infinite string. Initial boundary value problems. Semi-infinite string with a fixed end, semi-infinite string with a free end. Equations with non-homogeneous boundary conditions. Non-homogeneous wave equation. Method of separation of variables, solving the vibrating string problem. Solving the heat conduction problem

Unit 4

Central force. Constrained motion, varying mass, tangent and normal components of acceleration, modelling ballistics and planetary motion, Kepler's second law.

Unit 5

Graphical Demonstration(Teaching aid)

1. Solution of Cauchy problem for first order PDE.
2. Finding the characteristics for the first order PDE.
3. Plot the integral surfaces of a given first order PDE with initial data.
4. Solution of wave equation $\frac{\partial^2 u}{\partial t^2} - c^2 \frac{\partial^2 u}{\partial x^2} = 0$ for the following associated conditions:
   (a) $u(x,0) = \phi(x),\ u_t(x,0) = \psi(x),\ x \in R,\ t > 0.$
   (b) $u(x,0) = \phi(x),\ u_t(x,0) = \psi(x), u(0,t) = 0\ \ x \in (0,\infty),\ t > 0$
5. Solution of wave equation $\frac{\partial^2 u}{\partial t^2} - c^2 \frac{\partial^2 u}{\partial x^2} = 0$ for the following associated conditions:
   (a) $u(x,0) = \phi(x),\ u\ \ (o,t) = a, u\ \ (l,t) = b,\ \ 0 < x < l, t > 0.$

$u(x,0) = \phi(x),\ x \in R,\ \ 0 < t < T.$

Reference Books

- Tyn Myint-U and Lokenath Debnath, Linear Partial Differential Equations for Scientists and Engineers, 4th edition, Springer, Indian reprint, 2006.
- S.L. Ross, Differential equations, 3rd Ed., John Wiley and Sons, India, 2004.
- Martha L Abell, James P Braselton, Differential equations with MATHEMATICA, 3rd Ed., Elsevier Academic Press, 2004.
- Sneddon, I. N., Elements of Partial Differential Equations, McGraw Hill.
- Miller, F. H., Partial Differential Equations, John Wiley and Sons.
- Loney, S. L., An Elementary Treatise on the Dynamics of particle and of Rigid Bodies, Loney Press .

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

CC-12: Group Theory II Credits 06

C12T: Group Theory II

Unit 1
Automorphism, inner automorphism, automorphism groups, automorphism groups of finite and infinite cyclic groups, applications of factor groups to automorphism groups, Characteristic subgroups, Commutator subgroup and its properties.

Unit 2
Properties of external direct products, the group of units modulo n as an external direct product, internal direct products, Fundamental theorem of finite abelian groups.

Unit 3
Group actions, stabilizers and kernels, permutation representation associated with a given group action. Applications of group actions. Generalized Cayley's theorem. Index theorem.

Unit 4
Groups acting on themselves by conjugation, class equation and consequences, conjugacy in Sn, p-groups, Sylow's theorems and consequences, Cauchy's theorem, Simplicity of An for $n \geq 5$, non-simplicity tests.

Reference Books

- John B. Fraleigh, A First Course in Abstract Algebra, 7th Ed., Pearson, 2002.
- M. Artin, Abstract Algebra, 2nd Ed., Pearson, 2011.
- Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., Narosa Publishing House, 1999.
- David S. Dummit and Richard M. Foote, Abstract Algebra, 3rd Ed., John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 2004.
- J.R. Durbin, Modern Algebra, John Wiley & Sons, New York Inc., 2000.
- D. A. R. Wallace, Groups, Rings and Fields, Springer Verlag London Ltd., 1998
- D.S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of abstract algebra.
- I.N. Herstein, Topics in Algebra, Wiley Eastern Limited, India, 1975.

CC-13: Metric Spaces and Complex Analysis Credits 06

C13T: Metric Spaces and Complex Analysis

Unit 1
Metric spaces: sequences in metric spaces, Cauchy sequences. Complete metric spaces, Cantor's theorem.
Unit 2

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Continuous mappings, sequential criterion and other characterizations of continuity. Uniform continuity. Connectedness, connected subsets of R.
Compactness: Sequential compactness, Heine-Borel property, totally bounded spaces, finite intersection property, and continuous functions on compact sets.
Homeomorphism. Contraction mappings. Banach fixed point theorem and its application to ordinary differential equation.

Unit 3
Limits, limits involving the point at infinity, continuity. Properties of complex numbers, regions in the complex plane, functions of complex variable, mappings.
Derivatives, differentiation formulas, Cauchy-Riemann equations, sufficient conditions for differentiability.

Unit 4
Analytic functions, examples of analytic functions, exponential function, logarithmic function, trigonometric function, derivatives of functions, and definite integrals of functions. Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals. Cauchy- Goursat theorem, Cauchy integral formula.

Unit 5
Liouville's theorem and the fundamental theorem of algebra. Convergence of sequences and series, Taylor series and its examples.

Unit 6
Laurent series and its examples, absolute and uniform convergence of power series.

Reference Books

- SatishShirali and Harikishan L. Vasudeva, Metric Spaces, Springer Verlag, London, 2006.
- S. Kumaresan, Topology of Metric Spaces, 2nd Ed., Narosa Publishing House, 2011.
- G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill, 2004.
- James Ward Brown and Ruel V. Churchill, Complex Variables and Applications, 8th Ed., McGraw – Hill International Edition, 2009.
- Joseph Bak and Donald J. Newman, Complex Analysis, 2nd Ed., Undergraduate Texts in Mathematics, Springer-Verlag New York, Inc., NewYork, 1997.
- S. Ponnusamy, Foundations of complex analysis.
- E.M.Stein and R. Shakrachi, Complex Analysis, Princeton University Press.

CC-14: Ring Theory and Linear Algebra II **Credits 06**

C14T: Ring Theory and Linear Algebra II

Unit 1
Polynomial rings over commutative rings, division algorithm and consequences, principal ideal domains, factorization of polynomials, reducibility tests, irreducibility tests,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Eisenstein criterion, and unique factorization in Z [x]. Divisibility in integral domains, irreducible, primes, unique factorization domains, Euclidean domains.

Unit 2

Dual spaces, dual basis, double dual, transpose of a linear transformation and its matrix in the dual basis, annihilators. Eigen spaces of a linear operator, diagonalizability, invariant subspaces and Cayley-Hamilton theorem, the minimal polynomial for a linear operator, canonical forms.

Unit 3

Inner product spaces and norms, Gram-Schmidt orthogonalisation process, orthogonal complements, Bessel's inequality, the adjoint of a linear operator. Least squares approximation, minimal solutions to systems of linear equations. Normal and self-adjoint operators. Orthogonal projections and Spectral theorem.

Reference Books

- John B. Fraleigh, A First Course in Abstract Algebra, 7th Ed., Pearson, 2002.
- M. Artin, Abstract Algebra, 2nd Ed., Pearson, 2011.
- Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., Narosa Publishing House, 1999.
- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, Linear Algebra, 4th Ed., Prentice- Hall of India Pvt. Ltd., New Delhi, 2004.
- S. Lang, Introduction to Linear Algebra, 2nd Ed., Springer, 2005.
- Gilbert Strang, Linear Algebra and its Applications, Thomson, 2007.
- S. Kumaresan, Linear Algebra- A Geometric Approach, Prentice Hall of India, 1999.
- Kenneth Hoffman, Ray Alden Kunze, Linear Algebra, 2nd Ed., Prentice-Hall of India Pvt. Ltd., 1971.
- S.H. Friedberg, A.L. Insel and L.E. Spence, Linear Algebra, Prentice Hall of India Pvt. Ltd., 2004

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Department Specific Electives (DSE)

DSE -1: Linear Programming **Credits 06**

DSE1T: Linear Programming

Unit 1

Introduction to linear programming problem. Theory of simplex method, graphical solution, convex sets, optimality and unboundedness, the simplex algorithm, simplex method in tableau format, introduction to artificial variables, two-phase method. Big-M method and their comparison.

Unit 2

Duality, formulation of the dual problem, primal-dual relationships, economic interpretation of the dual.

Transportation problem and its mathematical formulation, northwest-corner method, least cost method and Vogel approximation method for determination of starting basic solution, algorithm for solving transportation problem, assignment problem and its mathematical formulation, Hungarian method for solving assignment problem.

Unit 3

Game theory: formulation of two person zero sum games, solving two person zero sum games, games with mixed strategies, graphical solution procedure,linearprogramming solutionof games.

Reference Books

- Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, Linear Programming and Network Flows, 2nd Ed., John Wiley and Sons, India, 2004.
- F.S. Hillier and G.J. Lieberman, Introduction to Operations Research, 9th Ed., Tata McGraw Hill, Singapore, 2009.
- Hamdy A. Taha, Operations Research, An Introduction, 8th Ed., Prentice-Hall India, 2006.
- G. Hadley, Linear Programming, Narosa Publishing House, New Delhi, 2002.

OR

DSE-1: Point Set Topology **Credits 06**

DSE1T: Point Set Topology

Unit 1

Countable and Uncountable Sets, Schroeder-Bernstein Theorem, Cantor's Theorem. Cardinal numbers and cardinal arithmetic. Continuum Hypothesis, Zorns Lemma, Axiom of Choice. Well-ordered sets, Hausdorff's maximalprinciple. Ordinal numbers.

Unit 2

Topological spaces, basis and Subbasis for a topology, subspace topology, interior points, limit points, derived set, boundary of a set, closed sets, closure and interior of a set.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Continuous functions, open maps, closed maps and homeomorphisms. Product topology, quotient topology, metric topology, Baire category theorem.

Unit 3

Connected and path connected spaces, connected sets in R, components and path components, local connectedness. Compact spaces, compact sets in R. Compactness in metric spaces. Totally bounded spaces, Ascoli-Arzela theorem, the Lebesgue number lemma. Local compactness.

Reference Books

- Munkres, J.R., Topology, A First Course, Prentice Hall of India Pvt.Ltd.,New Delhi, 2000.
- Dugundji, J., Topology, Allyn and Bacon, 1966.
- Simmons, G.F., Introduction to Topology and Modern Analysis, McGraw Hill, 1963.
- Kelley, J.L., General Topology, Van Nostrand Reinhold Co., New York,1995.
- Hocking, J., Young, G., Topology, Addison-Wesley Reading, 1961.
- Steen, L., Seebach, J., Counter Examples in Topology, Holt, Reinhart andWinston, New York, 1970.
- Abhijit Dasgupta, Set Theory, Birkhäuser.

OR

DSE-1: Theory of Equations **Credits 06**

DSE1T: Theory of Equations

Unit 1

General properties of polynomials, Graphical representation of a polynomial, maximum and minimum values of a polynomials, General properties of equations, Descarte's rule of signs positive and negative rule, Relation between the roots and the coefficients of equations.

Unit 2

Symmetric functions. Applications of symmetric function of the roots. Transformation of equations. Solutions of reciprocal and binomial equations. Algebraic solutions of the cubic and biquadratic. Properties of the derived functions.

Unit 3

Symmetric functions of the roots, Newton's theorem on the sums of powers of roots, homogeneous products, limits of the roots of equations.

Unit 4

Separation of the roots of equations, Strums theorem. Applications of Strum's theorem, conditions for reality of the roots of an equation. Solution of numerical equations.

Reference Books

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

- W.S. Burnside and A.W. Panton, The Theory of Equations, Dublin University Press, 1954.
- C. C. MacDuffee, Theory of Equations, John Wiley & Sons Inc., 1954.

DSE-2: Probability and Statistics **Credits 06**

DSE2T: Probability and Statistics

Unit 1

Sample space, probability axioms, real random variables (discrete and continuous), cumulative distribution function, probability mass/density functions, mathematical expectation, moments, moment generating function, characteristic function, discrete distributions: uniform, binomial, Poisson, geometric, negative binomial, continuous distributions: uniform, normal, exponential.

Unit 2

Joint cumulative distribution function and its properties, joint probability density functions, marginal and conditional distributions, expectation of function of two random variables, conditional expectations, independent random variables, bivariate normal distribution, correlation coefficient, joint moment generating function (jmgf) and calculation of covariance (from jmgf), linear regression for two variables.

Unit 3

Chebyshev's inequality, statement and interpretation of (weak) law of large numbers and strong law of large numbers. Central limit theorem for independent and identically distributed random variables with finite variance, Markov chains, Chapman-Kolmogorov equations, classification of states.

Unit 4

Random Samples, Sampling Diatributions, Estimation of parameters, Testing of hypothesis.

Reference Books

- Robert V. Hogg, Joseph W. McKean and Allen T. Craig, Introduction to Mathematical Statistics, Pearson Education, Asia, 2007.
- Irwin Miller and Marylees Miller, John E. Freund, Mathematical Statistics with Applications, 7th Ed., Pearson Education, Asia, 2006.
- Sheldon Ross, Introduction to Probability Models, 9th Ed., Academic Press, Indian Reprint, 2007.
- Alexander M. Mood, Franklin A. Graybill and Duane C. Boes, Introduction to the Theory of Statistics, 3rd Ed., Tata McGraw- Hill, Reprint 2007
- Gupta, Ground work of Mathematical Probability and Statistics, Academic publishers.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Or

DSE-2: Boolean Algebra and Automata Theory **Credits 06**

DSE2T: Boolean Algebra and Automata Theory

Unit 1

Definition, examples and basic properties of ordered sets, maps between ordered sets, duality principle, lattices as ordered sets, lattices as algebraic structures, sublattices, products and homomorphisms.

Unit 2

Definition, examples and properties of modular and distributive lattices, Boolean algebras, Boolean polynomials, minimal and maximal forms of Boolean polynomials, Quinn-McCluskey method, Karnaugh diagrams, Logic gates, switching circuits and applications of switching circuits.

Unit 3

Introduction: Alphabets, strings, and languages. Finite automata and regular languages: deterministic and non-deterministic finite automata, regular expressions, regular languages and their relationship with finite automata, pumping lemma and closure properties of regular languages.

Unit 4

Context free grammars and pushdown automata: Context free grammars (CFG), parse trees, ambiguities in grammars and languages, pushdown automaton (PDA) and the language accepted by PDA, deterministic PDA, Non- deterministic PDA, properties of context free languages; normal forms, pumping lemma, closure properties, decision properties.

Unit 5

Turing Machines: Turing machine as a model of computation, programming with a Turing machine, variants of Turing machine and their equivalence.

Unit 6

Undecidability: Recursively enumerable and recursive languages, undecidable problems about Turing machines: halting problem. Post correspondence problem, and undecidability problems about CFGs.

Reference Books

- B A. Davey and H. A. Priestley, Introduction to Lattices and Order, Cambridge University Press, Cambridge, 1990.
- Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory,
- (2nd Ed.), Pearson Education (Singapore) P.Ltd., Indian Reprint 2003.
- Rudolf Lidl and Günter Pilz, Applied Abstract Algebra, 2nd Ed., Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint, 2004.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

- J. E. Hopcroft, R. Motwani and J. D. Ullman, Introduction to Automata Theory, Languages, and Computation, 2nd Ed., Addison-Wesley, 2001.
- H.R. Lewis, C.H. Papadimitriou, C. Papadimitriou, Elements of the Theory of Computation, 2nd Ed., Prentice-Hall, NJ, 1997.
- J.A. Anderson, Automata Theory with Modern Applications, Cambridge University Press, 2006

Or

DSE2: Portfolio Optimization **Credits 06**

DSE2T: Portfolio Optimization

Unit 1

Financial markets. Investment objectives. Measures of return and risk. Types of risks. Risk free assets. Mutual funds. Portfolio of assets. Expected risk and return of portfolio. Diversification.

Unit 2

Mean-variance portfolio optimization- the Markowitz model and the two-fund theorem, risk-free assets and one fund theorem, efficient frontier. Portfolios with short sales. Capital market theory.

Unit 3

Capital assets pricing model- the capital market line, beta of an asset, beta of a portfolio, security market line. Index tracking optimization models. Portfolio performance evaluation measures.

Reference Books

- F. K. Reilly, Keith C. Brown, Investment Analysis and Portfolio Management, 10th Ed., South-Western Publishers, 2011.
- H.M. Markowitz, Mean-Variance Analysis in Portfolio Choice and Capital Markets, Blackwell, New York, 1987.
- M.J. Best, Portfolio Optimization, Chapman and Hall, CRC Press, 2010.
- D.G. Luenberger, Investment Science, 2nd Ed., Oxford University Press, 2013.

DSE -3: Mechanics Credits 06

DSE3T: Mechanics

Unit 1

Co-planar forces. Astatic equilibrium. Friction. Equilibrium of a particle on a rough curve. Virtual work.. Forces in three dimensions. General conditions of equilibrium. Centre of gravity for different bodies. Stable and unstable equilibrium.

Unit 2

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Equations of motion referred to a set of rotating axes. Motion of a projectile in a resisting medium. Stability of nearly circular orbits. Motion under the inverse square law.Slightly disturbed orbits. Motion of artificial satellites. Motion of a particle in three dimensions. Motion on a smooth sphere, cone, and on any surface of revolution.

Unit 3

Degrees of freedom. Moments and products of inertia. Momental Ellipsoid. Principal axes. D'Alembert's Principle. Motion about a fixed axis. Compound pendulum. Motion of a rigid body in two dimensions under finite and impulsive forces. Conservation of momentum and energy.

Reference Books

- I.H. Shames and G. Krishna Mohan Rao, Engineering Mechanics: Statics and Dynamics, (4th Ed.), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi, 2009.
- R.C. Hibbeler and Ashok Gupta, Engineering Mechanics: Statics and Dynamics, 11th Ed., Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi.
- Chorlton, F., Textbook of Dynamics.
- Loney, S. L., An Elementary Treatise on the Dynamics of particle and of Rigid Bodies,Loney Press .
- Loney, S. L., Elements of Staticsand Dynamics I and II.
- Ghosh, M. C, Analytical Statics.
- Verma, R. S., A Textbook on Statics, Pothishala, 1962.
- Matiur Rahman, Md., Statics.
- Ramsey, A. S., Dynamics (Part I).

OR

DSE-3: Number Theory Credits 06

DSE3T: Number Theory

Unit 1

Linear diophantine equation, prime counting function, statement of prime number theorem, Goldbach conjecture, linearcongruences, complete set of residues. Chinese remainder theorem, Fermat’s little theorem, Wilson’s theorem.

Unit 2

Number theoretic functions, sum and number of divisors, totally multiplicative functions, definition and properties of the Dirichlet product, the Mobius Inversion formula, the greatest integer function, Euler’s phi-function, Euler’s theorem, reduced set of residues, some properties of Euler’s phi-function.

Unit 3

Order of an integer modulo n, primitive roots for primes, composite numbers having primitive roots, Euler’s criterion, the Legendre symbol and its properties, quadratic

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

reciprocity, quadratic congruences with composite moduli. Public key encryption, RSA encryption and decryption, the equation x2 + y2= z2, Fermat's Last theorem.

Reference Books

- David M. Burton, Elementary Number Theory, 6th Ed., Tata McGraw-Hill, Indian reprint, 2007.
- Neville Robinns, Beginning Number Theory, 2nd Ed., Narosa Publishing House Pvt. Ltd., Delhi, 2007

OR

DSE-3: Industrial Mathematics Credits 06

DSE3T: Industrial Mathematics

Industry Mathematics

Unit 1

Medical Imaging and Inverse Problems. The content is based on Mathematics of X-ray and CT scan based on the knowledge of calculus, elementary differential equations, complex numbers and matrices.

Unit 2

Introduction to Inverse problems: Why should we teach Inverse Problems? Illustration of Inverse problems through problems taught in Pre-Calculus, Calculus, Matrices and differential equations. Geological anomalies in Earth's interior from measurements at its surface (Inverse problems for Natural disaster) and Tomography.

Unit 3

X-ray: Introduction, X-ray behavior and Beers Law (The fundamental question of image construction) Lines in the place.

Unit 4

Radon Transform: Definition and Examples, Linearity, Phantom (Shepp - Logan Phantom - Mathematical phantoms).

Unit 5

Back Projection: Definition, properties and examples.

Unit 6

CT Scan: Revision of properties of Fourier and inverse Fourier transforms and applications of their properties in image reconstruction. Algorithms of CT scan machine. Algebraic reconstruction techniques abbreviated as ART with application to CT scan.

Reference Books

- Timothy G. Feeman, The Mathematics of Medical Imaging, A Beginners Guide, Springer Under graduate Text in Mathematics and Technology, Springer, 2010.
- C.W. Groetsch, Inverse Problems, Activities for Undergraduates, The Mathematical Association of America, 1999.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

- Andreas Kirsch, An Introduction to the Mathematical Theory of Inverse Problems, 2nd Ed., Springer, 2011

DSE-4: Mathematical Modelling **Credits 06**

DSE4T: Mathematical Modelling

Unit 1

Power series solution of Bessel's equation and Legendre's equation, Laplace transform and inverse transform, application to initial value problem up to second order.

Unit 2

Monte Carlo simulation modelling: simulating deterministic behavior (area under a curve, volume under a surface), generating random numbers: middle square method, linear congruence, queuing models: harbor system, morning rush hour, Overview of optimization modelling. Linear programming model: geometric solution algebraic solution, simplex method, sensitivity analysis

Reference Books

- TynMyint-U and Lokenath Debnath, Linear Partial Differential Equation for Scientists and Engineers, Springer, Indian reprint, 2006.
- Frank R. Giordano, Maurice D. Weir and William P. Fox, A First Course in Mathematical Modeling, Thomson Learning, London and New York, 2003.

Graphical demonstration as Teaching aid using any software

1. Plotting of Legendre polynomial for n = 1 to 5 in the interval [0,1]. Verifying graphically that all the roots of $P_n(x)$ lie in the interval [0,1].
2. Automatic computation of coefficients in the series solution near ordinary points.
3. Plotting of the Bessel's function of first kind of order 0 to 3.
4. Automating the Frobenius Series Method.
5. Random number generation and then use it for one of the following (a) Simulate area under a curve (b) Simulate volume under a surface.
6. Programming of either one of the queuing model (a) Single server queue (e.g. Harbor system) (b) Multiple server queue (e.g. Rush hour).
7. Programming of the Simplex method for 2/3 variables.

OR

DSE-4: Differential Geometry Credits 06

DSE4T: Differential Geometry

Unit 1

Theory of space curves: Space curves. Planer curves, curvature, torsion and Serret-Frenet formula. osculating circles, osculating circles and spheres. Existence of space curves. Evolutes and involutes of curves.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Unit 2

Theory of surfaces: Parametric curves on surfaces. Direction coefficients. First and second Fundamental forms. Principal and Gaussian curvatures. Lines of curvature, Euler's theorem.

Rodrigue's formula. Conjugate and asymptotic lines.

Unit 3

Developables: Developable associated with space curves and curves on surfaces. Minimal surfaces.

Geodesics: Canonical geodesic equations. Nature of geodesics on a surface of revolution.

Clairaut's theorem. Normal property of geodesics. Torsion of a geodesic. Geodesic curvature.

Gauss-Bonnet theorem.

Reference Books

- T.J. Willmore, An Introduction to Differential Geometry, Dover Publications, 2012.
- B. O'Neill, Elementary Differential Geometry, 2nd Ed., Academic Press, 2006.
- C.E. Weatherburn, Differential Geometry of Three Dimensions, Cambridge University Press2003.
- D.J. Struik, Lectures on Classical Differential Geometry, Dover Publications, 1988.
- S. Lang, Fundamentals of Differential Geometry, Springer, 1999.
- B. Spain, Tensor Calculus: A Concise Course, Dover Publications, 2003

OR

DSE-4: Bio Mathematics Credits 06

DSE4T: Bio Mathematics

Unit 1

Mathematical biology and the modeling process: an overview. Continuous models: Malthus model, logistic growth, Allee effect, Gompertz growth, Michaelis-Menten Kinetics, Holling type growth, bacterial growth in a chemostat, harvesting a single natural population, Prey predator systems and LotkaVolterra equations, populations in competitions, epidemic models (SI, SIR, SIRS, SIC)

Unit 2

Activator-inhibitor system, insect outbreak model: Spruce Budworm. Numerical solution of the models and its graphical representation. Qualitative analysis of continuous models: Steady state solutions, stability and linearization, multiple species communities and Routh-Hurwitz Criteria. Phase plane methods and qualitative solutions, bifurcations and limit cycles with examples in the context of biological scenario.

Spatial models: One species model with diffusion. Two species model with diffusion, conditions for diffusive instability, spreading colonies of microorganisms, Blood flow in circulatory system, travelling wave solutions, spread of genes in a population.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Unit 3

Discrete models: Overview of difference equations, steady state solution and linear stability analysis. Introduction to discrete models, linear models, growth models, decay models, drug delivery problem, discrete prey-predator models, density dependent growth models with harvesting, host-parasitoid systems (Nicholson-Bailey model), numerical solution of the models and its graphical representation. case studies. Optimal exploitation models, models in genetics, stage structure models, age structure models.

Reference Books

- L.E. Keshet, Mathematical Models in Biology, SIAM, 1988.
- J. D. Murray, Mathematical Biology, Springer, 1993.
- Y.C. Fung, Biomechanics, Springer-Verlag, 1990.
- F. Brauer, P.V.D. Driessche and J. Wu, Mathematical Epidemiology, Springer, 2008.
- M. Kot, Elements of Mathematical Ecology, Cambridge University Press, 2001.

Graphical demonstration as Teaching aid using any software

1. Growth model (exponential case only).
2. Decay model (exponential case only).
3. Lake pollution model (with constant/seasonal flow and pollution concentration).
4. Case of single cold pill and a course of cold pills.
5. Limited growth of population (with and without harvesting).
6. Predatory-prey model (basic volterra model, with density dependence, effect of DDT, two prey one predator).
7. Epidemic model of infuenza (basic epidemic model, contagious for life,disease with carriers).
8. Battle model (basic battle model, jungle warfare, long range weapons).

Skill Enhancement Course (SEC)

SEC-1: Object Oriented Programming in C++ Credits 02

SEC1T: Object Oriented Programming in C++

Unit 1

Programming paradigms, characteristics of object oriented programming languages, brief history of C++, structure of C++ program, differences between C and C++, basic C++ operators, Comments, working with variables, enumeration, arrays and pointer.

Unit 2

Objects, classes, constructor and destructors, friend function, inline function, encapsulation, data abstraction, inheritance, polymorphism, dynamic binding, operator overloading, method overloading, overloading arithmetic operator and comparison operators.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Unit 3
Template class in C++, copy constructor, subscript and function call operator, concept of namespace and exception handling.

Reference Books

- A. R. Venugopal, Rajkumar, and T. Ravishanker, Mastering C++, TMH, 1997.
- S. B. Lippman and J. Lajoie, C++ Primer, 3rd Ed., Addison Wesley, 2000.
- Bruce Eckel, Thinking in C++, 2nd Ed., President, Mindview Inc., Prentice Hall.
- D. Parasons, Object Oriented Programming with C++, BPB Publication.
- BjarneStroustrup, The C++ Programming Language, 3rd Ed., Addison Welsley.
- E. Balaguruswami, Object Oriented Programming In C++, Tata McGrawHill
- Herbert Scildt, C++, The Complete Reference, Tata McGrawHill.

OR

SEC-1: Logic and Sets Credits 02

SEC1T: Logic and Sets

Unit 1
Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, contra positive and inverse propositions and precedence of logical operators. Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, quantifiers, binding variables and negations.

Unit 2
Sets, subsets, set operations and the laws of set theory and Venn diagrams. Examples of finite and infinite sets. Finite sets and counting principle. Empty set, properties of empty set. Standard set operations. classes of sets. Power set of a set.

Unit 3
Difference and Symmetric difference of two sets. Set identities, generalized union and intersections. Relation: Product set. Composition of relations, types of relations, partitions, equivalence Relations with example of congruence modulo relation. Partial ordering relations, n- ary relations.

Reference Books

- R.P. Grimaldi, Discrete Mathematics and Combinatorial Mathematics, Pearson Education, 1998.
- P.R. Halmos, Naive Set Theory, Springer, 1974.
- E. Kamke, Theory of Sets, Dover Publishers, 1950.

SEC-2: Graph Theory Credits 02

SEC2T: Graph Theory

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Unit 1
Definition, examples and basic properties of graphs, pseudo graphs, complete graphs, bipartite graphs isomorphism of graphs.

Unit 2
Eulerian circuits, Eulerian graph, semi-Eulerian graph, theorems, Hamiltonian cycles,theorems Representation of a graph by matrix, the adjacency matrix, incidence matrix, weighted graph,

Unit 3
Travelling salesman's problem, shortest path, Tree and their properties, spanning tree, Dijkstra's algorithm, Warshall algorithm.

Reference Books

- B.A. Davey and H.A. Priestley, Introduction to Lattices and Order, Cambridge UniversityPress, Cambridge, 1990.
- Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 2ndEdition, Pearson Education (Singapore) P. Ltd., Indian Reprint 2003.
- Rudolf Lidl and Gunter Pilz, Applied Abstract Algebra, 2nd Ed., Undergraduate Texts inMathematics, Springer (SIE), Indian reprint, 2004.

Or

SEC-2: Computer Graphics **Credits 02**

SEC2T: Computer Graphics

Unit 1
Development of computer Graphics: Raster Scan and Random Scan graphics storages, displays processors and character generators, colour display techniques, interactive input/output devices.

Unit 2
Points, lines and curves: Scan conversion, line-drawing algorithms, circle and ellipse generation, conic-section generation, polygon filling anti-aliasing.

Unit 3
Two-dimensional viewing: Coordinate systems, linear transformations, line and polygon clipping algorithms.

Reference Books

- D. Hearn and M.P. Baker, Computer Graphics, 2nd Ed., Prentice–Hall of India, 2004.
- J.D. Foley, A van Dam, S.K. Feiner and J.F. Hughes, Computer Graphics: Principals andPractices, 2nd Ed., Addison-Wesley, MA, 1990.
- D.F. Rogers, Procedural Elements in Computer Graphics, 2nd Ed., McGraw Hill BookCompany, 2001.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

- D.F. Rogers and A.J. Admas, Mathematical Elements in Computer Graphics, 2nd Ed.,McGraw Hill Book Company, 1990.

OR

SEC-2: Operating System: Linux **Credits 02**

SEC2T: Operating System: Linux

Unit 1

Linux – The operating system: Linux history, Linux features, Linux distributions, Linux's relationship to Unix, overview of Linux architecture, installation, start up scripts, system processes (an overview), Linux security.

Unit 2

The Ext2 and Ext3 file systems: General characteristics of the Ext3 file system, file permissions. User management: types of users, the powers of root, managing users (adding and deleting): using the command line and GUI tools.

Unit 3

Resource management in Linux: file and directory management, system calls for files process Management, signals, IPC: Pipes, FIFOs, System V IPC, message queues, system calls for processes, memory management, library and system calls for memory.

Reference Books

- Arnold Robbins, Linux Programming by Examples The Fundamentals, 2nd Ed., PearsonEducation, 2008.
- Cox K, Red Hat Linux Administrator's Guide, PHI, 2009.
- R. Stevens, UNIX Network Programming, 3rd Ed., PHI, 2008.
- Sumitabha Das, UNIX Concepts and Applications, 4th Ed., TMH, 2009.
- Ellen Siever, Stephen Figgins, Robert Love, Arnold Robbins, Linux in a Nutshell, 6th Ed.,O'Reilly Media, 2009.
- Neil Matthew, Richard Stones, Alan Cox, Beginning Linux Programming, 3rd Ed., 2004.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Generic Elective (GE)

[Interdisciplinary for other Department]

GE-1: Calculus, Geometry & Differential Equation **Credits 06**

GE1T: Calculus, Geometry & Differential Equation

Unit 1

Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of type $e^{ax+b}\sin x$, $e^{ax+b}\cos x$, $(ax+b)^n\sin x$, $(ax+b)^n\cos x$, concavity and inflection points, envelopes, asymptotes, curve tracing in cartesian coordinates, tracing in polar coordinates of standard curves, L'Hospital's rule, applications in business, economics and life sciences.

Unit 2

Reduction formulae, derivations and illustrations of reduction formulae of the type $\int \sin nx\, dx$, $\int \cos nx\, dx$, $\int \tan nx\, dx$, $\int \sec nx\, dx$, $\int (\log x)^n\, dx$, $\int \sin^n x \sin^m x\, dx$, parametric equations, parameterizing a curve, arc length of a curve, arc length of parametric curves, area under a curve, area and volume of surface of revolution, techniques of sketching conics.

Unit 3

Reflection properties of conics, rotation of axes and second degree equations, classification of conics using the discriminant, polar equations of conics.
Spheres. Cylindrical surfaces. Central conicoids, paraboloids, plane sections of conicoids, generating lines, classification of quadrics, illustrations of graphing standard quadric surfaces like cone, ellipsoid.

Unit 4

Differential equations and mathematical models. General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.

Graphical Demonstration (Teaching Aid)

1. Plotting of graphs of function e^{ax+b}, $\log(ax + b)$, $1/(ax + b)$, $\sin(ax + b)$, $\cos(ax + b)$, $|ax + b|$ and to illustrate the effect of a and b on the graph.
2. Plotting the graphs of polynomial of degree 4 and 5, the derivative graph, the second derivative graph and comparing them.
3. Sketching parametric curves (Eg. trochoid, cycloid, epicycloids, hypocycloid).
4. Obtaining surface of revolution of curves.
5. Tracing of conics in cartesian coordinates/ polar coordinates.
6. Sketching ellipsoid, hyperboloid of one and two sheets, elliptic cone, elliptic, paraboloid, and hyperbolic paraboloid using cartesian coordinates.

Reference Books

- G.B. Thomas and R.L. Finney, Calculus, 9th Ed., Pearson Education, Delhi, 2005.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

- M.J. Strauss, G.L. Bradley and K. J. Smith, Calculus, 3rd Ed., Dorling Kindersley (India) P. Ltd. (Pearson Education), Delhi, 2007.
- H. Anton, I. Bivens and S. Davis, Calculus, 7th Ed., John Wiley and Sons (Asia) P. Ltd., Singapore, 2002.
- R. Courant and F. John, Introduction to Calculus and Analysis (Volumes I & II), Springer- Verlag, New York, Inc., 1989.
- S.L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons, India, 2004.
- Murray, D., Introductory Course in Differential Equations, Longmans Green and Co.
- G.F.Simmons, Differential Equations, Tata Mcgraw Hill.
- T. Apostol, Calculus, Volumes I and II.
- S. Goldberg, Calculus and mathematical analysis.

GE-2 : Algebra Credits 06

GE2T : Algebra

Unit 1

Polar representation of complex numbers, nth roots of unity, De Moivre's theorem for rational indices and its applications.

Theory of equations: Relation between roots and coefficients, transformation of equation, Descartes rule of signs, cubic and biquadratic equation.

Inequality: The inequality involving AM≥ GM≥ HM, Cauchy-Schwartz inequality.

Unit 2

Equivalence relations. Functions, composition of functions, Invertible functions, one to one correspondence and cardinality of a set. Well-ordering property of positive integers, division algorithm, divisibility and Euclidean algorithm. Congruence relation between integers. Principles of Mathematical induction, statement of Fundamental Theorem of Arithmetic.

Unit 3

Systems of linear equations, row reduction and echelon forms, vector equations, the matrix equation Ax=b, solution sets of linear systems, applications of linear systems, linear independence.

Unit 4

Introduction to linear transformations, matrix of a linear transformation, inverse of a matrix, characterizations of invertible matrices. Subspaces of R^n, dimension of subspaces of R^n, rank of a matrix, Eigen values, eigen vectors and characteristic equation of a matrix. Cayley-Hamilton theorem and its use in finding the inverse of a matrix.

Reference Books

- Titu Andreescu and Dorin Andrica, Complex Numbers from A to Z, Birkhauser, 2006.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

- Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.
- David C. Lay, Linear Algebra and its Applications, 3rd Ed., Pearson Education Asia, Indian Reprint, 2007.
- K.B. Dutta, Matrix and linear algebra.
- K. Hoffman, R. Kunze, Linear algebra.
- W.S. Burnstine and A.W. Panton, Theory of equations.

GE-3: Differential Equations &Vector Calculus Credits 06

GE3T: Differential Equations &Vector Calculus

Differential Equations

Unit 1

Lipschitz condition and Picard's Theorem (Statement only). General solution of homogeneous equation of second order, principle of super position for homogeneous equation, Wronskian: its properties and applications, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation, method of undetermined coefficients, method of variation of parameters.

Unit 2

Systems of linear differential equations, types of linear systems, differential operators, an operator method for linear systems with constant coefficients,
Basic Theory of linear systems in normal form, homogeneous linear systems with constant coefficients: Two Equations in two unknown functions.

Unit 3

Equilibrium points, Interpretation of the phase plane
Power series solution of a differential equation about an ordinary point, solution about a regular singular point.

Unit 4

Triple product, introduction to vector functions, operations with vector-valued functions, limits and continuity of vector functions, differentiation and integration of vector functions.

Unit 5

Graphical demonstration (Teaching aid)

1. Plotting of family of curves which are solutions of second order differential equation.
2. Plotting of family of curves which are solutions of third order differential equation.

Reference Books

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

- Belinda Barnes and Glenn R. Fulford, Mathematical Modeling with Case Studies, A Differential Equation Approach using Maple and Matlab, 2nd Ed., Taylor and Francis group, London and New York, 2009.
- C.H. Edwards and D.E. Penny, Differential Equations and Boundary Value problems Computing and Modeling, Pearson Education India, 2005.
- S.L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons, India, 2004.
- Martha L Abell, James P Braselton, Differential Equations with MATHEMATICA, 3rd Ed., Elsevier Academic Press, 2004.
- Murray, D., Introductory Course in Differential Equations, Longmans Green and Co.
- Boyce and Diprima, Elementary Differential Equations and Boundary Value Problems, Wiley.
- G.F.Simmons, Differential Equations, Tata Mc Graw Hill
- Marsden, J., and Tromba, Vector Calculus, McGraw Hill.
- Maity, K.C. and Ghosh, R.K. Vector Analysis, New Central Book Agency (P) Ltd. Kolkata (India).
- M.R. Speigel, Schaum's outline of Vector Analysis.

Or

GE-3: Group Theory 1 Credits 06

GE3T: Group Theory 1

Group Theory 1 **Credits 06**

Unit 1

Symmetries of a square, dihedral groups, definition and examples of groups including permutation groups and quaternion groups (through matrices), elementary properties of groups.

Unit 2

Subgroups and examples of subgroups, centralizer, normalizer, center of a group, product of two subgroups.

Unit 3

Properties of cyclic groups, classification of subgroups of cyclic groups. Cycle notation for permutations, properties of permutations, even and odd permutations, alternating group, properties of cosets, Lagrange's theorem and consequences including Fermat's Little theorem.

Unit 4

External direct product of a finite number of groups, normal subgroups, factor groups, Cauchy's theorem for finite abelian groups.

Unit 5

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms. First, Second and Third isomorphism theorems.

Reference Books

- John B. Fraleigh, A First Course in Abstract Algebra, 7th Ed., Pearson, 2002.
- M. Artin, Abstract Algebra, 2nd Ed., Pearson, 2011.
- Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., Narosa Publishing House, New Delhi, 1999.
- Joseph J. Rotman, An Introduction to the Theory of Groups, 4th Ed., Springer Verlag, 1995.
- I.N. Herstein, Topics in Algebra, Wiley Eastern Limited, India, 1975.
- D.S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of abstract algebra.

Or

GE-3: Theory of Real Functions & Introduction to Metric Space

Credits 06

GE3T: Theory of Real Functions & Introduction to Metric Space

Theory of Real Functions & Introduction to Metric Space 6 Credits

Unit 1

Limits of functions (ε - δ approach), sequential criterion for limits, divergence criteria. Limit theorems, one sided limits. Infinite limits and limits at infinity. Continuous functions, sequential criterion for continuity and discontinuity. Algebra of continuous functions. Continuous functions on an interval, intermediate value theorem, location of roots theorem, preservation of intervals theorem. Uniform continuity, non-uniform continuity criteria, uniform continuity theorem.

Unit 2

Differentiability of a function at a point and in an interval, Caratheodory's theorem, algebra of differentiable functions. Relative extrema, interior extremum theorem. Rolle's theorem. Mean value theorem, intermediate value property of derivatives, Darboux's theorem. Applications of mean value theorem to inequalities and approximation of polynomials.

Unit 3

Cauchy's mean value theorem. Taylor's theorem with Lagrange's form of remainder, Taylor's theorem with Cauchy's form of remainder, application of Taylor's theorem to convex functions, relative extrema. Taylor's series and Maclaurin's series expansions of exponential and trigonometric functions, ln (1 + x), 1/(ax + b) and$(x+1)^n$. Application of Taylor's theorem to inequalities.

Unit 4

Metric spaces: Defiition and examples. open and closed balls, neighbourhood, open set, interior of a set. Limit point of a set, closed set, diameter of a set, subspaces, dense sets, separable spaces.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Reference Books

- R. Bartle and D.R. Sherbert, Introduction to Real Analysis, John Wiley and Sons, 2003.
- K.A. Ross, Elementary Analysis: The Theory of Calculus, Springer, 2004.
- A. Mattuck, Introduction to Analysis, Prentice Hall, 1999.
- S.R. Ghorpade and B.V. Limaye, a Course in Calculus and Real Analysis, Springer, 2006.
- T. Apostol, Mathematical Analysis, Narosa Publishing House
- Courant and John, Introduction to Calculus and Analysis, Vol II, Springer
- W. Rudin, Principles of Mathematical Analysis, Tata McGraw-Hill
- Terence Tao, Analysis II, Hindustan Book Agency, 2006
- SatishShirali and Harikishan L. Vasudeva, Metric Spaces, Springer Verlag, London, 2006
- S. Kumaresan, Topology of Metric Spaces, 2nd Ed., Narosa Publishing House,2011.
- G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill,2004.

GE-4: Numerical Methods — Credits 06

GE4T: Numerical Methods — Credits 04

Unit 1

Algorithms. Convergence. Errors: relative, absolute. Round off. Truncation.

Unit 2

Transcendental and polynomial equations: Bisection method, Newton's method, secant method, Regula-falsi method, fixed point iteration, Newton-Raphson method. Rate of convergence of these methods.

Unit 3

System of linear algebraic equations: Gaussian elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis. LU decomposition

Unit 4

Interpolation: Lagrange and Newton's methods. Error bounds. Finite difference operators. Gregory forward and backward difference interpolation.
Numerical differentiation: Methods based on interpolations, methods based on finite differences.

Unit 5

Numerical Integration: Newton Cotes formula, Trapezoidal rule, Simpson's $1/3^{rd}$ rule, Simpsons 3/8th rule, Weddle's rule, Boole's Rule. midpoint rule, Composite trapezoidal rule, composite Simpson's $1/3^{rd}$ rule, Gauss quadrature formula.
The algebraic eigen value problem: Power method.
Approximation: Least square polynomial approximation.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

Unit 6

Ordinary differential equations: The method of successive approximations, Euler's method, the modified Euler method, Runge-Kutta methods of orders two and four.

Reference Books

- Brian Bradie, A Friendly Introduction to Numerical Analysis, Pearson Education, India, 2007.
- M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering
- Computation, 6th Ed., New age International Publisher, India, 2007.
- C.F. Gerald and P.O. Wheatley, Applied Numerical Analysis, Pearson Education, India, 2008.
- Uri M. Ascher and Chen Greif, A First Course in Numerical Methods, 7th Ed., PHI Learning Private Limited, 2013.
- John H. Mathews and Kurtis D. Fink, Numerical Methods using Matlab, 4th Ed., PHI Learning Private Limited, 2012.
- Scarborough, James B., Numerical Mathematical Analysis, Oxford and IBH publishing co.
- Atkinson, K. E., An Introduction to Numerical Analysis, John Wiley and Sons, 1978.
- YashavantKanetkar, Let Us C , BPB Publications

GE4P: Numerical Methods Lab **Credits 02**

Numerical Methods Lab **02 Credits**

List of practical (using any software)

1. Calculate the sum 1/1 + 1/2 + 1/3 + 1/4 + ----------+ 1/ N.
2. Enter 100 integers into an array and sort them in an ascending order.
3. Solution of transcendental and algebraic equations by
   v) Bisection method
   vi) Newton Raphson method.
   vii) Secant method.
   viii) Regula Falsi method.
4. Solution of system of linear equations
   v) LU decomposition method
   vi) Gaussian elimination method
   vii) Gauss-Jacobi method
   viii) Gauss-Seidel method
5. Interpolation
   iii) Lagrange Interpolation
   iv) Newton Interpolation
6. Numerical Integration
   v) Trapezoidal Rule
   vi) Simpson's one third rule
   vii) Weddle's Rule
   viii) Gauss Quadrature
7. Method of finding Eigenvalue by Power method
8. Fitting a Polynomial Function

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

9. Solution of ordinary differential equations
   iv) Euler method
   v) Modified Euler method
   vi) Runge Kutta method

Note: For any of the CAS (Computer aided software) Data types-simple data types, floating data types, character data types, arithmetic operators and operator precedence, variables and constant declarations, expressions, input/output, relational operators, logical operators and logical expressions, control statements and loop statements, Arrays should be introduced to the students.

OR

GE-4: Partial Differential Equations & Applications Credits 06

[This course must be offered after completion the course **Differential equation & Vector Calculus**]

GE4T: Partial Differential Equations & Applications

Unit 1

Partial differential equations – Basic concepts and definitions. Mathematical problems. First- order equations: classification, construction and geometrical interpretation. Method of characteristics for obtaining general solution of quasi linear equations. Canonical forms of first-order linear equations. Method of separation of variables for solving first order partial differential equations.

Unit 2

Derivation of heat equation, wave equation and Laplace equation. Classification of second order linear equations as hyperbolic, parabolic or elliptic. Reduction of second order linear equations to canonical forms.

Unit 3

The Cauchy problem, Cauchy-Kowalewskaya theorem, Cauchy problem of an infinite string. Initial boundary value problems. Semi-infinite string with a fixed end, semi-infinite string with a free end. Equations with non-homogeneous boundary conditions. Non-homogeneous wave equation. Method of separation of variables, solving the vibrating string problem. Solving the heat conduction problem

Unit 4

Central force. Constrained motion, varying mass, tangent and normal components of acceleration, modelling ballistics and planetary motion, Kepler's second law.

Unit 5

Graphical Representation (Teaching aid)

1. Solution of Cauchy problem for first order PDE.
2. Finding the characteristics for the first order PDE.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

3. Plot the integral surfaces of a given first order PDE with initial data.
4. Solution of wave equation $\frac{\partial^2 u}{\partial t^2} - c^2 \frac{\partial^2 u}{\partial x^2} = 0$ for the following associated conditions:
   (a) $u(x,0) = \phi(x),\ u_t(x,0) = \psi(x),\ x \in R,\ t > 0.$
   (b) $u(x,0) = \phi(x),\ u_t(x,0) = \psi(x), u(0,t) = 0\ x \in (0,\infty),\ t > 0$
5. Solution of wave equation $\frac{\partial^2 u}{\partial t^2} - c^2 \frac{\partial^2 u}{\partial x^2} = 0$ for the following associated conditions:
   (a) $u(x,0) = \phi(x),\ u\ (o,t) = a, u\ (l,t) = b,\ 0 < x < l, t > 0.$
   $u(x,0) = \phi(x),\ x \in R,\ 0 < t < T.$

Reference Books

- Tyn Myint-U and Lokenath Debnath, Linear Partial Differential Equations for Scientists and Engineers, 4th edition, Springer, Indian reprint, 2006.
- S.L. Ross, Differential equations, 3rd Ed., John Wiley and Sons, India, 2004.
- Martha L Abell, James P Braselton, Differential equations with MATHEMATICA, 3rd Ed., Elsevier Academic Press, 2004.
- Sneddon, I. N., Elements of Partial Differential Equations, McGraw Hill.
- Miller, F. H., Partial Differential Equations, John Wiley and Sons.
- Loney, S. L., An Elementary Treatise on the Dynamics of particle and of Rigid Bodies, Loney Press .

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

OR

GE-4: Ring Theory and Linear Algebra I Credits 06

GE4T: Ring Theory and Linear Algebra I

Unit 1

Definition and examples of rings, properties of rings, subrings, integral domains and fields, characteristic of a ring. Ideal, ideal generated by a subset of a ring, factor rings, operations on ideals, prime and maximal ideals.

Unit 2

Ring homomorphisms, properties of ring homomorphisms. Isomorphism theorems I, II and III, field of quotients.

Unit 3

Vector spaces, subspaces, algebra of subspaces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces.

Unit 4

Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, algebra of linear transformations. Isomorphisms. Isomorphism theorems, invertibility and isomorphisms, change of coordinate matrix.

Reference Books

- John B. Fraleigh, A First Course in Abstract Algebra, 7th Ed., Pearson, 2002.
- M. Artin, Abstract Algebra, 2nd Ed., Pearson, 2011.
- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, Linear Algebra, 4th Ed., Prentice- Hall of India Pvt. Ltd., New Delhi, 2004.
- Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., Narosa Publishing House, New Delhi, 1999.
- S. Lang, Introduction to Linear Algebra, 2nd Ed., Springer, 2005.
- Gilbert Strang, Linear Algebra and its Applications, Thomson, 2007.
- S. Kumaresan, Linear Algebra- A Geometric Approach, Prentice Hall of India, 1999.
- Kenneth Hoffman, Ray Alden Kunze, Linear Algebra, 2nd Ed., Prentice-Hall of India Pvt. Ltd., 1971.
- D.A.R. Wallace, Groups, Rings and Fields, Springer Verlag London Ltd., 1998.
- D.S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of abstract algebra.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

OR

GE-4: Multivariate Calculus Credits 06

GE4T: Multivariate Calculus

Multivariate Calculus **6 Credits**

Unit 1

Functions of several variables, limit and continuity of functions of two or more variables Partial differentiation, total differentiability and differentiability, sufficient condition for differentiability. Chain rule for one and two independent parameters, directional derivatives, the gradient, maximal and normal property of the gradient, tangent planes, Extrema of functions of two variables, method of Lagrange multipliers, constrained optimization problems

Unit 2

Double integration over rectangular region, double integration over non-rectangular region, Double integrals in polar co-ordinates, Triple integrals, triple integral over a parallelepiped and solid regions. Volume by triple integrals, cylindrical and spherical co-ordinates.Change of variables in double integrals and triple integrals.

Unit 3

Definition of vector field, divergence and curl.
Line integrals, applications of line integrals: mass and work. Fundamental theorem for line integrals, conservative vector fields, independence of path.

Unit 4

Green's theorem, surface integrals, integrals over parametrically defined surfaces. Stoke's theorem, The Divergence theorem.

Reference Books

- G.B. Thomas and R.L. Finney, Calculus, 9th Ed., Pearson Education, Delhi, 2005.
- M.J. Strauss, G.L. Bradley and K. J. Smith, Calculus, 3rd Ed., Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi, 2007.
- E. Marsden, A.J. Tromba and A. Weinstein, Basic Multivariable Calculus, Springer (SIE), Indian reprint, 2005.
- James Stewart, Multivariable Calculus, Concepts and Contexts, 2nd Ed., Brooks /Cole, Thomson Learning, USA, 2001
- T. Apostol, Mathematical Analysis, Narosa Publishing House
- Courant and John, Introduction to Calculus and Analysis, Vol II, Springer
- W. Rudin, Principles of Mathematical Analysis, Tata McGraw-Hill
- Marsden, J., and Tromba, Vector Calculus, McGraw Hill.
- Maity, K.C. and Ghosh, R.K. Vector Analysis, New Central Book Agency (P) Ltd. Kolkata (India).
- Terence Tao, Analysis II, Hindustan Book Agency, 2006
- M.R. Speigel, Schaum's outline of Vector Analysis.

END

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:21:15; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Mathematics_Hons.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year BSc (General)
in

Mathematics

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Mathematics

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Differential Calculus	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
	II	SEMESTER-II							
		Core-4 (DSC-1B)		Differential Equations	6	5-1-0	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-7 (DSC-1C)		Real Analysis	6	5-1-0	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0	10	40	50
				Semester - 3 : Total	**20**				**275**
	IV	SEMESTER-IV							
		Core-10 (DSC-1D)		Algebra	6	5-1-0	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Mathematics)	6	5-1-0	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0	10	40	50
				Semester - 5 : Total	**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Mathematics)	6	5-1-0	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0	10	40	50
				Semester - 6 : Total	**20**				**275**
	Total in all semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

List of Core and Elective Courses

Core Courses (CC)

DSC-1A: Differential Calculus
DSC-1B: Differential Equations
DSC-1C: Real Analysis
DSC-1D: Algebra

Discipline Specific Electives (DSE)

DSE-1: Complex Analysis
Or
DSE-1: Matrices
Or
DSE-1: Linear Algebra
Or
DSE-1: Vector Calculus and Analytical Geometry

DSE-2: Mechanics
Or
DSE-2: Linear Programming
Or
DSE-2: Numerical Methods
Or
DSE-2: Integer Programming and Theory of Games

Skill Enhancement Course (SEC)

SEC-1: Theory of Equation
Or
SEC-1: Logic and Sets
Or
SEC-1: Boolean Algebra

SEC-2: Graph Theory
Or
SEC-2: Integral Calculus
Or
SEC-2: Mathematical Finance

SEC-2: Number Theory
Or
SEC-3: Bio-Mathematics
Or
SEC-3: Mathematical Modeling

SEC-4: Probability and Statistics
Or
SEC-4: Understanding Probability and Statistics through practical
Or
SEC-4: Forecasting
Or
SEC-4: Portfolio Optimization

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

Core Courses (CC)

DSC-1A(CC-1): Differential Calculus **Credit : 06**

DSC-1AT(CC-1): Differential Calculus

Course Contents:

Limit and Continuity (ε and δ definition), Types of discontinuities, Differentiability of functions, Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem on homogeneous functions. Tangents and normals, Curvature, Asymptotes, Singular points, Tracing of curves. Parametric representation of curves and tracing of parametric curves, Polar coordinates and tracing of curves in polar coordinates. Rolle's theorem, Mean Value theorems, Lagrange and cauchy theorems. Taylor's theorem with Lagrange's and Cauchy's forms of remainder, Power series and its convergences. Taylor's series, Maclaurin's series of sin x, cos x, ex, log(l+x), (l+x)m, Maxima and Minima, Indeterminate forms.

Suggested Readings:

- H. Anton, I. Birens and S. Davis, *Calculus*, John Wiley and Sons, Inc., 2002.
- G.B. Thomas and R.L. Finney, *Calculus*, Pearson Education, 2007.

DSC-1B(CC-2): Differential Equations **Credit : 06**

DSC1BT(CC-2) : Differential Equations

Course Contents:

First order exact differential equations. Integrating factors, rules to find an integrating factor. First order higher degree equations solvable for x, y, p. Methods for solving higher-order differential equations. Basic theory of linear differential equations, Wronskian, and its properties. Solving a differential equation by reducing its order. Linear homogenous equations with constant coefficients, Linear non-homogenous equations, The method of variation of parameters, The Cauchy-Euler equation, Simultaneous differential equations, Total differential equations. Order and degree of partial differential equations, Concept of linear and non-linear partial differential equations, Formation of first order partial differential equations, Linear partial differential equation of first order, Lagrange's method, Charpit's method. Classification of second order partial differential equations into elliptic, parabolic and hyperbolic through illustrations only.

Suggested Readings:

- Shepley L. Ross, *Differential Equations*, 3rd Ed., John Wiley and Sons, 1984.
- Sneddon, *Elements of Partial Differential Equations*, McGraw-Hill, International Edition, 1967.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

DSC-1C(CC-3): Real Analysis **Credit : 06**

DSC1CT(CC-3): Real Analysis

Course Contents:

Finite and infinite sets, examples of countable and uncountable sets. Real line, bounded sets, suprema and infima, completeness property of R, Archimedean property of R, intervals. Concept of cluster points and statement of Bolzano-Weierstrass theorem.Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences. Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences and their convergence (monotone convergence theorem without proof). Infinite series. Cauchy convergence criterion for series, positive term series, geometric series, comparison test, convergence of p-series, Root test, Ratio test, alternating series, Leibnitz's test (Tests of Convergence without proof). Definition and examples of absolute and conditional Convergence Series. Sequences and series of functions, Pointwise and uniform convergence. μ-test, M-test, Statements of the results about uniform convergence and integrability and differentiability of functions, Power series and radius of convergence.

Suggested Readings:

- T.M. Apostol, *Calculus* (Vol. I), John Wiley and Sons (Asia) P. Ltd., 2002.
- R.G. Bartle and D. R Sherbert, *Introduction to Real Analysis*, John Wiley and Sons (Asia) P. Ltd., 2000.
- E. Fischer, *Intermediate Real Analysis*, Springer Verlag, 1983.
- K.A. Ross,(2003). *Elementary Analysis - The Theory of Calculus Series*- Undergraduate Texts in Mathematics, Springer Verlag.
- S.K.Mapa Introduction to real analysis, Sarat Book House.

DSC-1D (CC-4): Algebra **Credits 06**

DSC1DT(CC-4): Algebra

Course Contents:

Definition and examples of groups, examples of abelian and non-abelian groups, the group Zn of integers under addition modulo n and the group U(n) of units under multiplication modulo n. Cyclic groups from number systems, complex roots of unity, circle group, the general linear group GLn (R), groups of symmetries of (i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle, and (iv) a square, the permutation group Sym (n), Group of quaternions. Subgroups, cyclic subgroups, the concept of a subgroup generated by a subset and the commutator subgroup of group, examples of subgroups including the center of a group. Cosets, Index of subgroup, Lagrange's theorem, order of an element, Normal subgroups: their definition, examples, and characterizations, Quotient groups.Definition and examples of rings, examples of commutative and non-commutative rings: rings from number systems, Zn the ring of integers modulo n, ring of real quaternions, rings of matrices, polynomial rings, and rings of continuous functions. Subrings and ideals, Integral domains and fields, examples of fields: Zp, Q, R, and C. Field of rational functions.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

Suggested Readings:

- John B. Fraleigh, *A First Course in Abstract Algebra*, 7th Ed., Pearson, 2002**.**
- M. Artin, *Abstract Algebra*, 2nd Ed., Pearson, 2011.
- Joseph A Gallian, *Contemporary Abstract Algebra*, Narosa, 1999.
- George E Andrews, *Number Theory*, Hindustan Publishing Corporation, 1984.
- S.K.Mapa. Higher Algebra : Abstract and Linear, Sarat Book House, Calcutta.

Discipline Specific Electives (DSE)

DSE-1 : Complex Analysis **Credit : 06**

DSE1T : Complex Analysis

Course Contents:

Limits, Limits involving the point at infinity, continuity. Properties of complex numbers, regions in the complex plane, functions of complex variable, mappings. Derivatives, differentiation formulas, Cauchy-Riemann equations, sufficient conditions for differentiability. Analytic functions, examples of analytic functions, exponential function, Logarithmic function, trigonometric function, derivatives of functions, definite integrals of functions. Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals. Cauchy - Goursat theorem, Cauchy integral formula. Liouville's theorem and the fundamental theorem of algebra. Convergence of sequences and series, Taylor series and its examples. Laurent series and its examples, absolute and uniform convergence of power series. Singular points of all kind, residue, Cauchy residue theorem and example.

Suggested Readings:

- James Ward Brown and Ruel V. Churchill, *Complex Variables and Applications*, 8th Ed., McGraw – Hill International Edition, 2009.
- Joseph Bak and Donald J. Newman, *Complex analysis*, 2nd Ed., Undergraduate Texts in Mathematics, Springer-Verlag New York, Inc., New York, 1997.

Or

DSE - 1: Matrices **Credit : 06**

DSE1T: Matrices

Course Contents:

R, R2, R3 as vector spaces over R. Standard basis for each of them. Concept of Linear Independence and examples of different bases. Subspaces of R2, R3. Translation, Dilation, Rotation, Reflection in a point, line and plane. Matrix form of basic geometric transformations. Interpretation of eigen values and eigenvectors for such transformations and eigen spaces as invariant subspaces. Matrices in diagonal form. Reduction to diagonal form upto matrices of order 3. Computation of matrix inverses using elementary row operations. Rank of matrix. Solutions of a system of linear equations using matrices.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

Illustrative examples of above concepts from Geometry, Physics, Chemistry, Combinatorics and Statistics.

Suggested Readings:

- A.I. Kostrikin, *Introduction to Algebra*, Springer Verlag, 1984.
- S. H. Friedberg, A. L. Insel and L.E. Spence, *Linear Algebra*, Prentice Hall of India Pvt. Ltd., New Delhi, 2004.
- Richard Bronson, Theory and Problems of Matrix Operations, Tata McGraw Hill, 1989.
- M. Pal (2013). Higher Algebra, PHI Learning Pvt. Ltd.

Or

DSE-1 : Linear Algebra **Credit : 06**

DSE1T: Linear Algebra

Course Contents:

Vector spaces, subspaces, algebra of subspaces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces. Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, algebra of linear transformations. Isomorphisms, Isomorphism theorems, invertibility and isomorphisms, change of coordinate matrix.

Suggested Readings:

- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, *Linear Algebra,* 4th Ed., Prentice- Hall of India Pvt. Ltd., New Delhi, 2004.
- David C. Lay, *Linear Algebra and its Applications,* 3rd Ed., Pearson Education Asia, Indian Reprint, 2007.
- S. Lang, *Introduction to Linear Algebra*, 2nd Ed., Springer, 2005.
- Gilbert Strang, *Linear Algebra and its Applications*, Thomson, 2007.
- M.Pal. Higher Algebra. PHI Pvt. Ltd. 2013.

Or

DSE - 1: Vector Calculus and Analytical Geometry **Credit : 06**

DSE1T: Vector Calculus and Analytical Geometry

Course Contents:

Algebra of vectors, Differentiation and partial differentiation of a vector function. Derivative of sum, dot product and cross product of two vectors. Gradient, divergence and curl. Techniques for sketching parabola, ellipse and hyperbola. Reflection properties of parabola, ellipse and hyperbola. Classification of quadratic equations representing lines, parabola, ellipse and hyperbola. Spheres, Cylindrical surfaces. Illustrations of graphing standard quadric surfaces like cone, ellipsoid.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

Suggested Readings:

- G.B. Thomas and R.L. Finney, *Calculus*, 9th Ed., Pearson Education, Delhi, 2005.
- H. Anton, I. Bivens and S. Davis, *Calculus*, John Wiley and Sons (Asia) P. Ltd. 2002.
- P.C. Matthew's, *Vector Calculus*, Springer Verlag London Limited, 1998.
- S.L. Loney, *The Elements of Coordinate Geometry*, McMillan and Company, London.
- R.Khan. Analytical Geometry and Vector Algebra, New Central Book Agency.
- R.J.T. Bill, *Elementary Treatise on Coordinate Geometry of Three Dimensions*, McMillan India Ltd., 1994.

DSE-2 : Mechanics **Credit : 6**

DSE2T: Mechanics

Course Contents:

Conditions of equilibrium of a particle and of coplanar forces acting on a rigid Body, Laws of friction, Problems of equilibrium under forces including friction, Centre of gravity, Work and potential energy. Velocity and acceleration of a particle along a curve: radial and transverse components (plane curve), tangential and normal components (space curve), Newton's Laws of motion, Simple harmonic motion, Simple Pendulum, Projectile Motion.

Suggested Readings:

- A.S. Ramsay, *Statics*, CBS Publishers and Distributors (Indian Reprint), 1998.
- A.P. Roberts, *Statics and Dynamics with Background in Mathematics*, Cambridge University Press, 2003.
- S.L.Loney. An elementary treaties on the dynamics of a particle and rigid body, New Age International Pvt. Ltd.

Or

DSE-2: Linear Programming **Credit: 06**

DSE2T: Linear Programming

Course Contents:

Linear Programming: Definition and formation Problems, Graphical Approach for solving some Linear Programming problems. Convex Sets, Supporting and Separating Hyperplanes. Theory of simplex method, optimality and unboundedness, the simplex algorithm, simplex method in tableau format, introduction to artificial variables, two-phase method, Big-M method and their comparison. Duality, formulation of the dual problem, primal- dual relationships, economic interpretation of the dual.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

Suggested Readings:

- Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, *Linear programming and Network Flows,* 2nd Ed., John Wiley and Sons, India, 2004.
- F.S. Hillier and G.J. Lieberman, *Introduction to Operations Research,* 8th Ed., Tata McGrawHill, Singapore, 2004.
- Hamdy A. Taha, *Operations Research, An Introduction,* 8th Ed., Prentice-Hall India, 2006.

Or

DSE-2 : Numerical Methods **Credit : 06**

DSE2T: Numerical Methods

Course Contents:

Algorithms, Convergence, Bisection method, False position method, fixed point iteration method, Newton's method, Secant method, LU decomposition, Gauss-Jacobi, Gauss-Siedel and SOR iterative methods. Lagrange and Newton interpolation: linear and higher order, finite difference operators. Numerical differentiation: forward difference, backward difference and central Difference. Integration: trapezoidal rule, Simpson's rule.
Solving ordinary differential equations : Euler's method. Runge – Kutta method of second and fourth order, Prediction – correlation methods.

Suggested Readings:

- B. Bradie, *A Friendly Introduction to Numerical Analysis*, Pearson Education, India, 2007.
- M.K. Jain, S.R.K. Iyengar and R.K. Jain, *Numerical Methods for Scientific and Engineering Computation*, 5th Ed., New age International Publisher, India, 2007.
- M. Pal. Numerical Analysis for Scientists and Engineers: Theory and C Programming, Narosa, 2007.

Or

DSE-2: Integer Programming and Theory of Games **Credit : 06**

DSE2T: Integer Programming and Theory of Games

Course Contents:

Integer Linear Programming. Modeling using pure and mixed integer programming, Branch and Bound Technique, Gomory's Cutting Plane Algorithm. Game theory: formulation of two person zero sum games, solving two person zero sum games, games with mixed strategies, graphical solution procedure, linear programming solution of games. Methods of dominance.

Suggested Readings:

- Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, *Linear Programming and Network Flows,* 2nd Ed., John Wiley and Sons, India, 2004.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

- F. S. Hillier and G. J. Lieberman, *Introduction to Operations Research*, 9th Ed., Tata McGraw Hill, Singapore, 2009.
- Hamdy A. Taha, *Operations Research, An Introduction*, 8th Ed., Prentice-Hall India, 2006.

Skill Enhancement Course (SEC)

SEC-1: Theory of Equations **Credit: 02**

SEC1T: Theory of Equations

Course Contents:

General properties of polynomials, Graphical representation of polynomials, maximum and minimum values of a polynomial, General properties of equations, Descarte's rule of signs positive and negative rule, Relation between the roots and the coefficients of equations. Symmetric functions, Applications of symmetric function of the roots, Transformation of equations. Solutions of reciprocal and binomial equations. Algebraic solutions of the cubic and biquadratic equations. Properties of the derived functions.

Suggested Readings:

- W.S. Burnside and A.W. Panton, *The Theory of Equations*, Dublin University Press, 1954.
- C. C. MacDuffee, *Theory of Equations*, John Wiley & Sons Inc., 1954.

Or

SEC-1: Logic and Sets **Credit: 02**

SEC1T: Logic and Sets

Course Contents:

Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, single words and inverse propositions and precedence of logical operators. Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, Quantifiers, Binding variables and Negations. Sets, subsets, Set operations, the laws of set theory and Venn diagrams. Examples of finite and infinite sets. Finite sets and counting principle. Empty set, properties of empty set. Cartesian product. Partition of sets. Power set of a set. Difference and Symmetric difference of two sets. Set identities, Generalized union and intersections. Relation: Product set, Composition of relations, Types of relations, Partitions, Equivalence Relations with example of congruence modulo relation.

Suggested Readings:

- R.P. Grimaldi, *Discrete Mathematics and Combinatorial Mathematics*, Pearson Education, 1998.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

- P.R. Halmos, *Naive Set Theory*, Springer, 1974.
- E. Kamke, *Theory of Sets*, Dover Publishers, 1950.

Or

SEC-1: Boolean algebra Credit: 02

SEC1T: Boolean algebra

Course Contents:

Definition, examples and basic properties of partially ordered sets, nasse – diagram, maps between ordered sets, duality principle, maximal and minimal elements, lattices as ordered sets, complete lattices, lattices as algebraic structures, sub lattices, products and homo morphisms. Definition, examples and properties of modular and distributive lattices, Boolean algebras, Boolean polynomials, minimal forms of Boolean polynomials, Quinn-McCluskey method, Karnaugh diagrams, switching circuits and applications of switching circuits.

Suggested Readings:

- B A. Davey and H. A. Priestley, *Introduction to Lattices and Order*, Cambridge University Press, Cambridge, 1990.
- Rudolf Lidl and Günter Pilz, *Applied Abstract Algebra*, 2nd Ed., Undergraduate Texts inMathematics, Springer (SIE), Indian reprint, 2004.

SEC-2: Graph Theory Credit: 02

SEC2T: Graph Theory

Course Contents:

Definition, examples and basic properties of graphs, pseudo graphs, complete graphs, bi-partite graphs, isomorphism of graphs, paths and circuits, connected graphs, Eulerian circuits, Hamiltonian cycles, the adjacency matrix, weighted graph, travelling salesman's problem, shortest path, Dijkstra's algorithm, Floyd-Warshall algorithm.

Suggested Readings:

- Edgar G. Goodaire and Michael M. Parmenter, *Discrete Mathematics with Graph Theory*2nd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2003.
- Narsingh Deo, Graph Theory with applications to Engineering and computer Science, PHI.
- D.B.West. Introduction to graph theory, PHI,2001.

Or

SEC -2: Integral Calculus Credit: 02

SEC2T: Integral Calculus

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

Course Contents:

Integration by Partial fractions, integration of rational and irrational functions. Properties of definite integrals. Reduction formulae for integrals of rational, trigonometric, exponential and logarithmic functions and of their combinations. Evaluation of areas and lengths of curves in the plane, valuation of volumes and surfaces of solids of revolution. Double and Triple integrals.

Suggested Readings:

- G.B. Thomas and R.L. Finney, *Calculus*, 9th Ed., Pearson Education, Delhi, 2005.
- H. Anton, I. Bivens and S. Davis, *Calculus*, John Wiley and Sons (Asia) P. Ltd. 2002.

Or

SEC-2 : Mathematical Finance **Credit : 02**

SEC2T : Mathematical Finance

Course Contents:

Basic principles: Comparison, arbitrage and risk aversion, Interest (simple and compound, discrete and continuous), time value of money, inflation, net present value, internal rate of return (calculation by bisection and Newton-Raphson methods), comparison of NPV and IRR. Bonds, bond prices and yields. floating-rate bonds, immunization. Asset return, short selling, portfolio return, (brief introduction to expectation, variance, covariance and correlation), random returns, portfolio mean return and variance, diversification, portfolio diagram, feasible set, Markowitz model (review of Lagrange multipliers for 1 and 2 constraints).

Suggested Readings:

- David G. Luenberger, *Investment Science*, Oxford University Press, Delhi, 1998.
- John C. Hull, Options, *Futures and Other Derivatives*, 6th Ed., Prentice-Hall India, Indian reprint, 2006.
- Sheldon Ross, *An Elementary Introduction to Mathematical Finance*, 2nd Ed., Cambridge University Press, USA, 2003.

SEC-3: Number Theory **Credit :02**

SEC3T: Number Theory

Course Contents:

Division algorithm, Lame's theorem, linear Diophantine equation, fundamental theorem of arithmetic, prime counting function, statement of prime number theorem. Goldbach conjecture, binary and decimal representation of integers, linear congruences, complete set of residues. Number theoretic functions, sum and number of divisors, totally multiplicative

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

functions, definition and properties of the Dirichlet product, the Möbius inversion formula, the greatest integer function, Euler's phi-function.

Suggested Readings:

- David M. Burton, *Elementary Number Theory*, 6th Ed., Tata McGraw-Hill Edition, Indian reprint, 2007.
- Richard E. Klima, Neil Sigmon, Ernest Stitzinger, *Applications of Abstract Algebra with Maple*, CRC Press, Boca Raton, 2000.
- Neville Robinns, *Beginning Number Theory*, 2nd Ed., Narosa Publishing House Pvt. Limited, Delhi, 2007.

Or

SEC-3: Bio-Mathematics **Credit: 02**

SEC3T: Bio-Mathematics

Course Contents:

Mathematical Biology and the modeling process: an overview. Continuous models: Malthus model, logistic growth, Allee effect, Gompertz growth, Michaelis-Menten Kinetics, Holling type growth, Bacterial growth in a Chemostat, Harvesting a single natural population, Prey predator systems and Lotka-Volterra equations, Populations in competitions, Epidemic Models (SI, SIR, SIRS, SIC), Activator-Inhibitor system, Insect Outbreak Model: Spruce Budworm, Numerical solution of the models and its graphical representation. Qualitative analysis of continuous models: Steady state solutions, stability and linearization, multiple species communities and Routh-Hurwitz Criteria. Spatial Models: One species model with diffusion. Discrete Models: Overview of difference equations, steady state solution and linear stability analysis, Introduction to Discrete Models, Linear Models, Growth models, Decay models. Case Studies: Optimal Exploitation models, Models in Genetics.

Suggested Readings:

- L.E. Keshet, *Mathematical Models in Biology*, SIAM, 1988.
- J.D. Murray, *Mathematical Biology*, Springer, 1993.
- Y.C. Fung, *Biomechanics*, Springer-Verlag, 1990.
- F. Brauer, P.V.D. Driessche and J. Wu, *Mathematical Epidemiology*, Springer, 2008.
- 5 M. Kot, *Elements of Mathematical Ecology*, Cambridge University Press, 2001

Or

SEC-3: Mathematical Modeling **Credits 02**

SEC3T: Mathematical Modeling

Course Contents:

Applications of differential equations: the vibrations of a mass on a spring, mixture problem, free damped motion, forced motion, resonance phenomena, electric circuit

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

problem, mechanics of simultaneous differential equations. Applications to Traffic Flow. Vibrating string, vibrating membrane, conduction of heat in solids, gravitational potential, conservation laws.

Suggested Readings:

- Shepley L. Ross, *Differential Equations*, 3rd Ed., John Wiley and Sons, 1984.
- I. Sneddon, *Elements of Partial Differential Equations*, McGraw-Hill, International Edition,1967.16

SEC-4: Probability and Statistics **Credit : 02**

SEC4T: Probability and Statistics

Course Contents:

Sample space, probability axioms, real random variables (discrete and continuous), cumulative distribution function, probability mass/density functions, mathematical expectation, moments, moment generating function, characteristic function, discrete distributions: uniform, binomial, Poisson, continuous distributions: uniform, normal, exponential. Joint cumulative distribution function and its properties, joint probability density functions, marginal and conditional distributions, expectation of function of two random variables, conditional expectations, independent random variables.

Suggested Readings:

- Robert V. Hogg, Joseph W. McKean and Allen T. Craig, *Introduction to Mathematical Statistics*, Pearson Education, Asia, 2007.
- Irwin Miller and Marylees Miller, John E. Freund, *Mathematical Statistics with Application*,7th Ed., Pearson Education, Asia, 2006.
- Sheldon Ross, *Introduction to Probability Model*, 9th Ed., Academic Press, Indian Reprint,2007.

Or

SEC-4: Understanding Probability and Statistics through Practical **Credit : 02**

SEC4T: Understanding Probability and Statistics through Practical

Course Contents:

Practical/ Lab work to be performed on a computer using Excel.

Practicals should broadly cover the following areas:

a) Fitting of Binomial, Poisson, Negative Binomial, Normal Distributions.
b) Applications of Chi-square, t and F Distributions.
c) Calculation of correlation coefficient, Rank Correlation, etc.
d) Fitting of polynomials and regression curves.
e) Methods of estimation (MLE and method of Moments)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

f) Selecting a simple random sample using random number tables.

Suggested Readings:

- Robert V. Hogg, Joseph W. McKean and Allen T. Craig, *Introduction to Mathematical Statistics*, Pearson Education, Asia, 2007.
- Irwin Miller and Marylees Miller, John E. Freunds, *Mathematical Statistics with Applications*, 7th Ed., Pearson Education, Asia, 2006.
- Sheldon Ross, *Introduction to Probability Models*, 9th Ed., Academic Press, Indian Reprint, 2007.

Or

SEC-4: Forecasting **Credits 02**

SEC4T: Forecasting

Course Contents:

Introduction to forecasting, Types of forecast, Basic forecasting tools. Time Series and its Components. Linear and Nonlinear Trend, seasonal Variations and Irregular Variations and their Measurements. Moving Averages. Single and Double exponential smoothing.

Suggested Readings:

- John E. Hanke, Dean Wichern and Arthur G. Reitch, *Business Forecasting*, 7th Ed., Pearson, 2008.
- J. Holton, Wilson and Barry Keating, *Business Forecasting Wforecast*, 6th Ed., Tata McGraw Hill, 2009.
- S.C. Gupta and V.K. Kapoor, *Fundamentals of Applied Statistics*, Sultan Chand and Sons, 2009.
- G. Hadley, T.M. Whitin, *Analysis of Inventory Systems*, D.B. Taraporevala and Sons, Published by arrangement with Prentice Hall Inc., 1979.

Or

SEC-4: Portfolio Optimization **Credit: 02**

SEC4T: Portfolio Optimization

Course Contents:

Financial markets. Investment objectives. Measures of return and risk. Types of risks. Portfolio of assets. Expected risk and return of portfolio. Diversification. Mean-variance portfolio optimization- the Markowitz model and the two-fund theorem, risk-free assets and one fund theorem, efficient frontier. Portfolio performance evaluation measures.

Suggested Readings:

- F.K. Reilly, Keith C. Brown, *Investment Analysis and Portfolio Management*, 10th Ed., South-Western Publishers, 2011.
- H.M. Markowitz, *Mean-Variance Analysis in Portfolio Choice and Capital Markets*, Blackwell, New York, 1987.
- D.G. Luenberger, *Investment Science*, 2nd Ed., Oxford University Press, 2013.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:22:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Mathematics_General.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B Sc (General)

in

Computer Science

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Computer Science

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Problem Solving using Computer - **Lab**	6	4-0-4	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
		Semester - I : Total			**20**				**275**
		SEMESTER-II							
	II	Core-4 (DSC-1B)		Database management System - **lab**	6	4-0-4	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
		Semester - 2 : Total			**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-7 (DSC-1C)		Operating System - **Lab**	6	4-0-4	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0 /1-0-2	10	40	50
		Semester - 3 : Total			**20**				**275**
	IV	SEMESTER-IV							
		Core-10 (DSC-1D)		Computer System Architecture - lab	6	4-0-4	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0 /1-0-2	10	40	50
		Semester - 4 : Total			**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Computer Science)	6	4-0-4	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0 /1-0-2	10	40	50
		Semester - 5 : Total			**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Computer Science)	6	4-0-4	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0 /1-0-2	10	40	50
		Semester - 6 : Total			**20**				**275**
	Total in all semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

List of Core and Electives

Core Courses (CC)

DSC-1A: **Problem Solving using Computers**
DSC-1B: **Database Management Systems**
DSC-1C: **Operating Systems**
DSC-1D: **Computer System Architecture**

Discipline Specific Elective (DSE)

DSE-1: **Programming in Java**
Or
DSE-1: **Discrete Structures**
Or
DSE 1: **Analysis of Algorithm and Data Structures**
Or
DSE 1: **Software Engineering**
Or
DSE 1: **Computer Networks**
Or
DSE 1: **Internet Technologies**

DSE 2: **Data Mining**
Or
DSE 2: **Mobile Applications**
Or
DSE 2: **E-Commerce Technologies**
Or
DSE 2: **Cloud Computing**
Or
DSE 2: **Project Work**

Skill Enhancement Course (SEC)

SEC-1: **MySQL (SQL/PL-SQL)**
Or
SEC-1: **HTML Programming**
SEC-2: **Multimedia Applications**
Or
SEC-2: **PHP Programming**
Or
SEC-2: **Programming with VB/GAMBAS**

SEC-3: **Programming with Matlab**
Or
SEC-3: **Concepts of Software Testing**

SEC-4: **R-Programming**
Or
SEC-4: **Android Programming**
Or
SEC-4: **XML Programming**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Core Courses (CC)

DSC-1A (CC-1): Problem Solving using Computers **Credits 06**

DSC1AT: Problem Solving using Computers **Credits 04**

Course Contents:

Computer Fundamentals: Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers. Basic Computer Organization - Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices.

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Techniques of Problem Solving: Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

Overview of Programming: Structure of a Python Program, Elements of Python .

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).

Creating Python Programs: Input and Output Statements, Control statements (Looping- while Loop, for Loop , Loop Control, Conditional Statement- if...else, Difference between break, continue and pass).

Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.

Introduction to Advanced Python: Objects and Classes, Inheritance, Regular Expressions, Event Driven Programming, GUI Programming.

Suggested Readings:

1. P. K. Sinha & Priti Sinha , “Computer Fundamentals”, BPB Publications.
2. Dr. Anita Goel, Computer Fundamentals, Pearson Education.
3. T. Budd, Exploring Python, TMH, 1st Ed,.
4. Python Tutorial/Documentation www.python.or 2010
5. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python , Freely available online.
6. http://docs.python.org/3/tutorial/index.html
7. http://interactivepython.org/courselib/static/pythonds

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

8. http://www.ibiblio.org/g2swap/byteofpython/read/

DSC1AP: Software Lab using Python(Lab) **Credits 02**

Practical

Section: A (Simple programs)

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria :

Grade A: Percentage >=80
Grade B: Percentage>=70 and <80
Grade C: Percentage>=60 and <70
Grade D: Percentage>=40 and <60
Grade E: Percentage<40

3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. WAP to display the first n terms of Fibonacci series.
5. WAP to find factorial of the given number.
6. WAP to find sum of the following series for n terms: 1 – 2/2! + 3/3! - - - - - n/n!
7. WAP to calculate the sum and product of two compatible matrices.

Section: B (Visual Python):

All the programs should be written using user defined functions, wherever possible.

1. Write a menu-driven program to create mathematical 3D objects
   I. curve
   II. sphere
   III. cone
   IV. arrow
   V. ring
   VI. Cylinder.

2. WAP to read n integers and display them as a histogram.
3. WAP to display sine, cosine, polynomial and exponential curves.
4. WAP to plot a graph of people with pulse rate p vs. height h. The values of p and h are to be entered by the user.
5. WAP to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula m = 60/(t+2), where t is the time in hours. Sketch a graph for t vs. m, where t>=0.

6. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

P(t) = (15000(1+t))/(15+ *e)* where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.

7. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion:

I. velocity wrt time (v=u+at)
II. distance wrt time (s=u*t+0.5*a*t*t)
III. distance wrt velocity (s=(v*v-u*u)/2*a)

DSC-1B (CC-2): Database Management Systems **Credits 06**

DSC1BT: Database Management Systems **Credits 04**

Course Contents:

Introduction to Database Management Systems: Characteristics of database approach, data models, DBMS architecture and data independence.

Entity Relationship and Enhanced ER Modeling: Entity types, relationships, SQL- 99:Schema Definition , constraints, and object modeling.

Relational Data Model : Basic concepts, relational constraints, relational algebra, SQL queries.

Database design: ER and EER to relational mapping, functional dependencies, normal forms up to third normal form.

Suggested Readings :

1. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems 6th Edition, Pearson Education, 2010.
2. R. Ramakrishanan, J. Gehrke, Database Management Systems 3rd Edition, McGraw-Hill, 2002.
3. A. Silberschatz, H.F. Korth, S. Sudarshan, Database System Concepts 6th Edition, McGraw Hill, 2010.
4. R. Elmasri, S.B. Navathe Database Systems Models, Languages, Design and application Programming, 6th Edition, Pearson Education,2013.

DSC1BP: Software Lab based on Database Management Systems (Lab) **Credits 02**

Practical

Note: MyAccess/MySQL may be used.

The following concepts must be introduced to the students:

DDL Commands

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

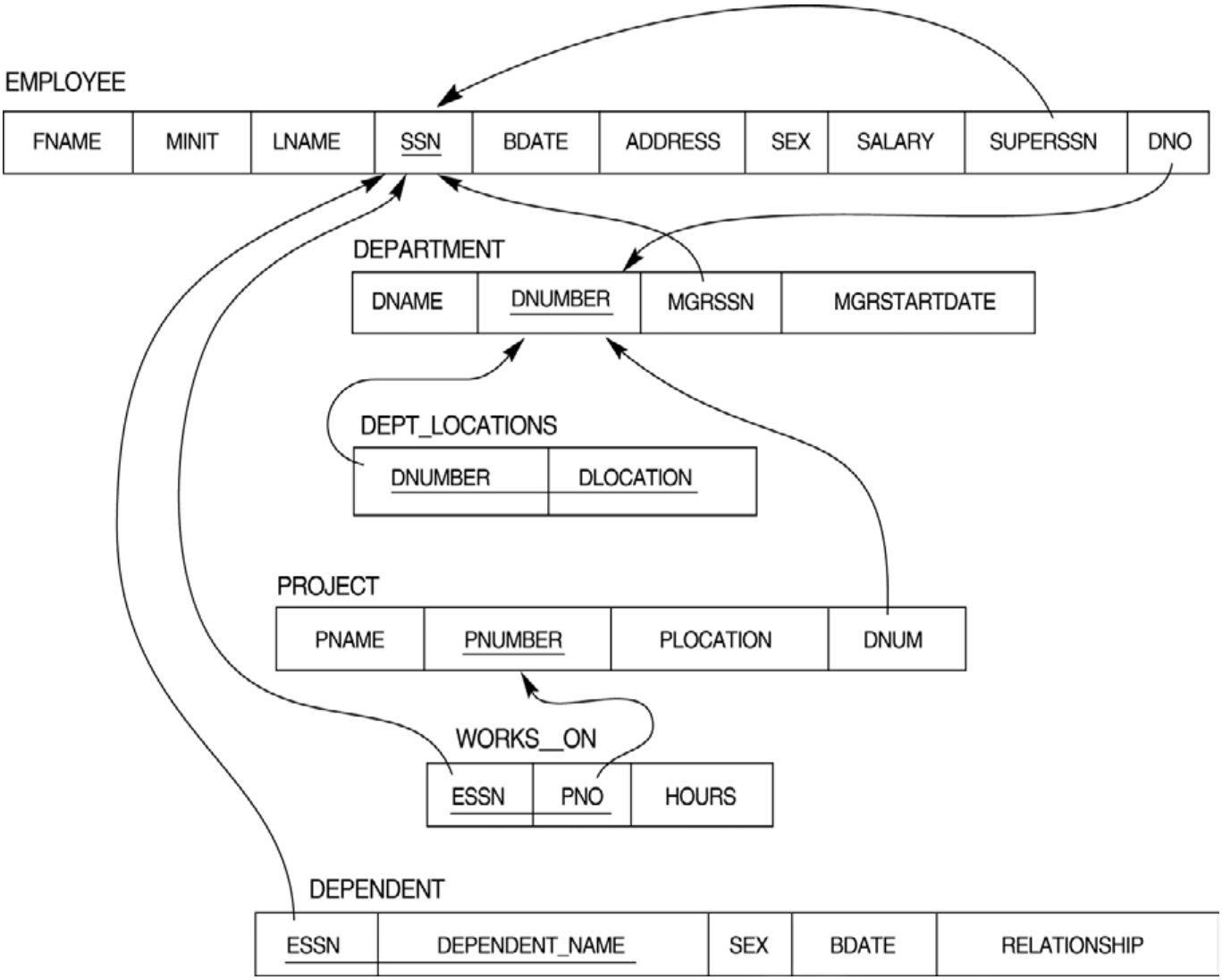
• Create table, alter table, drop table

DML Commands

- Select , update, delete, insert statements
- Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=)
- Arithmetic operators and aggregate functions(Count, sum, avg, Min, Max)
- Multiple table queries (join on different and same tables)
- Nested select statements
- Set manipulation using (any, in, contains, all, not in, not contains, exists, not exists, union, intersect, minus, etc.)
- Categorization using group by……..having
- Arranging using order by

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Relational Database Schema – COMPANY



Questions to be performed on above schema

1. Create tables with relevant foreign key constraints
2. Populate the tables with data
3. **Perform the following queries on the database** :

1. Display all the details of all employees working in the company.
2. Display ssn, lname, fname, address of employees who work in department no 7.
3. Retrieve the birthdate and address of the employee whose name is 'Franklin T. Wong'
4. Retrieve the name and salary of every employee
5. Retrieve all distinct salary values
6. Retrieve all employee names whose address is in ‘Bellaire’

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

7. Retrieve all employees who were born during the 1950s
8. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive)
9. Retrieve the names of all employees who do not have supervisors
10. Retrieve SSN and department name for all employees
11. Retrieve the name and address of all employees who work for the 'Research' department
12. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birthdate.
13. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.
14. Retrieve all combinations of Employee Name and Department Name
15. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan' either as a worker or as a manager of the department that controls the project.
16. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees.
17. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.
18. Select the names of employees whose salary does not match with salary of any employee in department 10.
19. Retrieve the name of each employee who has a dependent with the same first name and same sex as the employee.
20. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
21. Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings.
22. Find the sum of the salaries and number of employees of all employees of the 'Marketing' department, as well as the maximum salary, the minimum salary, and the average salary in this department.
23. Select the names of employees whose salary is greater than the average salary of all employees in department 10.
24. For each department, retrieve the department number, the number of employees in the department, and their average salary.
25. For each project, retrieve the project number, the project name, and the number of employees who work on that project.
26. Change the location and controlling department number for all projects having more than 5 employees to 'Bellaire' and 6 respectively.
27. For each department having more than 10 employees, retrieve the department no, no of employees drawing more than 40,000 as salary.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

28. Insert a record in Project table which violates referential integrity constraint with respect to Department number. Now remove the violation by making necessary insertion in the Department table.
29. Delete all dependents of employee whose ssn is '123456789'.
30. Delete an employee from Employee table with ssn = '12345'(make sure that this employee has some dependents, is working on some project, is a manager of some department and is supervising some employees). Check and display the cascading effect on Dependent and Works on table. In Department table MGRSSN should be set to default value and in Employee table SUPERSSN should be set to NULL
31. Perform a query using alter command to drop/add field and a constraint in Employee table.

DSC-1C (CC-3): Operating Systems **Credits 06**

DSC1CT: Operating Systems **Credits 04**

Course Contents:

Introduction: System Software, Resource Abstraction, OS strategies.

Types of operating systems - Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.

Operating System Organization: Factors in operating system design, basic OS functions, implementation consideration; process modes, methods of requesting system services – system calls and system programs.

Process Management : System view of the process and resources, initiating the OS, process address space, process abstraction, resource abstraction, process hierarchy, Thread model

Scheduling: Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.

Memory Management: Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory

Shell introduction and Shell Scripting

- What is shell and various type of shell, Various editors present in linux
- Different modes of operation in vi editor
- What is shell script, Writing and executing the shell script
- Shell variable (user defined and system variables)
- System calls, Using system calls

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

- Pipes and Filters
- Decision making in Shell Scripts (If else, switch), Loops in shell
- Functions
- Utility programs (cut, paste, join, tr , uniq utilities)
- Pattern matching utility (grep)

Suggested Readings:

1. A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications .
2. A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education .
3. G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education .
4. W. Stallings, Operating Systems, Internals & Design Principles , 5th Edition, Prentice Hall of India.
5. M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill.

DSC1CP: Software Lab based on Operating Systems (Lab) Credits 02

Practical

Note: Following exercises can be performed using Linux or Unix

1. Usage of following commands: ls, pwd, tty, cat, who, who am I, rm, mkdir, rmdir, touch, cd.
2. Usage of following commands: cal, cat(append), cat(concatenate), mv, cp, man, date.
3. Usage of following commands: chmod, grep, tput (clear, highlight), bc.
4. Write a shell script to check if the number entered at the command line is prime or not.
5. Write a shell script to modify “cal” command to display calendars of the specified months.
6. Write a shell script to modify “cal” command to display calendars of the specified range of months.
7. Write a shell script to accept a login name. If not a valid login name display message – “Entered login name is invalid”.
8. Write a shell script to display date in the mm/dd/yy format.
9. Write a shell script to display on the screen sorted output of “who” command along with the total number of users .
10. Write a shell script to display the multiplication table any number,
11. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file.
12. Write a shell script to find the sum of digits of a given number.
13. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.
14. Write a shell script to find the LCD (least common divisor) of two numbers.
15. Write a shell script to perform the tasks of basic calculator.
16. Write a shell script to find the power of a given number.
17. Write a shell script to find the factorial of a given number.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

18. Write a shell script to check whether the number is Armstrong or not.
19. Write a shell script to check whether the file have all the permissions or not.
20. Program to show the pyramid of special character "*".

DSC-1D (CC-4): Computer System Architecture Credits 06

DSC1DT: Computer System Architecture Credits 04

Course Contents:

Introduction: Logic gates, boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexors, registers, counters and memory units.

Data Representation and basic Computer Arithmetic: Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.

Basic Computer Organization and Design: Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt.

Central Processing Unit: Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.

Programming the Basic Computer: Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming.

Input-output Organization: Peripheral devices, I/O interface, Modes of data transfer, direct memory access.

Suggested Readings:

1. M. Mano, Computer System Architecture, Pearson Education 1992.
2. J. Dos Reis, Assembly Language and Computer Architecture using C++ and JAVA, Course Technology, 2004
3. W. Stallings, Computer Organization and Architecture Designing for Performance, 8th Edition, Prentice Hall of India ,2009
4. Digital Design, M.M. Mano, Pearson Education Asia, 1979.

DSC1DP: Computer System Architecture Lab Credits 02

Practical: 60 Lab Periods

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Memory 4096 words 16 bits per word	Instruction format 0 3 4 15 Opcode | Address

Basic Company Instructions

Memory Reference	Register Reference	Input-Output

1. Create a machine based on the following architecture:

IR	DR	AC	AR	PC	FGI	FGO	S	I	E
0 15	0 15	0 15	011	011	1 Bit	1 Bit	1 Bit	1 Bit	1 Bit

Symbol	Hex		Symbol	Hex	Symbol	Hex
AND	0xxx		CLA	E800	INP	F80 0
ADD	2xxx		CLE	E400	OUT	F40 0
ISZ	Cxxx		INC	E020		
AND_ I	1xxx	Indirect Addressing	SPA	E010		
ADD_I	3xxx		SNA	E008		
LDA _I	5xxx		SZA	E004		
STA _I	7xxx		SZE	E002		
BUN_I	9xxx		HLT	E001		
BSA _I	Bxxx					
ISZ _I	Dxxx					

Refer to Chapter-5 of Morris Mano for description of instructions.

ii) Create the micro operations and associate with instructions as given in the chapter (except interrupts). Design the register set, memory and the instruction set. Use this machine for the assignments of this section.

iii) Create a Fetch routine of the instruction cycle.

iv) Simulate the machine to determine the contents of AC, E, PC, AR and IR registers in hexadecimal after the execution of each of following register reference instructions:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

a. CLA	e. CIR	i. SNA
b. CLE	f. CIL	j. SZA
c. CMA	g. INC	k. SZE
d. CME	h. SPA	l. HLT

Initialize the contents of AC to $(A937)_{16}$, that of PC to $(022)_{16}$ and E to 1.

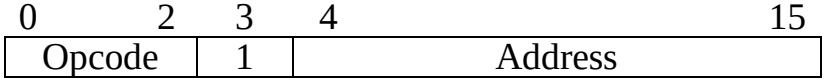
5. Simulate the machine for the following memory-reference instructions with I= 0 and address part = 082. The instruction to be stored at address 022 in RAM. Initialize the memory word at address 082 with the operand B8F2 and AC with A937. Determine the contents of AC, DR, PC, AR and IR in hexadecimal after the execution.

   a. ADD
   b. AND
   c. LDA
   d. STA
   e. BUN
   f. BSA
   g. ISZ

6. Simulate the machine for the memory-reference instructions referred in above question with I= 1 and address part = 082. The instruction to be stored at address 026 in RAM. Initialize the memory word at address 082 with the value 298. Initialize the memory word at address 298 with operand B8F2 and AC with A937. Determine the contents of AC, DR, PC, AR and IR in hexadecimal after the execution.

1. Modify the machine created in Practical 1 according to the following instruction format:

Instruction formate



   a. The instruction format contains a 3-bit opcode, a 1-bit addressing mode and a 12-bit address. There are only two addressing modes, I = 0 (direct addressing) and I = 1 (indirect addressing).

b. Create a new register I of 1 bit.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

c. Create two new microinstructions as follows :

i. Check the opcode of instruction to determine type of instruction (Memory Reference/Register Reference/Input-Output) and then jump accordingly.

ii. Check the I bit to determine the addressing mode and then jump accordingly.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Discipline Specific Elective (DSE)

DSE-1: Programming in Java **Credits 06**

DSE1T: Programming in Java **Credits 04**

Course Contents:

Introduction to Java: Features of Java, JDK Environment

Object Oriented Programming Concept Overview of Programming, Paradigm, Classes, Abstraction, Encapsulation, Inheritance, Polymorphism, Difference between C++ and JAVA

Java Programming Fundamental : Structure of java program, Data types, Variables, Operators, Keywords, Naming Convention, Decision Making (if, switch),Looping(for, while) ,Type Casting

Classes and Objects: Creating Classes and objects, Memory allocation for objects, Constructor, Implementation of Inheritance, Implementation of Polymorphism, Method Overloading, Method Overriding, Nested and Inner classes

Arrays and Strings: Arrays, Creating an array, Types of Arrays, String class Methods, String Buffer methods.

Abstract Class, Interface and Packages: Modifiers and Access Control, Abstract classes and methods, Interfaces, Packages Concept, Creating user defined packages.

Exception Handling: Exception types, Using try catch and multiple catch, Nested try, throw, throws and finally, Creating User defined Exceptions.

File Handling: Byte Stream, Character Stream, File IO Basics, File Operations, Creating file, Reading file, Writing File

Applet Programming: Introduction, Types Applet, Applet Life cycle, Creating Applet, Applet tag

Suggested Readings:

1. Ivan Bayross, Web Enabled Commercial Application Development Using Html, Dhtml, javascript, Perl Cgi , BPB Publications, 2009.
2. Cay Horstmann, BIG Java, Wiley Publication , 3rd Edition., 2009
3. Herbert Schildt , Java 7, The Complete Reference, , 8th Edition, 2009.
4. E Balagurusamy , Programming with JAVA, TMH, 2007

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

DSE1P: Software Lab based on Java (Lab) **Credits 02**

Practical

1. WAP to find the largest of n natural numbers.
2. WAP to find whether a given number is prime or not.
3. Write a menu driven program for following:
    a. Display a Fibonacci series
    b. Compute Factorial of a number
    c. WAP to check whether a given number is odd or even.
    d. WAP to check whether a given string is palindrome or not.
4. WAP to print the sum and product of digits of an Integer and reverse the Integer.
5. Write a program to create an array of 10 integers. Accept values from the user in that array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
6. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
7. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
8. Write java program for the following matrix operations:
    a. Addition of two matrices
    b. Summation of two matrices
    c. Transpose of a matrix
    d. Input the elements of matrices from user.
9. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
10. Write a Java for the implementation of Multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
11. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.
12. Write a java program to draw a line between two coordinates in a window.
13. Write a java program to display the following graphics in an applet window.
    a. Rectangles
    b. Circles
    c. Ellipses
    d. Arcs
    e. Polygons
14. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage() prints the information about the error occurring causes.
15. Write a program for the following string operations:
    a. Compare two strings
    b. Concatenate two strings
    c. Compute length of a string
16. Create a class called Fraction that can be used to represent the ratio of two integers. Include appropriate constructors and methods. If the denominator becomes zero, throw and handle an exception.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Or

DSE-1: Discrete Structures **Credits 06**

DSE1T: Discrete Structures

Course Contents:

Introduction: Introduction to Sets, Finite and Infinite Sets, Unaccountably Infinite Sets. Introduction to Functions and relations, Properties of Binary relations, Closure, Partial Ordering Relations.

Unit-II: Pigeonhole Principle, Permutation and Combinations, Mathematical Induction, Principle of Inclusion and Exclusion.

Unit-III : Asymptotic Notations

Recurrence Relations: Introduction, Generating Functions, Linear Recurrence Relations with constant coefficients and their solution.

Graphs Theory: Basic Terminology of Graphs, Models and Types, Multigraphs, Weighted Graphs, Graph Representation. Graph Isomorphism Graph Connectivity, Euler and Hamiltonian Paths and Circuits, Planar Graphs, Graph Coloring, Basic Terminology of Trees, Properties of Trees, Spanning Trees.

Inference Theory: Introduction, Logical Connectives, Well Formed Forjmulas, Tautologies, Equivalence .

Suggested Readings:

1. C. L. Liu and D.P. Mohapatra, Elements of Discrete Mathematics, Third Edition, Tata McGraw Hill , 2008.
2. K. Rosen, Discrete Mathematics and Its Applications, Sixth Edition, Tata McGraw Hill,2007.
3. T.H. Cormen, C.E. Leiserson, R.L. Rivest, Introduction to Algorithms, Third Edition,Prentice Hall of India,2010.
4. J.P. Trembley, R. Manohar, Discrete Mathematical Structures with Application to Computer Science, First Edition, Tata McGraw Hill, 2001.
5. David Gries, Fred B. Schneider, A Logical Approach to Discrete Math, Springer; , 2010.

Online Reading/Supporting Material:

1. http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer- science-fall-2005/

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Or

DSE-1: Analysis of Algorithm and Data Structures **Credits 06**

DSE1T: Analysis of Algorithm and Data Structures **Credits 04**

Course Contents:

Introduction: Basic Design and Analysis techniques of Algorithms, Correctness of Algorithm

Algorithm Design Techniques: Iterative techniques, Divide and Conquer, Dynamic Programming, Greedy Algorithms.

Sorting Techniques: Elementary sorting techniques-Bubble Sort, Insertion Sort, Merge Sort, Advanced Sorting techniques-Heap Sort, Quick Sort, Sorting in Linear Time-Bucket Sort, Radix Sort and Count Sort

Searching Techniques: Linear and Binary search.

C**omplexity Analysis**: Medians & Order Statistics.

Data Structures:

1. Arrays
   Single and Multi-dimensional Arrays, Sparse Matrices
2. Stacks
   Implementing stack using array and linked list, Prefix, Infix and Postfix expressions, Utility and conversion of these expressions from one to another;
3. Queues
   Array and Linked representation of Queue, De-queue, Priority Queues
4. Linked Lists
   Singly, Doubly and Circular Lists, representation of Stack and Queue as Linked Lists.
5. Recursion
   Developing Recursive Definition of Simple Problems and their implementation; Advantages and Limitations of Recursion;
6. Trees
   Introduction to Tree as a data structure; Binary Trees, Binary Search Tree, (Creation, and Traversals of Binary Search Trees)

Suggested Readings:

1. T.H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein-Introduction to Algorithms, PHI, 3rd Edition 2009.
2. Sarabasse & A.V. Gelder Computer Algorithm –Introduction to Design and Analysis,Publisher– Pearson 3rd Edition 1999.
3. Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning, 2012.
4. SartajSahni, Data Structures, "Algorithms and applications in C++", Second Edition, Universities Press, 2011.
5. Aaron M. Tenenbaum, Moshe J. Augenstein, YedidyahLangsam, "Data Structures Using C and C++:, Second edition, PHI, 2009.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

6. Robert L. Kruse, "Data Structures and Program Design in C++", Pearson.
7. D.S Malik, Data Structure using C++,Second edition, Cengage Learning, 2010.

DSE1P: Software Lab based on Analysis of Algorithms (Lab) **Credits 02**

Practical:

1. Implement Insertion Sort (The program should report the number of comparisons)
2. Implement Merge Sort(The program should report the number of comparisons)
3. Implement Heap Sort (The program should report the number of comparisons)
4. Implement Randomized Quick sort (The program should report the number of comparisons)
5. Implement Radix Sort.
6. Implement Searching Techniques
7. Implementation of Recursive function.
8. Array and Linked list implementation of Stack and Queue.
9. Implementation of Single, Double and circular Linked List
10. Creation and traversal of Binary Search Tree.

Or

DSE-1: Software Engineering **Credits 06**

DSE1T: Software Engineering **Credits 04**

Course Contents:

Software Process: Introduction ,S/W Engineering Paradigm , life cycle models (water fall, incremental, spiral, evolutionary, prototyping, object oriented) , System engineering, computer based system, verification, validation, life cycle process, development process, system engineering hierarchy.

Software requirements: Functional and non-functional , user, system, requirement engineering process, feasibility studies, requirements, elicitation, validation and management, software prototyping, prototyping in the software process, rapid prototyping techniques, user interface prototyping, S/W document. Analysis and modeling, data, functional and behavioral models, structured analysis and data dictionary.

Design Concepts and Principles: Design process and concepts, modular design, design heuristic, design model and document, Architectural design, software architecture, data design, architectural design, transform and transaction mapping, user interface design, user interface design principles. Real time systems, Real time software design, system design, real time executives, data acquisition system, monitoring and control system.

Software Configuration Management: The SCM process, Version control, Change control, Configuration audit, SCM standards.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Software Project Management: Measures and measurements, S/W complexity and science measure, size measure, data and logic structure measure, information flow measure. Estimations for Software Projects, Empirical Estimation Models, Project Scheduling.

Testing: Taxonomy of software testing, levels, test activities, types of s/w test, black box testing testing boundary conditions, structural testing, test coverage criteria based on data flow, mechanisms, regression testing, testing in the large. S/W testing strategies, strategic approach and issues, unit testing, integration testing, validation testing, system testing and debugging.

Trends in Software Engineering: Reverse Engineering and Re-engineering – wrappers – Case Study of CASE tools.

Suggested Readings:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
4. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
5. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxfor University Press, New Delhi, 1996.
6. Pfleeger, "Software Engineering", Pearson Education India, New Delhi, 1999. Carlo Ghezzi, Mehdi Jazayari and Dino Mandrioli, "Fundamentals of Software Engineering", Prentice Hall of India, New Delhi, 1991.

DSE1P: Software Engineering (Lab) **Credits 02**

Practical

1. Practical Title
   - Problem Statement,
   - Process Model

2. Requirement Analysis
   - Creating a Data Flow
   - Data Dictionary,
   - Use Cases

3. Project Management
   - Computing FP
   - Effort
   - Schedule, Risk Table, Timeline chart

4. Design Engineering
   - Architectural Design
   - Data Design, Component Level Design

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

5. Testing
- Basis Path Testing

Sample Projects

- DTC Route Information: Online information about the bus routes and their frequency and fares
- Car Pooling: To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.
- Patient Appointment and Prescription Management System
- Organized Retail Shopping Management Software
- Parking Allocation System
- Wholesale Management System

Or

DSE-1: Computer Networks **Credits 06**

DSE1T: Computer Networks **Credits 04**

Course Contents:

Basic concepts : Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite.

Physical Layer : Cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway.
Data Link Layer : Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.

Network Layer : Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive)

Transport Layer: Transport services, Transport Layer protocol of TCP and UDP.

Application Layer : Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP.

Network Security : Common Terms, Firewalls, Virtual Private Networks.

Suggested Readings:

1. B.A. Forouzan: Data Communication and Networking, 4th Edition, Tata McGraw Hill, 2007.

2. D.E. Comer, Internetworking with TCP/IP, Vol. I, Prentice Hall of India, 1998.

3. W. Stalling, Data & Computer Communication, 8th edition, Prentice Hall of India, 2006.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

4. D. Bertsekas, R. Gallager, Data Networks, 2nd edition, Prentice Hall of India, 1992.

DSE1P: Computer Networks **Credits 02**

Software Lab based on Computer Networks:

Implement the concepts of Computer Networks such as:
1. Simulate Checksum Algorithm.
2. Simulate CRC Algorithm
3. Simulate Stop & Wait Protocol.
4. Simulate Go-Back-N Protocol.
5. Simulate Selective Repeat Protocol.
and so on….

Or

DSE-1: Internet Technologies **Credits 06**

DSE1T: Internet Technologies **Credits 04**

Course Contents:

Introduction to Web Design: Introduction to hypertext markup language (html) document type definition, creating web pages, graphical elements, lists, hyperlinks, tables, web forms, inserting images, frames.

Customized Features: Cascading style sheets, (css) for text formatting and other manipulations.

JavaScript: Data types, operators, functions, control structures, events and event handling.

Java: Use of Objects, Array and Array List class, Designing classes, Inheritance, Input/Output, Exception Handling.

JDBC: JDBC Fundamentals, Establishing Connectivity and working with connection interface,Working with statements, Creating and Executing SQL Statements, Working with Result Set Objects.

JSP: Introduction to JavaServer Pages, HTTP and Servlet Basics, The Problem with Servlets, The Anatomy of a JSP Page, JSP Processing, JSP Application Design with MVC, Setting Up the JSP Environment, Implicit JSP Objects, Conditional Processing, Displaying Values.

Using an expression to Set an Attribute, Declaring Variables and Methods, Error Handling and Debugging, Sharing Data Between JSP Pages, Requests, and Users, Database Access.

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

1. Web Enabled Commercial Application Development Using Html, Dhtml, javascript, Perl Cgi By Ivan Bayross, BPB Publications.

2. BIG Java Cay Horstmann, Wiley Publication , 3rd Edition..

3. Java 7 ,The Complete Reference, Herbert Schildt, 8th Edition.

4. The Complete Reference J2EE, TMH, Jim Keogh.

5. Java Server Pages, Hans Bergsten, Third Edition, O'Reilly Media December.

DSE1P: Internet Technologies (lab) **Credits 02**

Software Lab based on Internet Technologies

JAVA Script

1. Create a student registration form. Create functions to perform the following checks:
    a. Roll number is a 7-digit numeric value
    b. Name should be an alphabetical value(String)
    c. Non-empty fields like DOB

2. Implement a static password protection.
3. Write a java script
    a. To change the colour of text using SetTimeOut()
    b. To move an image across screen using SetInterval()

JAVA Programs

1. WAP to find the largest of n natural numbers.
2. WAP to find whether a given number is prime or not.
3. WAP to print the sum and product of digits of an Integer and reverse the Integer.
4. Write a program to create an array of 10 integers. Accept values from the user in that array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
5. Write java program for the following matrix operations:
    a. Addition of two matrices
    b. Summation of two matrices
    c. Transpose of a matrix
    Input the elements of matrices from user
6. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.

JDBC

1. Create a table 'Student' and ‘Teacher’ in 'College' database and insert two rows in this newly created table using JDBC API and do the following:

    a. Update an already created table 'Teacher' in 'College' database by updating a teacher's name, with "Dr." appended before the name, whose name is "Rita".

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

b. Repeat the same thing for all the teachers using Prepared Statement.

c. Delete the student with ID=3 from 'Student' database.

d. Insert two students to the Result Set returned by the query which selects all students with First Name="Ayush". The database must also get updated along with Result Set.

2. Create a procedure in MySQL to count the number of Rows in table 'Student'. Use Callable Statement to call this method from Java code.

JSP Practical list

1.Display the pattern:

1
1 2
1 2 3

Take ‘n’ in a textbox from user. Display this pattern using

- Scriptlets
- <c:forEach> loop

2. Make two files as follows:

a. main.html: shows 2 text boxes and 3 radio buttons with values "addition", "subtraction" and "multiplication"

b. operate.jsp: depending on what the user selects perform the corresponding function (Give two implementations: using request. get Parameter() and using expression language)

3. Validate User input entered in a form. The input must include Name, DOB, Email ID, Lucky Number, Favorite food etc.

4. Display Good Morning <uname>, Good Afternoon <uname> or Good Evening <uname> based on the current time of the day.

5. Create your custom library which contains two tags: <hello>, <choco>.
Usage of the tags:

- <hello name=”Ajay”>: Output should be Hello Ajay. It contains a mandatory attribute ‘name’ which can accept Dynamic value.
- <choco texture=”Chewy”>: Output should be FiveStar, BarOne.

<choco texture=”Crunchy”>: Output should be Munch. KitKat.

That means the mandatory attribute must accept a value, and based on the attributes value, it should give output. You must use a bean ChocoBean for this purpose.

DSE-2: Data Mining **Credits 06**

DSE2T: Data Mining **Credits 04**

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Data Warehousing: Introduction- Definition and description, need for data ware housing, need for strategic information, failures of past decision support systems, OLTP vs DWH-DWH requirements-trends in DWH-Application of DWH.

Data Warehousing Architecture: Reference architecture- Components of reference architecture - Data warehouse building blocks, implementation, physical design process and DWH deployment process. A Multidimensional Data, Model Data Warehouse Architecture.

Data Mining: Data mining tasks-Data mining vs KDD- Issues in data mining, Data Mining metrics, Data mining architecture - Data cleaning- Data transformation- Data reduction - Data mining primitives.

Association Rule Mining: Introduction - Mining single dimensional Boolean association rules from transactional databases - Mining multi-dimensional association rules.

Classification and Prediction: Classification Techniques - Issues regarding classification and prediction - decision tree - Bayesian classification –Classifier accuracy – Clustering – Clustering Methods - Outlier analysis.

Applications and Other Data Mining Methods: Distributed and parallel Data Mining Algorithms, Text mining- Web mining.

Suggested Readings:

1. Jiawei Han and Micheline Kamber, ” Data Mining Concepts and Techniques”, Morgan Kaufmann Publishers, USA, 2006.
2. Berson,”DataWarehousing, Data Mining and OLAP”, Tata McGraw Hill Ltd, New Delhi, 2004.
3. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, , Pearson Education.
4. Arun K Pujari,”Data mining techniques”, Oxford University Press, London, 2003.
5. Dunham M H,”Data mining: Introductory and Advanced Topics”. Pearson Education, New Delhi, 2003.
6. Mehmed Kantardzic,” Data Mining Concepts, Methods and Algorithms”, John Wiley and Sons, USA, 2003.
7. Soman K. P., DiwakarShyam, Ajay V., Insight into Data mining: Theory and Practice, PHI 2006

DSE2P: Data Mining (Lab) **Credits 02**

Software Lab based on Data Mining:

Practical List:

Practical are to be done using Weka, and a report prepared as per the format*. The operations are to be performed on built-in dummy data sets of weka and/or the downloadable datasets mentioned in references below. Also wherever applicable, the parameter values are to be varied (upto 3 distinct values). The 'Visualize' tab is to be explored with each operation.

1. Preprocessing : Apply the following filters –

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

a. weka>filter>supervised>attributed>
AddClassification , AttributeSelection, Discretize , NominalToBinary

b. weka>filter>supervised>instance:
StratifiedRemoveFolds, Resample

c. weka>filter>unsupervised>attribute>
Add, AddExpression, AddNoise , Center , Discretize , MathExpression , MergeTwoValues , NominalToBinary , NominalToString, Normalize NumericToBinary , NumericToNominal , NumericTransform , PrincipalComponent , RandomSubset , Remove , RemoveType , ReplaceMissingValues , Standardize

d. weka>filter>unsupervised>instance>
Normalize , Randomize , Standardize, RemoveFrequentValues, RemoveWithValues , Resample , SubsetByExpression

2. **Explore the 'select attribute' as follows**
weka>attributeSelection> , FilteredSubsetEval , WrapperSubsetEval

3. **Association mining**
weka>associations> , Apriori, FPGrowth

4**. Classification****
weka>classifiers>bayes> , NaïveBayes , weka>classifiers>lazy> : IB1 , IBk
weka>classifiers>trees , SimpleCart , RandomTree , ID3

5. **Clustering****
weka>clusters> , SimpleKMeans , FarthestFirst algorithm, DBSCAN, hierarchicalClusterer

Or

DSE-2: Mobile Applications **Credits 06**

DSE2T: Mobile Applications **Credits 04**

Course Contents:

Event Driven Programming: UI event loop, Threading for background tasks, Outlets / actions, delegation, notification, Model View Controller (MVC) design pattern.

Mobile application issues: limited resources (memory, display, network, file system), input / output (multi-touch and gestures), sensors (camera, compass, accelerometer, GPS)

Development tools: Apple iOS toolchain: Objective-C, Xcode IDE, Interface Builder, Device simulator.

Frameworks: Objective-C and Foundation Frameworks, Cocoa Touch, UIKit, Others: Core Graphics, Core Animation, Core Location and Maps, Basic Interaction.

Common UI's for mobile devices: Navigation Controllers, Tab Bars, Table Views, Modal views, UI Layout.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Data Persistence: Maintaining state between application invocations, File system, Property Lists, SQLite, Core Data.

Remote Data-Storage and Communication: "Back End" / server side of application, RESTful programming, HTTP get, post, put, delete, database design, server side JavaScript / JSON.

Code signing: security, Keychain, Developers and App Store License Agreement.

Suggested Readings:

1. Rajiv Ramnath, Roger Crawfis, and Paolo Sivilotti, Android SDK 3 for Dummies, Wiley, 2011.
2. Valentino Lee, Heather Schneider, and Robbie Schell, Mobile Applications: Architecture, Design, and Development, Prentice Hall, 2004.
3. Brian Fling, Mobile Design and Development, O'Reilly Media, 2009. Maximiliano
4. Firtman, Programming the Mobile Web, O'Reilly Media, 2010.
5. Christian Crumlish and Erin Malone, Designing Social Interfaces, O'Reilly Media, 2009.

DSE2P: Mobile Applications (Lab) **Credits 02**

Software Lab based on Mobile Applications:

1. Installing Android Environment
2. Create Hello World Application
3. Sample Application about Android Resources
4. Sample Application about Layouts
5. Sample Application about Intents
6. Sample Application I about user interfaces
7. Sample Application about Animations
8. Make a Project based on above labs
9. Sample Application about Android Data
10. Sample Application about SQLite I
11. Sample Application about SQLite II
12. Project Presentation

Or

DSE-2: E-Commerce Technologies **Credits 06**

DSE2P: E-Commerce Technologies **Credits 04**

Course Contents:

An introduction to Electronic commerce: What is E-Commerce (Introduction And Definition), Main activities E-Commerce, Goals of E-Commerce, Technical Components of E-Commerce, Functions of E-Commerce, Advantages and disadvantages of E-Commerce, Scope of E-Commerce, Electronic Commerce Applications, 9 Electronic Commerce and Electronic Business(C2C)(C2G,G2G, B2G, B2P, B2A, P2P, B2A, C2A, B2B, B2C) .

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

The Internet and WWW: Evolution of Internet, Domain Names and Internet Organization (.edu, .com, .mil, .gov, .net etc.) , Types of Network, Internet Service Provider, World Wide Web, Internet & Extranet, Role of Internet in B2B Application, building own website, Cost, Time, Reach, Registering a Domain Name, Web promotion, Target email, Baner, Exchange, Shopping Bots .

Internet Security: Secure Transaction, Computer Monitoring, Privacy on Internet, Corporate Email privacy, Computer Crime(Laws , Types of Crimes), Threats, Attack on Computer System, Software Packages for privacy, Hacking, Computer Virus(How it spreads, Virus problem, virus protection, Encryption and Decryption, Secret key Cryptography, DES, Public Key Encryption, RSA, Authorisation and Authentication, Firewall, Digital Signature(How it Works) .

Electronic Data Exchange: Introduction, Concepts of EDI and Limitation, Applications of EDI, Disadvantages of EDI, EDI model, Electronic Payment System: Introduction, Types of Electronic Payment System, Payment Types, Value Exchange System, Credit Card System, Electronic Fund Transfer, Paperless bill, Modern Payment Cash, Electronic Cash .

Planning for Electronic Commerce: Planning Electronic Commerce initiates, Linking objectives to business strategies, Measuring cost objectives, Comparing benefits to Costs, Strategies for developing electronic commerce web sites .

Internet Marketing: The PROS and CONS of online shopping, The cons of online shopping, Justify an Internet business, Internet marketing techniques, The E-cycle of Internet marketing, Personalization e-commerce.

Suggested Readings:

1. G.S.V.Murthy, E-Commerce Concepts, Models, Strategies- :- Himalaya Publishing House, 2011.
2. Kamlesh K Bajaj and Debjani Nag , E- Commerce , 2005.
3. Gray P. Schneider , Electronic commerce, International Student Edition, 2011,
4. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, E-Commerce, Fundamentals and Applications, Wiely Student Edition, 2011

DSE2P: E-Commerce Technologies (Lab) **Credits 02**

Software Lab based on E-Commerce Technologies

E-commerce concepts are to be implemented in developing a website using a combination of following technologies:

1. HyperText Markup Language (HTML)
2. Cascading Style Sheets (CSS)
3. JavaScript
4. ASP
5. PHP

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

6. XML

7. Joomla

Or

DSE-2: Cloud Computing **Credits 06**

DSE2T: Cloud Computing **Credits 04**

Course Contents:

Cloud Introduction: Cloud Computing Fundamentals: Cloud Computing definition, Types of cloud, Cloud services: Benefits and challenges of cloud computing, Evolution of Cloud Computing , usage scenarios and Applications , Business models around Cloud – Major Players in Cloud Computing - Issues in Cloud - Eucalyptus - Nimbus - Open Nebula, CloudSim.

Cloud Services And File System: Types of Cloud services: Software as a Service - Platform as a Service – Infrastructure as a Service - Database as a Service - Monitoring as a Service – Communication as services. Service providers- Google App Engine, Amazon EC2, Microsoft Azure, Sales force. Introduction to MapReduce, GFS, HDFS, Hadoop Framework.)

Collaborating With Cloud:Collaborating on Calendars, Schedules and Task Management – Collaborating on Event Management, Contact Management, Project Management – Collaborating on Word Processing , Databases – Storing and Sharing Files- Collaborating via Web-Based Communication Tools – Evaluating Web Mail Services – Collaborating via Social Networks – Collaborating via Blogs and Wikis. 185 CS-Engg&Tech-SRM-2013.

Virtualization For Cloud :Need for Virtualization – Pros and cons of Virtualization – Types of Virtualization – System Vm, Process VM, Virtual Machine monitor – Virtual machine properties - Interpretation and binary translation, HLL VM - Hypervisors – Xen, KVM , VMWare, Virtual Box, Hyper-V.

Security, Standards, And Applications
Security in Clouds: Cloud security challenges – Software as a Service Security, Common Standards: The Open Cloud Consortium – The Distributed management Task Force – Standards for application Developers – Standards for Messaging – Standards for Security, End user access to cloud computing, Mobile Internet devices and the cloud.

Suggested Readings:

1. Bloor R., Kanfman M., Halper F. Judith Hurwitz “Cloud Computing ” Wiley India Edition,2010
2. John Rittinghouse & James Ransome, “Cloud Computing Implementation Management and Strategy”, CRC Press, 2010
3. Antohy T Velte ,Cloud Computing : “A Practical Approach”, McGraw Hill,2009

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

4. Michael Miller, Cloud Computing: "Web-Based Applications That Change the Way You Work and Collaborate Online", Que Publishing, August 2008.
5. James E Smith, Ravi Nair, "Virtual Machines", Morgan Kaufmann Publishers, 2006.

Online Reading/Supporting Material

1. Haley Beard, "Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing", Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008
2. webpages.iust.ac.ir/hsalimi/.../89.../Cloud%20Common%20standards.pptop ennebula.org,
3. www.cloudbus.org/cloudsim/, http://www.eucalyptus.com/
4. hadoop.apache.org
5. http://hadoop.apache.org/docs/stable/hdfs_design.html
6.http://static.googleusercontent.com/external_content/untrusted_dlcp/researc
h.google.com/en//archive/mapreduce-osdi04.pdf

DSE2P: Cloud Computing (Lab) **Credits 02**

Software Lab based on Cloud Computing:

1. Create virtual machines that access different programs on same platform.
2. Create virtual machines that access different programs on different platforms.
3. Exploring Google cloud for the following
    a) Storage
    b) Sharing of data
    c) Manage your calendar, to-do lists,
    d) A document editing tool
4. Exploring Microsoft cloud
5. Exploring Amazon cloud

Or

DSE-2: Project Work **Credits 06 (2+4)**

The students will be allowed to work on any project based on the concepts studied in core/elective or skill based elective courses. Theory classes will cover project management techniques.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Skill Enhancement Courses (SEC)

SEC-1: MySQL (SQL/PL-SQL) **Credits 02**

SEC1T: MySQL (SQL/PL-SQL) **Credits 01**

Course Contents:

SQL Vs. SQL * Plus:

SQL Commands and Data types, Operators and Expressions, Introduction to SQL * Plus.

Managing Tables and Data:

- Creating and Altering Tables (Including constraints)
- Data Manipulation Command like Insert, update, delete
- SELECT statement with WHERE, GROUP BY and HAVING, ORDER BY, DISTINCT, Special operator like IN, ANY, ALL BETWEEN, EXISTS, LIKE
- Join, Built in functions

Other Database Objects

- View
- Synonyms, Index

Transaction Control Statements

- Commit, Rollback, Savepoint

Introduction to PL/SQL

- SQL v/s PL/SQL
- PL/SQL Block Structure
- Language construct of PL/SQL (Variables, Basic and Composite Data type, Conditions looping etc.)
- % TYPE and % ROWTYPE
- Using Cursor (Implicit, Explicit)

Suggested Readings:

1. Baron Schwartz , High Performance MySQL, O'Reilly, 2012.
2. Vikram Vaswani , The Complete Reference MySQL , McGraw Hill Educations, 2004.

SEC1P: MySQL (SQL/PL-SQL) (Lab) **Credits 01**

Software Lab Based on MySQL (SQL/PL-SQL):

[SQL COMMANDS]

1) SQL* formatting commands

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

2) To create a table, alter and drop table.
3) To perform select, update, insert and delete operation in a table.
4) To make use of different clauses viz where, group by, having, order by, union and intersection,
5) To study different constraints.

[SQL FUNCTION]

6) To use oracle function viz aggregate, numeric, conversion, string function.
7) To understand use and working with joins.
8) To make use of transaction control statement viz rollback, commit and save point.
9) To make views of a table.
10) To make indexes of a table.

[PL/SQL]
11) To understand working with PL/SQL
12) To implement Cursor on a table.
13) To implement trigger on a table

Or

SEC-1: HTML Programming **Credits 02**

SEC1T: HTML Programming **Credits 01**

Course Contents:

Unit-I: Introduction
Unit-II: The Basics

- The Head, the Body
- Colors, Attributes
- Lists, ordered and unordered

Unit-III: Links

- Introduction
- Relative Links, Absolute Links
- Link Attributes
- Using the ID Attribute to Link Within a Document

Unit-IV: Images
- Putting an Image on a Page
- Using Images as Links

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

- Putting an Image in the Background

Unit V: Tables
- Creating a Table
- Table Headers
- Captions
- Spanning Multiple Columns
- Styling Table

Unit VI: Forms
- Basic Input and Attributes
- Other Kinds of Inputs
- Styling forms with CSS
- Where To Go From Here

Suggested Readings:

1. Virginia DeBolt , Integrated HTML and CSS A Smarter, Faster Way to Learn Wiley / Sybex , 2006
2. Cassidy Williams, Camryn Williams Introduction to HTML and CSS, O'Reilly, 2015

SEC1P: Software Lab Based on HTML **Credits 01**

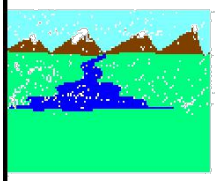
Q.1 Create an HTML document with the following formatting options:

1. Bold
2. Italics
3. Underline
4. Headings (Using H1 to H6 heading styles)
5. Font (Type, Size and Color)
6. Background (Colored background/Image in background)
7. Paragraph
8. Line Break
9. Horizontal Rule
10. Pre tag

Q.2 Create an HTML document which consists of:

I. Ordered List
II. Unordered List
III. Nested List
IV. Image

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf



XYZ Ltd's Update

1. Introduction
2. Company Financial Update
   - First Quarter
   - Second Quarter
   - Third Quarter
   - Fourth Quarter
3. Advertising Update
   - Result of Newspaper Campaign
   - Additions to staff
   - New Thoughts on Television
4. Human Resources Update

A. Saftey Considerations
   1. Body substance isolation
   2. Sense safty
   3. Initial size-up
B. Intitial Patient Assessment
   1. General Impression
   2. Unresponsiveness
      i. Alert to person, place and time
      ii. Verbal response to audible stimuli
      iii. Pain evokes verbal or physical response
      iv. Unresponsive to all stimuli
C. Patient Critical Needs
   1. Airway
   2. Breathing
      i. Use oxygen if indicated
      ii. Consider use of assisting with bag value mask
   3. Circulation
   4. Bleeding

Q.3 Create an HTML document which implements Internal linking as well as External linking.

Q.4 Create a table using HTML which consists of columns for Roll No., Student's name and grade.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Result		
Roll No.	Name	Grade

Q.5 Create a Table with the following view:

			Please an image here		

Q.6 Create a form using HTML which has the following types of controls :

I. Text Box
II. Option/radio buttons
III. Check boxes
IV. Reset and Submit buttons

Subscribe to XYZ News Magazine and Emails

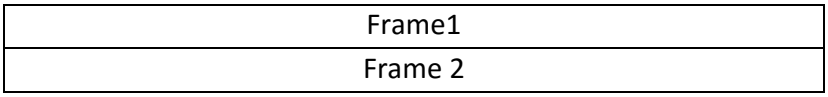
Interested in receiving daily small updates of all latest News? Well, now you can. And best of all, it is free! Just fill out this form and submit it by clicking the "send it In" button. We will put you on our mailing list and you will receive your first email in 3-5 days.

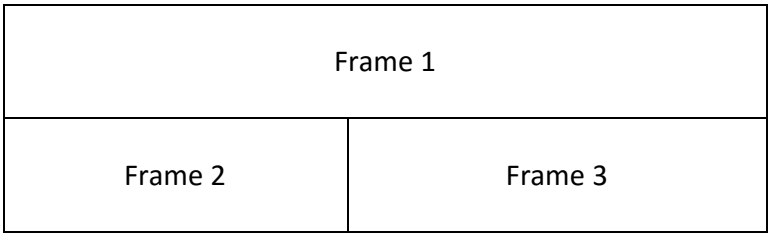
Please fill the following boxes to help us send the emails and our news letter:
First Name:
Last Name:
Business:
We must have a correct e-mail address to send you the news letter:
Email:
How did you hear about XYZ News Magazine and Emails?
◉ Here on the Web ○ In a magazine ○ Television ○ Other
Would you like to be on our regular mailing list?
☑ Yes, we love junk emails

Reset Send it in!

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Q.7 Create HTML documents (having multiple frames) in the following three formats:





SEC-2: Multimedia Applications **Credits 02**

SEC2T: Multimedia Applications **Credits 01**

Course Contents:

Multimedia: Introduction to multimedia, Components, Uses of multimedia.

Making Multimedia: Stages of a multimedia project, Requirements to make good multimedia, Multimedia Hardware - Macintosh and Windows production Platforms, Hardware peripherals - Connections, Memory and storage devices, Multimedia software and Authoring tools.

Text: Fonts & Faces, Using Text in Multimedia, Font Editing & Design Tools, Hypermedia &Hypertext.

Images: Still Images – Bitmaps, Vector Drawing, 3D Drawing & rendering, Natural Light & Colors, Computerized Colors, Color Palletes, Image File Formats.

Sound: Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats.

Video: How Video Works, Analog Video, Digital Video, Video File Formats, Video Shooting and Editing.

Animation: Principle of Animations. Animation Techniques, Animation File Formats.

Suggested Readings:

1. Tay Vaughan, “Multimedia: Making it work”, TMH, Eighth edition. 2006
2. Ralf Steinmetz and Klara Naharstedt, “Multimedia: Computing, Communications Applications”, Pearson,1995.
3. Keyes, “Multimedia Handbook”, TMH. 2000.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

4. K. Andleigh and K. Thakkar, “Multimedia System Design”, PHI,2000

SEC2P: Multimedia Applications (Lab) **Credits 01**

Software Lab Based on Multimedia (FLASH as a multimedia S/W):

Practical exercises based on concepts listed in theory using Flash.
FLASH: Concept of Frame, Key frames, Frame rate, Timeline, Tween, Layers, Symbols, Embedding audio/video and embedding on the web page

1. Draw an animation to show a bouncing ball.
2. Draw an animation to show a moving stick man.
3. Draw an animation to show a fainting banana.
4. Draw an animation to show sunrise and sunset.
5. Draw an animation to show a disappearing house.
6. Draw an animation to show two boats sailing in river
7. Draw an animation to show a scene of cricket match.
8. Draw an animation to help teach a poem or a song
9. Draw an animation to show cartoon with a message
10. Make a movie showing Shape Tweening.
11. Make a movie showing Motion Tweening.
12. Add sound and button to the movie.

Or

SEC-2: PHP Programming **Credits 02**

SEC2T: PHP Programming **Credits 01**

Course Contents:

Introduction to PHP:

- PHP introduction, inventions and versions, important tools and software requirements (like Web Server, Database, Editors etc.)
- PHP with other technologies, scope of PHP
- Basic Syntax, PHP variables and constants
- Types of data in PHP , Expressions, scopes of a variable (local, global)
- PHP Operators : Arithmetic, Assignment, Relational , Logical operators, Bitwise , ternary and MOD operator.
- PHP operator Precedence and associativity

Handling HTML form with PHP:

- Capturing Form Data

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

- GET and POST form methods
- Dealing with multi value fields
- Redirecting a form after submission

PHP conditional events and Loops:

- PHP IF Else conditional statements (Nested IF and Else)
- Switch case, while ,For and Do While Loop
- Goto , Break ,Continue and exit

PHP Functions:

- Function, Need of Function , declaration and calling of a function
- PHP Function with arguments, Default Arguments in Function
- Function argument with call by value, call by reference
- Scope of Function Global and Local

String Manipulation and Regular Expression:

- Creating and accessing String , Searching & Replacing String
- Formatting, joining and splitting String , String Related Library functions
- Use and advantage of regular expression over inbuilt function
- Use of preg_match(), preg_replace(), preg_split() functions in regular expression

Array:

- Anatomy of an Array ,Creating index based and Associative array ,Accessing array
- Looping with Index based array, with associative array using each() and foreach()
- Some useful Library function

SEC2P: PHP Programming (Lab) **Credits 01**

Software Lab Based on PHP:

1. Create a PHP page using functions for comparing three integers and print the largest number.
2. Write a function to calculate the factorial of a number (non-negative integer). The function accept the number as an argument.
3. WAP to check whether the given number is prime or not.
4. Create a PHP page which accepts string from user. After submission that page displays the reverse of provided string.
5. Write a PHP function that checks if a string is all lower case.
6. Write a PHP script that checks whether a passed string is palindrome or not? (A palindrome is word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run)
7. WAP to sort an array.
8. Write a PHP script that removes the whitespaces from a string.
   Sample string : 'The quick " " brown fox'
   Expected Output : Thequick""brownfox

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

9. Write a PHP script that finds out the sum of first n odd numbers.
10. Create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered (i.e.name is present in the database) otherwise error message should be displayed.
11. Write a PHP script that checks if a string contains another string.
12. Create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.

13. Create a script to construct the following pattern, using nested for loop.

```
*
* *
* * *
* * * *
* * * * *
```

14. Write a simple PHP program to check that emails are valid.
15. WAP to print first n even numbers.
16. $color = array('white', 'green', 'red")

Write a PHP script which will display the colors in the following way :
Output :
white, green, red,

- green
- red
- white

17. Using switch case and dropdown list display a “Hello” message depending on the language selected in drop down list.
18. Write a PHP program to print Fibonacci series using recursion.
19. Write a PHP script to replace the first 'the' of the following string with 'That'.

Sample : 'the quick brown fox jumps over the lazy dog.'
Expected Result : That quick brown fox jumps over the lazy dog.

Or

SEC-2: Programming with VB/GAMBAS **Credits 02**

SEC2T: Programming with VB/GAMBAS **Credits 01**

`Course Contents:

GUI Environment: Introduction to graphical user interface (GUI), programming language (procedural, object oriented, event driven), the GUI environment, compiling, debugging, and running the programs.

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

properties, designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls.

Operations: Data types, constants, named & intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data.

Decision Making : If statement, comparing strings, compound conditions (and, or, not), nested if statements, case structure, using if statements with option buttons & check boxes, displaying message in message box, testing whether input is valid or not**.**

Forms Handling : Multiple forms creating, adding, removing forms in project, hide, show method, load, unload statement, me keyword, referring to objects on a different forms.

Iteration Handling: Do/loops, for/next loops, using msgbox function, using string function.

Suggested Readings:

a. Programming in Visual Basic 6.0 by Julia Case Bradley, Anita C. Millispangh (Tata Mcgraw Hill Edition 2000 (Fourteenth Reprint 2004)

SEC2P: Programming with VB/GAMBAS (Lab) **Credits 01**

Software Lab Based on Visual Basic:

Practical exercises based on concepts listed in theory using VB.

1. Write a VB application to compute the sum of two variables.
2. Write a VB application to compute the factorial of a number n.
3. Write a VB application to compute the Fibonacci series of a number n.
4. Write a VB application to compute the series of prime numbers till number n.
5. Write a VB application to compute the maximum of three numbers.
6. Write a VB application to compute the sum of odd numbers and even numbers in an array of n integers.
7. Write a VB application to compare the strings.
8. Write a VB application to make a calculator.
9. Write a VB application to choose your hobbies from a list.
10. Write a VB application to illustrate the use of color radio button.
11. Write a VB application to illustrate the use of color scroll bar form.
12. Write a VB application to illustrate the use of color scroll bar label text.
13. Write a VB application to illustrate the use of color text box.
14. Write a VB application to show a timer.

SEC-3: Programming with Matlab **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

SEC3T: Programming with Matlab

Course Contents:

MATLAB Basics

The MATLAB environment - Basic computer programming - Variables and constants, operators and simple calculations - Formulas and functions - MATLAB toolboxes

Matrices and vectors

Matrix and linear algebra review - Vectors and matrices in MATLAB - Matrix operations and functions in MATLAB

Computer programming

Algorithms and structures - MATLAB scripts and functions (m-files) - Simple sequential algorithms - Control structures

MATLAB programming and Numerical Simulations

Matlab Programming. Reading and writing data, file handling - Personalized functions - Toolbox structure - MATLAB graphic functions. Numerical simulations. Numerical methods and simulations - Random number generation – Monte carlo methods

Suggested Readings:

1. Hanselman Mastering Matlab, Pearson
2. Rudrapratap Matlab, Oxford
3. Bansal , Matlab, Pearson
4. Navas Lab Primer through Matlab, PHI

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Or

SEC-3: Concepts of Software Testing **Credits 02**

SEC3T: Concepts of Software Testing **Credits 01**

Course Contents:

Introduction
Strategic Approach to Software Testing, Test Strategies for Conventional Software, Validation Testing, System Testing, Basic Terminologies, V Shaped Software Lifecycle Model

Functional Testing\ Black-box Testing
Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing

Structural Testing\ White-box Testing
Basis Path Testing: Program Graph, DD Path graph, Cyclomatic Complexity, Graph Matrices, Control Flow Testing: Statement Coverage, Branch Coverage, Condition Coverage, Path Coverage

Suggested Readings:

1. Roger S. Pressman, Software Engineering: A Practitioner's Approach, Seventh Edition, Mc Graw Hill Education.2009.
2. Yogesh Singh, Software Testing, Cambridge University Press,2011.

SEC3P: Concepts of Software Testing (Lab) **Credits 01**

Computer Lab Based on Software Testing:

1. Write a program that takes three inputs (a, b &c) that represent the sides of a triangle, and the output is one of the below four:
    a. Not a triangle
    b. Scalene triangle
    c. Isosceles triangle
    d. Equilateral triangle

1.1 Generate test cases using Boundary Value Analysis, Equivalence Class Partitioning and Decision Table Testing.
1.2 Generate test cases using Basis path testing.
1.3 Run code coverage tool.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

2. Write a program that determines the nature of roots of a quadratic equation. Output should be one of the following:-

   • Not a quadratic equation.

   • Complex roots

   • Real roots

   • Single roots

   I. Generate test cases using Boundary Value Analysis, Equivalence Class Partitioning and Decision Table Testing.

   II. Generate test cases using Basis path testing.

   III. Run code coverage tool

3. Write a program that checks whether the number is even or odd. Run code coverage tool and find the amount of code being covered.

4. Write a program that dynamically allocates memory to10 integers using malloc() or calloc() and

   • donot free memory leading to memory leaks. Verify the same usingValgrind.

   • Now, free memory using free () at the end of the program to avoid memory leaks. Verify the same using Valgrind.

5. Use Load UI load testing tool to test the web application performance.

SEC-4: R-Programming **Credits 02**

SEC4T: R-Programming **Credits 01**

Course Contents:

Introduction: Overview and History of R, Getting Help, Data Types, Subsetting, Vectorized Operations, Reading and Writing Data.

Control Structures, Functions, lapply, tapply, split, mapply, apply, Coding Standards.

Scoping Rules, Debugging Tools, Simulation, R Profiler.

Suggested Readings:

W. N. Venables, D. M. Smith, An Introduction to R, R-core team,2015

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

SEC4P: R-Programming (Lab) `Credits 01

Software Lab Based on R Programming:

1. Write a program that prints 'Hello World' to the screen.
2. Write a program that asks the user for a number n and prints the sum of the numbers 1 to n
3. Write a program that prints a multiplication table for numbers up to 12.
4. Write a function that returns the largest element in a list.
5. Write a function that computes the running total of a list.
6. Write a function that tests whether a string is a palindrome.
7. Implement the following sorting algorithms: Selection sort, Insertion sort, Bubble Sort
8. Implement linear search.
9. Implement binary search.
10. Implement matrices addition , subtraction and Multiplication

Or

SEC-4: Android Programming Credits 02

SEC4T: Android Programming Credits 01

Course Contents:

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

Overview of object oriented programming using Java: OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract class, Threads, Overloading and Overriding, Java Virtual Machine.

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating a android project – Hello Word, run on emulator, Deploy it on USB-connected Android device.

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes.

User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu, and Dialog.

Database: Understanding of SQLite database, connecting with the database.

Suggested Readings:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Online Reading / Supporting Material:

1. http://www.developer.android.com
2. http://developer.android.com/about/versions/index.html
3. http://developer.android.com/training/basics/firstapp/index.html
4. http://docs.oracle.com/javase/tutorial/index.htm (Available in the form of free downloadable ebooks also).
5. http://developer.android.com/guide/components/activities.html
6. http://developer.android.com/guide/components/fundamentals.html
7. http://developer.android.com/guide/components/intents-filters.html.
8. http://developer.android.com/training/multiscreen/screensizes.html
9. http://developer.android.com/guide/topics/ui/controls.html
10. http://developer.android.com/guide/topics/ui/declaring-layout.html
11. http://developer.android.com/training/basics/data-storage/databases.html

SEC4P: Android Programming (Lab) **Credits 01**

Software Lab Based on Android Programming:

1. Create “Hello World” application. That will display “Hello World” in the middle of the screen in the emulator. Also display “Hello World” in the middle of the screen in the Android Phone.

2. Create an application with login module. (Check username and password).

3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.

4. Create a menu with 5 options and selected option should appear in text box.

5. Create a list of all courses in your college and on selecting a particular course teacher-in-charge of that course should appear at the bottom of the screen.

6. Create an application with three option buttons, on selecting a button colour of the screen will change.

7. Create and Login application as above. On successful login, pop up the message.

8. Create an application to Create, Insert, update, Delete and retrieve operation on the database.

Or

SEC-4: XML Programming **Credits 02**

SEC4T: XML Programming **Credits 01**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Course Contents:

Introduction:
Understanding Mark-up Languages, Introduction to XML and its Goals.

XML Basics:
XML Structure and Syntax, Document classes and Rules.

Other XML Concepts:
Scripting XML, XML as Data, Linking with XML.

XML with Style:
XSL –Style Sheet Basics, XSL basics, XSL style sheets.

Suggested Readings:

1. XML in action web technology by William J. Pardi

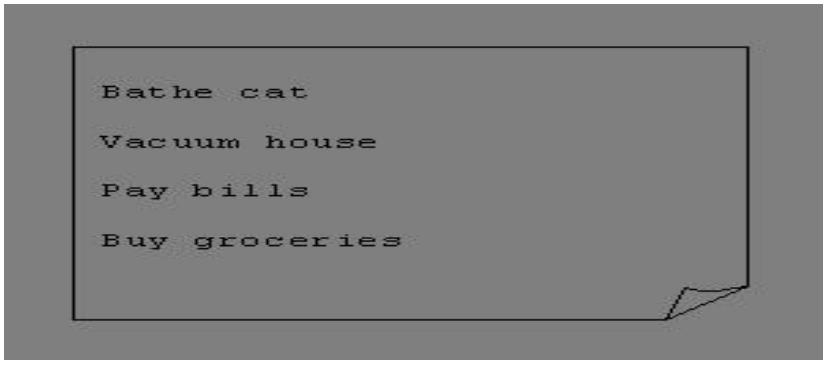
2. Step by Step XML by Michael J. Young

SEC4P: Software Lab Based on XML **Credits 02**

Exercise #1 – Information Structure
In this exercise, student will practice identifying the structure of an information object. For the sample document provided below:

Label the information structures you see, including containing structures.

1. Draw a tree representation of the structure.



Exercise 2# Deconstructing an XML Document

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

In this exercise, student will practice identifying the explicit structure within an XML document. In a sense, this is the reverse of what you did in Exercise #1. For the sample XML markup below, create a document-like representation (or a simple drawing) for the content contained within the XML tags:

<book>
<coverInfo>
<title>The XML Handbook</title>
<author>Charles F. Goldfarb</author>
<author>Paul Prescod</author>
<edition>Second</edition

<description>The definitive XML resource: applications, products, and technologies. Revised and expanded—over 600 new pages.

</description>
</coverInfo>
</book>

Exercise #3 – Creating XML Markup

In this exercise, create some XML markup based on the tree representation from Exercise #1 above, and the content from the original sample document.

Exercise #4 – Well-Formedness

This exercise checks your understanding of the constraints for well-formedness. Are the following document instances well-formed? Explain any NO answers.

<list><title>The first list</title><item>An item</list>
<item>An item</item><item>Another item</item>
<para>Bathing a cat is a <emph>relatively</emph> easy task as long as the cat is willing.</para>
<bibl><title>How to Bathe a Cat<author></title>Merlin Bauer<author></bibl>

Exercise #5-Well Formedness

This exercise is a bit more challenging than the previous example. Here is a fragment of an XML document instance. Identify all the places where it fails to match the constraints for well-formedness.

<PROCEDURE><TITLEHow to Bathe a Cat</TITLE>
<OVERVIEW>

This procedure tells you how to bathe a cat. <WARNING></OVERVIEW>Cats don't like to take baths. You could get hurt doing this. Be sure to obtain all the required protective gear before you start. </WARNING><EQUIPEMENT><ITEM>Hockey Mask <ITEM>Padded Full-body Kevlar Armor</ITEM><ITEM>Tub full of warm water</ITEM><ITEM>Towels </ITEM><ITEM>First Aid kit</ITEM><ITEM>Cat Shampoo</ITEM> <EQUIPMENT><INSTRUCTIONS> <STEP> Locate the cat, who by now is hiding under the bed.</STEP><STEP>Place the cat in the tub of water.</STEP> <ITEM>Using the First Aid kit, repair the damage to your head and arms.</STEP> <STEP>Place the cat

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

back in the tub and hold it down.</STEP> <STEP>Wash it really fast, then make an effort to dry it with the towels.</STEP> <STEP>Decide not to do this again. </STEP> </INSTRUCTIONS>

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:58:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Computer_Science_General.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Zoology

[Choice Based Credit System]

Semester-I

Sl.No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C1	**C1T:** Non- Chordates-I	Core Course-1		4	0	0	6	75
	C1P: Non- Chordates-I (Practical)	Core Course1 [Practical]		0	0	4		
C2	**C2T:** Ecology	Core Course-2		4	0	0	6	75
	C2P: Ecology (Practical)	Core Course-2 [Practical]		0	0	4		
GE-1	GE-1	GE					4/5	75
	GE-1	GE					2/1	
AECC	English	AECC					2	50
				Total Credits =20				

L=Lecture, T=Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: English /Modern Indian Language.

Interdisciplinary/Generic Elective (GE) from other Department

[**Four papers are to be taken and each paper will be of 6 credits**]:

[Papers are to be taken from any of the following discipline **(GE-1 Preferably Chemistry/Physiology)]:Chemistry/Botany/Physiology/ComputerSc./Microbiology/Bio Technology/ Geology /Nutrition /Aquaculture Management.**

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Semester -1

Core Courses-1

CC-1: Non-Chordates I — Credits 06

C1T1 –Non-Chordates I — Credits 04

Non-Chordates I		
	4 Credits	**Class**
Unit 1: Basics of Animal Classification		4
Definitions: Classification, Systematics and Taxonomy; Taxonomic Hierarchy, Taxonomic types Codes of Zoological Nomenclature; Principle of priority; Synonymy and Homonymy; Six kingdom concept of classification (Card woese)		
Unit 2: Protista and Metazoa		15
Protozoa General characteristics and Classification up to phylum (according to Levine et. al., 1981) Locomotion in *Euglena*, *Paramoecium* and *Amoeba*; Conjugation in *Paramoecium*. Life cycle and pathogenicity of *Plasmodium vivax* and *Entamoeba histolytica* **Metazoa** Evolution of symmetry and segmentation of Metazoa		

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Unit 3: Porifera	6
General characteristics and Classification up to classes; Canal system and spicules in sponges	
Unit 4: Cnidaria	10
General characteristics and Classification up to classes Metagenesis in *Obelia* & *Aurelia* Metagenesis in *Obelia* Polymorphism in Cnidaria Corals and coral reef diversity, function & conservation	
Unit 5: Ctenophora	2
General characteristics	
Unit 6: Platyhelminthes	6
General characteristics and Classification up to classes Life cycle and pathogenicity and control measures of *Fasciola hepatica* and *Taenia solium*	
Unit 7: Nematoda	7
General characteristics and Classification up to classes Life cycle, and pathogenicity and control measures of *Ascaris lumbricoides* and *Wuchereria bancrofti* Parasitic adaptations in helminthes	
Reference Books	
▸Ruppert and Barnes, R.D. (2006). Invertebrate Zoology, VIII Edition. Holt Saunders International Edition.	

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

- Invertebrates by Brusca & Brusca. Second edition, 2002.

Classification for metazoans to be followed from: Rupert and Barnes, 1994, 6th Edition.

C1 P1 –Non-Chordates I Lab — Credits 02

List of Practical

1. Study of whole mount of *Euglena*, *Amoeba* and *Paramoecium*
2. Identification of *Amoeba*, *Euglena*, *Entamoeba*, *Opalina*, *Paramecium*, *Plasmodium vivax* and *Plasmodium falciparum* (from the prepared slides)
3. Identification of *Sycon*, Neptune's Cup, *Obelia*, *Physalia*, *Millepora*, *Aurelia*, *Tubipora*, *Corallium*, *Alcyonium*, *Gorgonia*, *Metridium*, *Pennatula*, *Fungia*, *Meandrina*, *Madrepora*
4. Identification and significance of adult *Fasciola hepatica*, *Taenia solium* and *Ascaris lumbricoides*
5. Staining/mounting of any protozoa/helminth from gut of cockroach

Core -2

CC-2: Ecology — Credits 06

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

C2 T2 –Ecology Credits 04

Ecology		
	4 Credits	**Class**
Unit 1: Introduction to Ecology		4
History of ecology, Autecology and synecology, Levels of organization, Laws of limiting factors,Study of Physical factors, The Biosphere.		
Unit 2: Population		20
Unitary and Modular populations Unique and group attributes of population: Demographic factors, life tables, fecundity tables, survivorship curves, dispersal and dispersion. Geometric, exponential and logistic growth, equation and patterns, r and K strategies Population regulation - density-dependent and independent factors Population Interactions, Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition.		
Unit 3: Community		11
Community characteristics: species diversity, abundance, , dominance, richness, Vertical stratification, Ecotone and edge effect. Ecological succession with one example		
Unit 4: Ecosystem		10
Types of ecosystem with an example in detail, Food chain: Detritus and grazing food chains,		

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Linear and Y-shaped food chains, Food web, Energy flow through the ecosystem, Ecological pyramids and Ecological efficiencies Nutrient and biogeochemical cycle with an example of Nitrogen cycle Human modified ecosystem	
Unit 5: Applied Ecology	5
Wildlife Conservation (in-situ and ex-situ conservation). Management strategies for tiger conservation; Wild life protection act (1972)	

Reference Books

- Krebs, C. J. (2001). Ecology. VI Edition. Benjamin Cummings.
- Odum, E.P., (2008). Fundamentals of Ecology. Indian Edition.
- Brooks/Cole Robert Leo Smith Ecology and field biology
- Harper and Row publisher
- Ecology: Theories & Application (2001). 4th Edition by Peter Stilling.

Ecology by Cain, Bowman & Hacker. 3rd edition. Sinauer associates

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

C2 P2 –Ecology Lab Credits 02

List of Practical

1. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided

2. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community

3. Study of an aquatic ecosystem: Phytoplankton and zooplankton, Measurement of area, temperature,

   turbidity/penetration of light, determination of pH, and Dissolved Oxygen content (Winkler's method), Chemical Oxygen Demand and free CO_2

4. Report on a visit to National Park/Biodiversity Park/Wild life sanctuary

Note: In field report costal area to be included.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Generic Elective Syllabus

GE-1 [Interdisciplinary for other department]

GE-1 -Animal Cell Biotechnology Credits 06

GE-1 T1 -Animal Cell Biotechnology Credits 04

Animal Cell Biotechnology		
	4 Credits	**Class**
Unit 1: Introduction		2
Concept and Scope of Biotechnology		
Unit 2: Techniques in Gene manipulation		15
Recombinant DNA technology, Isolation of genes, Concept of restriction and modification: Restriction endonucleases, DNA modifying enzymes Cloning Vectors: Plasmids, Phage vectors, Cosmids, Phagemids, BAC, YAC, and HAC. Shuttle and Expression Vectors. Construction of Genomic libraries and cDNA libraries Transformation techniques: microbial, plants and animals: Cloning in mammalian cells, Integration of DNA into mammalian genome- Electroporation and Calcium Phosphate Precipitation method.		
Unit 3: Animal cell Culture		9
Basic techniques in animal cell culture and organ culture, Primary Culture and Cell lines,		

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Culture

media- Natural and Synthetic, Stem cells, Cryopreservation of cultures.

Agarose and Polyacrylamide Gel Electrophoresis, Southern, Northern and Western blotting, DNA

sequencing: Sanger method, Polymerase chain reaction, DNA Fingerprinting and DNA microarrays.

Unit 4: Fermentation 8

Different types of Fermentation: Submerged & Solid state; batch, Fed batch & Continuous; Stirred

tank, Air Lift, Fixed Bed and Fluidized.

Downstream Processing: Filtration, centrifugation, extraction, chromatography, spray drying and

lyophilization.

Unit 5: Transgenic Animal Technology 6

Production of transgenic animals: nuclear transplantation, Retroviral method, DNA microinjection

method, Dolly and Polly.

Unit 6: Application in Health 6

Development of recombinant Vaccines, Hybridoma technology, Gene Therapy. Production of

recombinant Proteins: Insulin and growth hormones.

Unit 7: Bio safety Physical and Biological containment 4

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Bio safety Physical and Biological containment

Reference Books

- Animal Cells Culture and Media, D.C. Darling and S.J. Morgan, 1994. BIOS Scientific

  Publishers Limited.

- Methods in Cell Biology, Volume 57, Jennie P. Mathur and David Barnes, 1998. Animal

  Cell Culture Methods Academic Press.

- P.K. Gupta: Biotechnology and Genomics, Rastogi publishers (2003).

- B.D. Singh: Biotechnology, Kalyani publishers, 1998 (Reprint 2001).

- T.A. Brown: Gene cloning and DNA analysis: An Introduction, Blackwell Science (2001).

- Bernard R. Click & Jack J. Pasternak: Molecular Biotechnology, ASM Press, Washington

  (1998).

- Methods in Gene Biotechnology, W. Wu, M.J. Welsh, P.B. Kaufman &H.H. Zhang, 1997,

  CRC Press, New York

- Griffiths, A.J.F., J.H. Miller, Suzuki, D.T., Lewontin, R.C. and Gelbart,

  W.M. (2009). An introduction to genetic analysis. IX Edition. Freeman & Co., N.Y., USA

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

GE-1 P1 –Animal Cell Biotechnology Lab Credits 02

List of Practical

1. Packing and sterilization of glass and plastic wares for cell culture.
2. Preparation of culture media.
3. Preparation of genomic DNA from E. coli/animals/ human.
4. Plasmid DNA isolation (p UC 18/19) and DNA quantitation using agarose gel electrophoresis (by using lambda DNA as standard).
5. Restriction digestion of lambda (λ) DNA using EcoR1 and Hind III.
6. Preparation of competent cells and Transformation of E. coli with plasmid DNA using CaCl2, Selection of transformants on X-gal and IPTG (Optional).
7. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting, PCR, DNA Microarrays

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Zoology [Choice Based Credit System]

Semester-II

Sl.No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C3	**C3T:** Non- Chordates-II	Core Course-3		4	0	0	6	75
	C3P: Non- Chordates-II (Practical)	Core Course-3 [Practical]		0	0	4		
C4	**C4T:** Cell Biology	Core Course-4		4	0	0	6	75
	C4P: Cell Biology (Practical)	Core Course-4 [Practical]		0	0	4		
GE-2	GE-2	GE					4/5	75
	GE-2	GE					2/1	
AECC -2	Environmental Studies	AECC					4	100
				Total Credits =22				

L=Lecture, T=Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: Environmental Studies.

<u>Interdisciplinary/Generic Elective (GE) from other Department</u>
[**Four papers are to be taken and each paper will be of 6 credits**]:
[Papers are to be taken from any of the following discipline **Chemistry/Botany/Physiology/Computer Sc./Microbiology/Bio Technology/ Geology /Nutrition /Aquaculture Management.**

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Semester –II

Core Courses
Core-3

CC-3 :Non-Chordates II — Credits 06

C3 T - Non-Chordates II — Credits 04

C3 T - Non-Chordates II

	4 Credits	Class
Unit 1: Introduction		2
Evolution of coelom and metamerism		
Unit 2: Annelida		10
General characteristics and Classification up to classes Excretion in Annelida through nephridia. Metamerism in Annelida.		
Unit 3:Arthropoda		16
General characteristics and Classification up to classes Vision in Insecta only. Respiration in Arthropoda (Gills in prawn and trachea in cockroach) Metamorphosis in Lepidopteran Insects. Social life in termite		
Unit 4: Onychophora		2
General characteristics and Evolutionary significance		
Unit 5: Mollusca		10
General characteristics and Classification up to classes Nervous system and torsion in Gastropoda Feeding and respiration in *Pila* sp		
Unit 6: Echinodermata		8

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

General characteristics and Classification up to classes

Water-vascular system in Asteroidea

Larval forms in Echinodermata

Affinities with Chordates

Unit 7: Hemichordata **2**

General characteristics of phylum Hemichordata. Relationship with non-chordates and chordates

Reference Books

- Ruppert and Barnes, R.D. (2006). Invertebrate Zoology, VIII Edition. Holt Saunders International Edition
- TheInvertebrates: A New Synthesis, III Edition, Blackwell Science

Note: Classification to be followed from Rupert and Barnes, 1994, 6th Edition.

C3 P – Non-Chordates II Credits 02

List of Practical

1. Study of following specimens:
    a. Annelids - *Aphrodite, Nereis, Heteronereis, Sabella, Serpula, Chaetopterus, Pheretima, Hirudinaria*
    b. Arthropods - *Limulus, Palamnaeus, Palaemon, Daphnia, Balanus, Sacculina, Cancer, Eupagurus, Scolopendra, Julus, Bombyx, Periplaneta*, termites and honey bees *Onychophora - Peripatus*
    c. Molluscs - *Chiton, Dentalium, Pila, Doris, Helix, Unio, Ostrea, Pinctada, Sepia, Octopus, Nautilus*
    d. Echinodermates - *Pentaceros/Asterias, Ophiura, Clypeaster, Echinus, Cucumaria* and
    e. Antedon
2. Study of digestive system, septal nephridia and pharyngeal nephridia of earthworm
3. T.S. through pharynx, gizzard, and typhlosolar intestine of earthworm
4. Mount of mouth parts and dissection of digestive system and nervous system of *Periplaneta**
5. To submit a Project Report on any related topic to larval forms (crustacean, mollusc and echinoderm)

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Core-4

CC-4 : Cell Biology — Credits 06

C4 T: Cell Biology — Credits 04

C4 T - Cell Biology

4 Credits — **Class**

Unit 1: Overview of Cells — 2

Basic structure of Prokaryotic and Eukaryotic cells, Viruses, Viroid, Prion and Mycoplasma

Unit 2: Plasma Membrane — 6

Ultra structure and composition of Plasma membrane: Fluid mosaic model

Transport across membrane: Active and Passive transport, Facilitated transport

Cell junctions: Tight junctions, Gap junctions, Desmosomes

Unit 3: Cytoplasmic organelles I — 5

Structure and Functions: Endoplasmic Reticulum, Golgi Apparatus, Lysosomes

Protein sorting and mechanisms of vesicular transport

Unit 4: Cytoplasmic organelles II — 6

Mitochondria: Structure, Semi-autonomous nature, Endosymbiotic hypothesis
Mitochondrial Respiratory Chain, Chemi-osmotic hypothesis
Peroxisomes: Structure and Functions

Centrosome: Structure and Functions

Unit 5: Cytoskeleton — 5

Type, structure and functions of cytoskeleton

Accessory proteins of microfilament & microtubule

A brief idea about molecular motors

Unit 6: Nucleus — 8

Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleolus

Chromatin: Euchromatin and Hetrochromatin and packaging (nucleosome)

Unit 7: Cell Division — 10

Cell cycle and its regulation, Cancer (Concept of oncogenes and tumor suppressor genes with special reference to p53, Retinoblastoma and Ras and APC. Mitosis and Meiosis: Basic process and their significance

Unit 8: Cell Signaling — 8

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Cell signalling transduction pathways; Types of signaling molecules and receptors
GPCR and Role of second messenger (cAMP)
Extracellular matrix-Cell interactions
Apoptosis and Necrosis

Reference Books

- Lewin's Cells – 3rd Edition – Cassimeris/Lingappa/Plopper – Johns & Bartlett Publishers
- Biology of Cancer by Robert. A. Weinberg. 2nd edition.
- Cooper, G.M. and Hausman, R.E. (2009). The Cell: A Molecular Approach. V Edition. ASM Press and Sunderland, Washington, D.C.; Sinauer Associates, MA.
- Bruce Albert, Bray Dennis, Levis Julian, Raff Martin, Roberts Keith and Watson James (2008). Molecular Biology of the Cell, V Edition, Garland publishing Inc., New York and London.

C4P–Cell Biology (Lab) Credits 02

Cell Biology

List of Practical

1. Preparation of temporary stained squash of onion root tip to study various stages of mitosis
2. Study of various stages of meiosis.
3. Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells.
4. Preparation of permanent slide to demonstrate:

    a. DNA by Feulgen reaction
    b. Cell viability study by Trypan Blue staining
    c. Mitochondria identification through vital staining

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Generic Elective Syllabus

GE-2 [Interdisciplinary for other department]

GE-2 :Animal Diversity — Credits 06

GE2 T:Animal Diversity — Credits 04

GE2 T-Animal Diversity

	4 Credits	Class
Unit 1: Protista		**3**
Protozoa : General characters of Protozoa; Life cycle of *Plasmodium*		
Unit 2: Porifera		3
General characters and canal system in Porifera		
Unit 3: Radiata		3
General characters of Cnidarians and polymorphism		
Unit 4: Aceolomates		2
General characters of Helminthes		
Unit 5: Pseudocoelomates		3
General characters of Nematoda Parasitic adaptations		
Unit 6: Annelida		3
General characters of Annelida Metamerism		
Unit 7: Arthropoda		4
General characters. Social life in insects.		
Unit 8: Mollusca		4
General characters of mollusk. Pearl Formation		
Unit 9: Echynodermata		4
General characters of Echinodermata. Water Vascular system in Starfish.		

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Unit 10: Protochordata 2

Salient features

Unit 11: Pisces 3

General Characters.
Osmoregulation, Migration of Fish

Unit 12: Amphibia 4

General characters, Adaptations for terrestrial life, Parental care

Unit 13: Reptilia 4

General Characters.
Amniotes; Origin of reptiles. Terrestrial adaptations in reptiles.

Unit 14: Aves 4

General Characters.
The origin of birds; Flight adaptations

Unit 15: Mammalia 4

General Characters.
Early evolution of mammals; Primates; Dentition in mammals.

Reference Books

- Barnes, R.D. (1992). Invertebrate Zoology. Saunders College Pub. USA.
- Ruppert, Fox and Barnes (2006) Invertebrate Zoology. A functional Evolutionary Approach
  7th Edition, Thomson Books/Cole
- Campbell & Reece (2005). Biology, Pearson Education, (Singapore) Pvt. Ltd.

Kardong, K. V. (2002). Vertebrates Comparative Anatomy. Function and Evolution. Tata McGraw Hill Publishing Company. New Delhi.

Raven, P. H. and Johnson, G. B. (2004). Biology, 6th edition, Tata McGraw Hill Publications. New Delhi.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

GE2 P –Animal Diversity Lab Credits 02

List of Practical

1. Study of following specimens:

    a. Non Chordates: *Euglena*, *Noctiluca*, *Paramecium*, *Sycon*, , *Physalia*, *Tubipora*, *Metridium*, *Taenia*, *Ascaris*, *Nereis*, *Aphrodite*, Leech, *Peripatus*, *Limulus*, Hermitcrab, *Daphnia*, Millipede, Centipede, Beetle, *Chiton*, *Dentalium*, *Octopus*, *Asterias*, and *Antedon*.

    b. Chordates: *Balanoglossus*, *Amphioxus*, *Petromyzon*, *Pristis*, *Hippocampus*, *Labeo*, *Icthyophis*/*Uraeotyphlus*, Salamander, *Rhacophorus*, *Draco*, *Uromastix*, *Naja*, *Viper*, model of Archaeopteryx, any three common birds-(Crow, duck, Owl), Squirrel and Bat.

2. Study of following Permanent Slides:

    Cross section of *Sycon*, Sea anemone and *Ascaris* (male and female). T. S. of Earthworm passing through pharynx, gizzard, and typhlosolar intestine. Bipinnaria and Pluteus larva.

3. Temporary mounts of:

    a. Septal & pharyngeal nephridia of earthworm.

    b. Unstained mounts of Placoid, cycloid and ctenoid scales.

4. Dissections of:

    a. Digestive and nervous system of Cockroach

    b. Urinogenital system of Rat

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Zoology
[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		**C5T:**Chordates	Core Course - 5	4	0	0	6	75
		C5P: Chordates Lab		0	0	4		
CC-6		**C6T:**Animal Physiology: Controlling & Coordinating Systems	Core Course - 6	4	0	0	6	75
		C6P: Animal Physiology: Controlling & Coordinating Systems Lab		0	0	4		
CC-7		**C7T:**Fundamentals of Biochemistry	Core Course - 7	4	0	0	6	75
		C7P: Fundamentals of Biochemistry Lab		0	0	4		
GE-3	TBD		Generic Elective -3				4/5	75
							2/1	
SEC-1		**SEC-1:**Apiculture Or **SEC-1:**Aquarium Fish Keeping	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P=**Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [**Four papers are to be taken and each paper will be of 6 credits**]:

Papers are to be taken from any of the following discipline:

Chemistry /Botany/Physiology/Computer Sc./Microbiology /Bio Technology/ Geology /Nutrition /Aquaculture Management.

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Semester- III
Core Course (CC)

CC-5: Chordates **Credits 06**

C5T: Chordates **Credits 04**

Unit 1: Introduction to Chordates
General characteristics and outline classification of Phylum Chordata

Unit 2: Protochordata
General characteristics and classification of sub-phylum Urochordata and Cephalochordata up to Classes. Retrogressive metamorphosis in *Ascidia*. Chordate Features and Feeding in *Branchiostoma*

Unit 3: Origin of Chordata
Dipleurula concept and the Echinoderm theory of origin of chordates
Advanced features of vertebrates over Protochordata

Unit 4: Agnatha
General characteristics and classification of cyclostomes up to order

Unit 5: Pisces
General characteristics and classification of Chondrichthyes and Osteichthyes up to Subclasses
Accessory respiratory organ, migration and parental care in fishes
Swim bladder in fishes. Classification up to Sub-Classes

Unit 6: Amphibia
General characteristics and classification up to living Orders.
Metamorphosis and parental care in Amphibia

Unit 7: Reptilia
General characteristics and classification up to living Orders.
Poison apparatus and Biting mechanism in Snake

Unit 8: Aves
General characteristics and classification up to Sub-Classes
Exoskeleton and migration in Birds
Principles and aerodynamics of flight

Unit 9: Mammals
General characters and classification up to living orders
Affinities of Prototheria
Exoskeleton derivatives of mammals
Adaptive radiation in mammals with reference to locomotory appendages
Echolocation in Micro chiropterans and Cetaceans

Unit 10: Zoogeography

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Zoogeographical realms, Plate tectonic and Continental drift theory, distribution of birds and mammals in different realms

Suggested Readings :

1. Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford university press.
2. Pough H. Vertebrate life, VIII Edition, Pearson International.
3. Darlington P.J. The Geographical Distribution of Animals, R.E. Krieger Pub Co.
4. Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.
5. Parker, T. J. &Haswell, W. (1972). Text Book of Zoology, Volume II: Marshall and Willam (Eds.) 7th Ed. Macmillan Press, London.
6. Kardong, K. V. (2002). Vertebrates: Comparative anatomy, function evolution. Tata McGraw Hill.
7. Kent, G. C. & Carr, R. K. (2001). Comparative anatomy of the Vertebrates. 9th Ed. McGraw Hill.
8. Nelson, J.S., (2006) : Fishes of the World, 4th Edn., Wiley.
9. Romer, A. S. & Parsons, T. S. (1986). The vertebrate body. 6th Ed. Saunders College Publishing.
10. Jordan, E.L. &Verma, P.S. (2003). Chordate Zoology. S. Chand & Company Ltd. New Delhi.
11. Sinha, K. S., Adhikari, S., Ganguly, B. B. & Bharati Goswami, B. D. (2001). Biology of Animals. Vol. II. New Central Book Agency (p) Ltd.
12. Futuyama, D. (1997). Evolutionary Biology. 3rd Ed. Sinauer Associates, INC.

Note: Classifications for Protochordata, Agnatha, Reptilia, Aves and Mammalia to be followed from Young (1981), for Pisces to be followed from Romer (1959), for Amphibia to be followed from Duellman and Trueb (1986).

CP5: Chordates Lab **Credits 02**

List of Practical

1. Protochordata
   Balanoglossus, Herdmania, Branchiostoma
2. Agnatha
   Petromyzon, Myxine
3. Fishes
   Scoliodon, Sphyrna, Pristis, Torpedo, Chimaera, Mystus, Heteropneustes, Labeo, Exocoetus, Echeneis, Anguilla, Hippocampus, Tetrodon/ Diodon, Anabas, Flat fish
4. Amphibia
   Necturus, Bufo, Hyla, Alytes, Axolotl, Tylototriton
5. Reptilia
   Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Zamenis, Crocodylus. Key for Identification of poisonous and non-poisonous snakes
6. Mammalia: Bat (Insectivorous and Frugivorous), *Funambulus*
7. Pecten from Fowl head
8. Dissection of brain and pituitary of Tilapia

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

9. Power point presentation on study of any two animals from two different classes by students (may be included if dissections not given permission)

CC-6: Animal Physiology: Controlling & Coordinating Systems Credits 06

C6T: Animal Physiology: Controlling & Coordinating Systems Credits 04

Unit 1: Tissues
Structure, location, classification and functions of epithelial tissue, connective tissue, muscular tissue and nervous tissue and, fixation and staining of tissues.

Unit 2: Bone and Cartilage
Structure and types of bones and cartilages, Ossification

Unit 3: Nervous System
Structure of neuron, resting membrane potential, Origin of action potential and its propagation across the myelinated and unmyelinated nerve fibers; Types of synapse, Synaptic transmission and Neuromuscular junction; Reflex action and its types

Unit 4: Muscular system
Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle fibre

Unit 5: Reproductive System
Histology of testis and ovary
Physiology of Reproduction

Unit 6: Endocrine System
Histology and function of pituitary, thyroid, pancreas and adrenal
Classification of hormones; Mechanism of Hormone action
Signal transduction pathways for Steroidal and Non steroidal hormones
Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary and endocrine system
Placental hormones

Suggested Readings :

1. Histology: A Text and Atlas. Sixth Edition. Ross & Pawlina. Lippincott Williams & Wilkins.
2. Eckert Animal Physiology by David Randall and Warren Burggren. 4th edition. W. H. Freeman.

C6P: Animal Physiology: Controlling & Coordinating Systems Lab Credits 02

List of Practical

1. Recording of simple muscle twitch with electrical stimulation (or Virtual)

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

2. Demonstration of the unconditioned reflex action (Deep tendon reflex such as knee jerk reflex)
3. Preparation of temporary mounts: Squamous epithelium, Striated muscle fibres and nerve cells
4. Study of permanent slides of Mammalian skin, Cartilage, Bone, Spinal cord, Nerve cell, Pituitary, Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid
5. Microtomy: Preparation of permanent slide of any five mammalian (Goat/white rat) tissues

CC-7: Fundamentals of Biochemistry **Credits 06**

C7T: Fundamentals of Biochemistry **Credits 04**

Unit 1: Carbohydrates
Structure and Biological importance: Monosaccharides, Disaccharides, Polysaccharides; Derivatives of Monosachharides

Carbohydrate metabolism: Glycolysis, Citric acid cycle, Pentose phosphate pathway, Gluconeogenesis

Unit 2: Lipids
Structure and Significance: Physiologically important saturated and unsaturated fatty acids, Tri-acylglycerols, Phospholipids, Sphingolipid, Glycolipids, Steroids, Eicosanoids and terpinoids.

Lipid metabolism: β-oxidation of fatty acids; Fatty acid biosynthesis

Unit 3: Proteins
Amino acids
Structure, Classification, General and Electro chemical properties of α-amino acids; Physiological importance of essential and non-essential amino acids
Proteins
Bonds stabilizing protein structure; Levels of organization
Protein metabolism: Transamination, Deamination, Urea cycle, Fate of C-skeleton of Glucogenic and Ketogenic amino acids

Unit 4: Nucleic Acids
Structure: Purines and pyrimidines, Nucleosides, Nucleotides, Nucleic acids
Types of DNA and RNA, Complementarity of DNA, Hpyo- Hyperchromaticity of DNA
Basic concept of nucleotide metabolism

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Unit 5: Enzymes
Nomenclature and classification; Cofactors; Specificity of enzyme action; Isozymes; Mechanism of enzyme action; Enzyme kinetics; Derivation of Michaelis-Menten equation, Lineweaver-Burk plot;
Factors affecting rate of enzyme-catalyzed reactions; Enzyme inhibition; Allosteric enzymes and their kinetics; Strategy of enzyme action- Catalytic and Regulatory (Basic concept with one example each)

Unit 5: Oxidative Phosphorylation
Redox systems; Review of mitochondrial respiratory chain, Inhibitors and un-couplers of Electron Transport System

C7P: Fundamentals of Biochemistry Lab **Credits 02**

List of Practical

1. Qualitative tests of functional groups in carbohydrates, proteins and lipids.
2. Paper chromatography of amino acids.
3. Quantitative estimation of Lowry Methods.
4. Demonstration of proteins separation by SDS-PAGE.
5. To study the enzymatic activity of Trypsin and Lipase.
6. To perform the Acid and Alkaline phosphatase assay from serum/ tissue.

Suggested Readings:

1. Cox, M.M and Nelson, D.L. (2008). Lehninger's Principles of Biochemistry, V Edition, W.H. Freeman and Co., New York.
2. Berg, J.M., Tymoczko, J.L. and Stryer, L. (2007). Biochemistry, VI Edition, W.H. Freeman and Co., New York.
3. Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well, P.A.(2009). Harper's Illustrated Biochemistry, XXVIII Edition, International Edition, The McGraw- Hill Companies Inc.
4. Hames, B.D. and Hooper, N.M. (2000). Instant Notes in Biochemistry, II Edition, BIOS Scientific Publishers Ltd., U.K.
5. Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R. (2008). Molecular Biology of the Gene, VI Edition, Cold Spring Harbor Lab. Press, Pearson Pub.

Skill Enhancement Course (SEC)

SEC1: Apiculture **Credits 02**

SEC1T: Apiculture

Unit 1: Biology of Bees
History, Classification and Biology of Honey Bees
Social Organization of Bee Colony

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Unit 2: Rearing of Bees
Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth
Bee Pasturage
Selection of Bee Species for Apiculture
Bee Keeping Equipment
Methods of Extraction of Honey (Indigenous and Modern)

Unit 3: Diseases and Enemies
Bee Diseases and Enemies
Control and Preventive measures

Unit 4: Bee Economy
Products of Apiculture Industry and its Uses (Honey, Bees Wax, Propolis), Pollen etc

Unit 5: Entrepreneurship in Apiculture
Bee Keeping Industry – Recent Efforts, Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens

Suggested Readings :

1. Prost, P. J. (1962). Apiculture. Oxford and IBH, New Delhi.
2. Bisht D.S., Apiculture, ICAR Publication.
3. Singh S., Beekeeping in India, Indian council of Agricultural Research, New Delhi.

Or

SEC1: Aquarium Fish Keeping **Credits 02**

SEC1T: Aquarium Fish Keeping

Aquarium Fish Keeping

Unit 1: Introduction to Aquarium Fish Keeping
The potential scope of Aquarium Fish Industry as a Cottage Industry, Exotic and Endemic species of Aquarium Fishes

Unit 2: Biology of Aquarium Fishes
Common characters and sexual dimorphism of Fresh water and Marine Aquarium fishes such as Guppy, Molly, Sword tail, Gold fish, Angel fish, Blue morph, Anemone fish and Butterfly fish

Unit 3: Food and feeding of Aquarium fishes
Use of live fish feed organisms. Preparation and composition of formulated fish feeds, Aquarium fish as larval predator

Unit 4: Fish Transportation
Live fish transport - Fish handling, packing and forwarding techniques.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Unit 5: Maintenance of Aquarium
General Aquarium maintenance – budget for setting up an Aquarium Fish Farm as a Cottage Industry

Generic Elective
GE-3 [Interdisciplinary for other department]

GE-3: Aquatic Biology **Credits 06**

GE3T: Aquatic Biology **Credits 04**

Unit 1: Aquatic Biomes
Brief introduction to the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs.

Unit 2: Freshwater Biology
Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico–chemical Characteristics: Light, Temperature, Thermal stratification, Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity, dissolved gases (Oxygen, Carbon dioxide). Nutrient Cycles in Lakes (Nitrogen, Sulphur and Phosphorous).

Streams: Different stages of stream development, Physico-chemical environment, Adaptation of hill- stream fishes.

Unit 3: Marine Biology
Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Coral reefs, Sea weeds.

Unit 4: Management of Aquatic Resources
Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD

GE3 P: Aquatic Biology Lab **Credits 02**

List of Practical

1. Determine the area of a lake using graphimetric and gravimetric method.
2. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.
3. Determine the amount of Turbidity/transparency, Dissolved Oxygen, and Free Carbon dioxide, Alkalinity (carbonates & bicarbonates) in water collected from a nearby lake / water body.
4. Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler) and their significance.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

5. A Project Report on a visit to a Sewage treatment plant/Marine bio- reserve/Fisheries Institute.

Suggested Readings :

1. Anathakrishnan : Bioresources Ecology 3rd Edition
2. Goldman : Limnology, 2nd Edition
3. Odum and Barrett : Fundamentals of Ecology, 5th Edition
4. Pawlowski: Physicochemical Methods for Water and Wastewater Treatment, 1st Edition
5. Wetzel : Limnology, 3rd edition
6. Trivedi and Goyal : Chemical and biological methods for water pollution studies
7. Welch : Limnology Vols. I-II

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 12:00:02; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Zoology
[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-8		**C8T:** Comparative Anatomy of Vertebrates	Core Course - 8	4	0	0	6	75
		C8P: Practical		0	0	4		
CC-9		**C9T:** Animal Physiology: Life Sustaining Systems	Core Course - 9	4	0	0	6	75
		C9P: Practical		0	0	4		
CC-10		**C10T:** Immunology	Core Course - 10	4	0	0	6	75
		C10P: Practical		0	0	4		
GE-4	TBD		Generic Elective -4				4/5	75
							2/1	
SEC-2		**SEC2:** Medical Diagnostic Techniques **Or** Sericulture	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T**= Tutorial, **P**=Practical, **CC** = Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD** = to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [**Four papers are to be taken and each paper will be of 6 credits**]: **Chemistry/Botany/Physiology/Computer Sc./Microbiology/Bio Technology/ Geology /Nutrition /Aquaculture Management.**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

Semester-IV

Core Course (CC)

CC-8: Comparative Anatomy of Vertebrates **Credits 06**

C8T: Comparative Anatomy of Vertebrates **Credits 04**

Course Contents:

Unit 1: Integumentary System

Structure, function and derivatives of integument in amphibian, birds and mammals

Unit 2: Skeletal System

Overview of axial and appendicular skeleton; Jaw suspension; Visceral arches.

Unit 3: Digestive System

Comparative anatomy of stomach; dentition in mammals

Unit 4: Respiratory System

Respiratory organs in fish, amphibian, birds and mammals

Unit 5: Circulatory System

General plan of circulation, Comparative account of heart and aortic arches

Unit 6: Urinogenital System

Succession of kidney, Evolution of urinogenital ducts, Types of mammalian uteri

Unit 7: Nervous System

Comparative account of brain, Cranial nerves in mammals

Unit 8: Sense Organs

Classification of receptors, Brief account of olfactory and auditory receptors in vertebrate

Suggested Readings:

- Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education
- Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies
- Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons Saxena, R.K. &Saxena, S.C.(2008) : Comparative Anatomy of Vertebrates, Viva Books Pvt. Ltd.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

C8P: Comparative Anatomy of Vertebrates **Credits 02**

List of Practical

1. Study of placoid, cycloid and ctenoid scales through permanent slides/photographs.
2. Study of disarticulated skeleton of Toad, Pigeon and Guineapig.
3. Demonstration of Carapace and plastron of turtle.
4. Identification of mammalian skulls: One herbivorous (Guineapig) and one carnivorous (Dog) animal.
5. Dissection of Tilapia: Circulatory system, Brain, pituitary, urinogenital system.

CC-9: Animal Physiology: Life Sustaining Systems **Credits 06**

C9T: Animal Physiology: Life Sustaining Systems **Credits 04**

Course Contents:

Unit 1: Physiology of Digestion

Structural organisation and functions of Gastrointestinal tract and Associated glands; Mechanical and chemical digestion of food, absorption of Carbohydrates, Lipids, Proteins and Nucleic Acids; Digestive enzymes

Unit 2: Physiology of Respiration

Mechanism of Respiration, Respiratory volumes and capacities, transport of Oxygen and Carbon dioxide in blood, Dissociation curves and the factors influencing it, respiratory pigments; Carbon monoxide poisoning

Unit 3: Physiology of Circulation

Components of Blood and their functions; Structure and functions of haemoglobin Haemostasis; Blood clotting system, Fibrinolytic system Haemopoiesis; Basic steps and its regulation Blood groups; ABO and Rh factor

Unit 4: Physiology of Heart

Structure of mammalian heart, Coronary Circulation, Structure and working of conducting myocardial fibres, Origin and conduction of cardiac impulses Cardiac Cycle and cardiac output Blood pressure and its regulation

Unit 5: Thermoregulation & Osmoregulation

Physiological classification based on thermal biology.

Thermal biology of endotherms

Osmoregulation in aquatic vertebrates

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

Extrarenal osmoregulatory organs in vertebrates

Unit 6: Renal Physiology

Structure of Kidney and its functional unit, Mechanism of urine formation, Regulation of acid-base balance

Suggested Readings:

- Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt
- Asia PTE Ltd. W.B. Saunders Company.
- Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons,
- Eckert Animal Physiology: Mechanisms and adaptations Randall, Burggren and FrenchVander A, Sherman J. and Luciano D. (2014). Vander's Human Physiology: The Mechanism of Body Function. XIII Edition, McGraw Hills
- Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition. Lippincott W. & Wilkins.
- Vander A, Sherman J. and Luciano D. (2014). Vander's Human Physiology: The Mechanism of Body Function. XIII Edition, McGraw Hills

C9P: Animal Physiology: Life Sustaining Systems Lab **Credits 02**

List of Practical

1. Determination of ABO Blood group
2. Enumeration of red blood cells and white blood cells using haemocytometer
3. Estimation of haemoglobin using Sahli's haemoglobinometer
4. Preparation of haemin and haemochromogen crystals
5. Recording of blood pressure using a sphygmomanometer

CC-10: Immunology **Credits 06**

C10T: Immunology **Credits 04**

Course Contents:

Unit 1: Overview of Immune System

Basic concepts of health and diseases, Historical perspective of Immunology, Cells and organs of the Immune system

Unit 2: Innate and Adaptive Immunity

Anatomical barriers, Inflammation, Cell and molecules involved in innate immunity, Adaptive immunity (Cell mediated and humoral).

Unit 3: Antigens

Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, B and T-Cell epitopes

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

Unit 4: Immunoglobulins

Structure and functions of different classes of immunoglobulins, Antigen- antibody interactions,

Immunoassays (ELISA and RIA), Hybridoma technology, Monoclonal antibody production

Unit 5: Major Histocompatibility Complex

Structure and functions of MHC molecules.

Structure of T cell Receptor and its signalling, T cell development & selection

Unit 6: Cytokines

Types, properties and functions of cytokines.

Unit 7: Complement System

Components and pathways of complement activation.

Unit 8: Hypersensitivity

Gell and Coombs' classification and brief description of various types of hypersensitivities.

Unit 9: Immunology of diseases

Malaria, Filariasis, Dengue and Tuberculosis

Unit 10: Vaccines

Various types of vaccines. Active & passive immunization (Artificial and natural).

Suggested Readings:

- Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2006). Immunology, VI Edition. W.H. Freeman and Company.
- Abbas, K. Abul and Lechtman H. Andrew (2003.) Cellular and Molecular Immunology. V Edition. Saunders Publication.

C10P: Immunology Lab **Credits 02**

List of Practical

1. Demonstration of lymphoid organs.
2. Histological study of spleen, thymus and lymph nodes through slides/ photographs
3. Preparation of stained blood film to study various types of blood cells.
4. ABO blood group determination.
5. Demonstration of ELISA

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

Skill Enhancement Courses (SEC)

SEC-2: Medical Diagnostic Techniques **Credits 02**

SEC2T: Medical Diagnostic Techniques

Course Contents:

Unit 1: Introduction to Medical Diagnostics and its Importance

Unit 2: Diagnostics Methods Used for Analysis of Blood

Blood composition, Preparation of blood smear and Differential Leucocyte Count (D.L.C) using Leishman's stain, Platelet count using haemocytometer, Erythrocyte Sedimentary Rate (E.S.R), Packed Cell Volume (P.C.V.)

Unit 3: Diagnostic Methods Used for Urine Analysis

Urine Analysis: Physical characteristics; Abnormal constituents

Unit 4: Non-infectious Diseases

Causes, types, symptoms, complications, diagnosis and prevention of Diabetes (Type I and Type II), Hypertension (Primary and secondary), Testing of blood glucose using Glucometer/Kit

Unit 5: Infectious Diseases

Causes, types, symptoms, diagnosis and prevention of Tuberculosis and Hepatitis, Malarial parasite (Microscope based and ELISA based)

Unit 6: Clinical Biochemistry

LFT, Lipid profiling

Unit 7: Clinical Microbiology

Antibiotic Sensitivity Test

Unit 8: Tumours

Types (Benign/Malignant), Detection and metastasis; Medical imaging: X-Ray of Bone fracture, PET, MRI and CT Scan (using photographs).

Unit 9: Visit to Pathological Laboratory and Submission of Project

Suggested Readings:

- Park, K. (2007), *Preventive and Social Medicine*, B.B. Publishers
- Godkar P.B. and Godkar D.P. *Textbook of Medical Laboratory Technology*, II Edition, Bhalani Publishing House
- Cheesbrough M., *A Laboratory Manual for Rural Tropical Hospitals, A Basis for Training Courses*
- Guyton A.C. and Hall J.E. T*extbook of Medical Physiology*, Saunders Robbins and Cortan, *Pathologic Basis of Disease*, VIII Edition, Saunders
- Prakash, G. (2012), *Lab Manual on Blood Analysis and Medical Diagnostics*, S. Chand and Co. Ltd.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

Or

SEC-2: Sericulture **Credits 02**

SEC2T: Sericulture

Course Contents:

Unit 1: Introduction

Sericulture: Definition, history and present status; Silk route

Types of silkworms, Distribution and Races

Exotic and indigenous races

Mulberry and non-mulberry Sericulture

Unit 2: Biology of Silkworm

Life cycle of *Bombyx mori*

Structure of silk gland and secretion of silk

Unit 3: Rearing of Silkworms

Selection of mulberry variety and establishment of mulberry garden

Rearing house and rearing appliances.

Disinfectants: Formalin, bleaching powder, RKO

Silkworm rearing technology: Early age and Late age rearing

Types of mountages

Spinning, harvesting and storage of cocoons

Unit 4: Pests and Diseases

Pests of silkworm: Uzi fly, dermestid beetles and vertebrates

Pathogenesis of silkworm diseases: Protozoan, viral, fungal and bacterial

Control and prevention of pests and diseases

Unit 5: Entrepreneurship in Sericulture

Prospectus of Sericulture in India: Sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture Visit to various sericulture centres.

Suggested Readings:

- Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi
- Solar energy - M P Agarwal - S Chand and Co. Ltd.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

- Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd Godfrey Boyle, “Renewable Energy, Power for a sustainable future”, 2004,
- Oxford University Press, in association with The Open University.
- Dr. P Jayakumar, Solar Energy: Resource Assesment Handbook, 2009
- J. Balfour, M. Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA). http://en.wikipedia.org/wiki/Renewable_energy

Generic Elective Syllabus
GE-4 [Interdisciplinary for other department]

GE-4: Insect Vectors and Diseases **Credits 06**

GE4T: Insect Vectors and Diseases **Credits 04**

Course Contents:

Unit 1: Introduction to Insects

General Features of Insects, Morphological features, Head – Eyes, Types of antennae, Mouth Parts

Unit 2: Concept of Vectors

Brief introduction to Vectors (mechanical and biological vectors),Reservoirs, Host-vector relationship, Adaptations as vectors, Host specificity

Unit 3: Insects as Vectors

Detailed features of orders with insects as vectors – Diptera, Siphonaptera, Siphunculata, Hemiptera

Unit 4: Dipteran as Disease Vectors

Dipterans as important insect vectors – Mosquitoes, Sand fly, Houseflies

Study of mosquito-borne diseases – Malaria, Dengue, Chikungunya, Viral encephalitis, Filariasis Control of mosquitoes

Study of sand fly-borne diseases –Leishmaniasis,; Control of Sand fly

Study of house fly as important mechanical vector, Myiasis, Control of house fly

Unit 5: Siphonaptera as Disease Vectors

Fleas as important insect vectors; Host-specificity, Study of Flea-borne diseases – Plague, Typhus fever; Control of fleas

Unit 6: Siphunculata as Disease Vectors

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

Human louse (Head, Body and Pubic louse) as important insect vectors; Control of human louse

Unit 7: Hempitera as Disease Vectors

Bugs as insect vectors; Blood-sucking bugs; Chagas disease, Bed bugs as mechanical vectors, Control and prevention measures

Suggested Readings:

- Imms, A.D. (1977). A General Text Book of Entomology. Chapman & Hall, UK
- Chapman, R.F. (1998). The Insects: Structure and Function. IV Edition, Cambridge University Press, UK
- Pedigo L.P. (2002). Entomology and Pest Management. Prentice Hall Publication
- Mathews, G. (2011). Integrated Vector Management: Controlling Vectors of Malaria and Other Insect Vector Borne Diseases. Wiley-Blackwell
- Mosquito (2000) Chandra G, Sribhumi Publication Co. Kolkata
- Medical Entomology, Hati A. K Allied Book Agency, Kolkata

GE4P: Insect Vectors and Diseases Lab **Credits 02**

List of Practical

1. Study of different kinds of mouth parts of insects
2. Study of following insect vectors through permanent slides/ photographs: *Aedes*, *Culex*, *Anopheles*, *Pediculus humanus capitis*, *Pediculus humanus corporis*, *Phithirus pubis*, *Xenopsylla cheopis*, *Cimex lectularius*, *Phlebotomus argentipes*, *Musca domestica* through permanent slides/ photographs
3. Study of different diseases transmitted by above insect vectors

Submission of a project report on any one of the insect vectors and disease transmitted

Or

GE-4: Environment and Public Health **Credits 06**

GE4T: Environment and Public Health **Credits 04**

Course Contents:

Unit 1: Introduction

Sources of Environmental hazards, Hazard identification and accounting, Fate of toxic and persistent substances in the environment, Dose response evaluation, Exposure assessment.

Unit 2: Climate Change

Greenhouse gases and global warming, Acid rain, Ozone layer destruction, Effect of climate change on public health

Unit 3: Pollution

Air, water, noise pollution sources and effects, Pollution control.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

Unit 4: Waste Management Technologies

Sources of waste, types and characteristics, Sewage disposal and its management, Solid waste disposal, Biomedical waste handling and disposal, Nuclear waste handling and disposal, Waste from thermal power plants.

Unit 5: Diseases

Causes, symptoms and control of tuberculosis, Asthma, Cholera, Minamata disease, typhoid, filariasis

Suggested Readings:

- Cutter, S.L., Environmental Risk and Hazards, Prentice-Hall of India Pvt. Ltd., New Delhi, 1999.
- Kolluru Rao, Bartell Steven, Pitblado R and Stricoff "Risk Assessment and Management Handbook", McGraw Hill Inc., New York, 1996.
- Kofi Asante Duah "Risk Assessment in Environmental management", John Wiley and sons, Singapore, 1998.
- Kasperson, J.X. and Kasperson, R.E. and Kasperson, R.E., Global Environmental Risks, V. N. University Press, New York, 2003.
- Joseph F Louvar and B Diane Louver Health and Environmental Risk Analysis
- fundamentals with applications, Prentice Hall, New Jersey 1997.

GE4P: Environment and Public Health Lab **Credits 02**

List of Practical

To determine pH, Cl, SO_4, NO_3 in soil and water samples from different locations.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:58:47; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons4.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Zoology [Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 11		C11T: Molecular Biology	Core Course-11	4	0	0	6	75
		- Lab		0	0	4		
CC- 12		C12T: Genetics	Core Course-12	4	0	0	6	75
		- Lab		0	0	4		
DSE-1		TBD	Discipline Specific Elective - 1	4	0	0	6	75
				0	0	4		
DSE-2		TBD	Discipline Specific Elective -2	4	0	0	6	75
				0	0	4		
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

Semester-V

List of Core Course (CC)

CC-11: Molecular Biology
CC-12: Genetics

Discipline Specific Electives (DSE)

DSE-1: Animal Behaviour and Chronobiology
Or
DSE-1: Fish and Fisheries
Or
DSE-1: Reproductive Biology

DSE-2: Animal Biotechnology
Or
DSE-2: Microbiology

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

Semester-V

Core Courses (CC)

CC-11: Molecular Biology **Credits 06**

C11T: Molecular Biology **Credits 04**

Course Contents:

Unit 1: Nucleic Acids

Salient features of DNA and RNA. Watson and Crick Model of DNA

Unit 2: DNA Replication

Mechanism of DNA Replication in Prokaryotes, Semi-conservative, bidirectional and discontinuous Replication, RNA priming, Replication of telomeres

Unit 3: Transcription

Mechanism of Transcription in prokaryotes and eukaryotes, Transcription factors, Difference between prokaryotic and eukaryotic transcription.

Unit 4: Translation

Mechanism of protein synthesis in prokaryotes, Ribosome structure and assembly in prokaryotes, fidelity of protein synthesis, aminoacyl tRNA synthetases and charging of tRNA; Proteins involved in initiation, elongation and termination of polypeptide chain; Genetic code, Degeneracy of the genetic code and Wobble Hypothesis; Inhibitors of protein synthesis; Difference between prokaryotic and eukaryotic translation

Unit 5: Post Transcriptional Modifications and Processing of Eukaryotic RNA

Capping and Poly A tail formation in mRNA; Split genes: concept of introns and exons, splicing mechanism, alternative splicing, exon shuffling, and RNA editing, Processing of tRNA

Unit 6: Gene Regulation

Regulation of Transcription in prokaryotes: *lac* operon and *trp* operon;
Regulation of Transcription in eukaryotes: Activators, enhancers, silencer, repressors, miRNA mediated gene silencing, Genetic imprinting

Unit 7: DNA Repair Mechanisms

Types of DNA repair mechanisms, RecBCD model in prokaryotes, nucleotide and base excision repair, SOS repair

Unit 8: Molecular Techniques

PCR, Western and Southern blot, Northern Blot, Sanger DNA sequencing

Suggested Readings:

1. Molecular Cell Biology by Harvey Lodish. 7th Edition. W.H. Freeman.
2. Molecular Biology of the Gene by Watson. 7th Edition. Pearson.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

3. iGenetics: A Molecular Approach by Peter. J. Russell. 3rd edition. Pearson Benjamin Cummings.

C11P: Molecular Biology (Lab) **Credits 02**

List of Practical

1. Demonstration of polytene and lampbrush chromosome from photograph
2. Isolation and quantification of genomic DNA using spectrophotometer (A260 measurement)
3. Agarose gel electrophoresis for DNA

CC-12: Genetics **Credits 06**

C12T: Genetics **Credits 04**

Course Contents:

Unit 1: Mendelian Genetics and its Extension
Principles of inheritance, Incomplete dominance and co-dominance, Epistasis Multiple alleles, Lethal alleles, Pleiotropy, Sex-linked, sex- influenced and sex-limited inheritance, Polygenic Inheritance.

Unit 2: Linkage, Crossing Over and Chromosomal Mapping
Linkage and Crossing Over, molecular basis of crossing over, Measuring Recombination frequency and linkage intensity using three factor crosses, Interference and coincidence

Unit 3: Mutations
Types of gene mutations (Classification), Types of chromosomal aberrations (Classification with one suitable example of each), Non-disjunction and variation in chromosome number; Molecular basis of mutations in relation to UV light and chemical mutagens

Unit 4: Sex Determination
Mechanisms of sex determination in *Drosophila*
Sex determination in mammals
Dosage compensation in *Drosophila* & Human

Unit 5: Extra-chromosomal Inheritance
Criteria for extra chromosomal inheritance, Antibiotic resistance in *Chlamyadomonas,* Kappa particle in *Paramoecium* Shell spiralling in snail

Unit 6: Recombination in Bacteria and Viruses
Conjugation, Transformation, Transduction, Complementation test in Bacteriophage

Unit 7: Transposable Genetic Elements
Transposons in bacteria, Ac-Ds elements in maize and P elements in *Drosophila,* LINE, SINE, Alu elements in humans

Suggested Readings:

1. Developmental biology by Scott. F. Gilbert, 9th edition.
2. Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons Inc

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. X Edition. Benjamin Cummings
4. Russell, P. J. (2009). Genetics- A Molecular Approach.III Edition. Benjamin Cummings Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B.

C12P: Genetics (Lab) **Credits 02**

List of Practical

1. Chi-square analyses
2. Linkage maps based on conjugation
3. Identification of chromosomal aberration in Drosophila and man from photograph
4. Pedigree analysis of some human inherited traits

Discipline Specific Electives (DSE)

DSE-1 : Animal Behaviour and Chronobiology **Credits 06**

DSE1T : Animal Behaviour and Chronobiology **Credits 04**

Course Contents:

Unit 1: Introduction to Animal Behaviour

Origin and history of Ethology, Brief profiles of Karl Von Frish, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen Proximate and ultimate causes of behaviour, Methods and recording of a behaviour

Unit 2: Patterns of Behaviour

Stereotyped Behaviours (Orientation, Reflexes); Individual Behavioural patterns; Instinct vs. Learnt Behaviour; Associative learning, classical and operant conditioning, Habituation, Imprinting.

Unit 3: Social and Sexual Behaviour

Social Behaviour: Concept of Society; Communication and the senses

Altruism; Insects' society with Honey bee as example; Foraging in honey bee and advantages of the waggle dance.

Sexual Behaviour: Asymmetry of sex, Sexual dimorphism, Mate choice, Intra-sexual selection (male rivalry), Inter-sexual selection (female choice), Sexual conflict in parental care.

Unit 4: Introduction to Chronobiology

Historical developments in chronobiology; Biological oscillation: the concept of Average, amplitude, phase and period.

Adaptive significance of biological clocks

Unit 5: Biological Rhythm

Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking; Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation of seasonal reproduction of vertebrates; Role of melatonin.

Suggested Readings:

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

1. Animal Behaviour by Drickamar.
2. John Alcock, Animal Behaviour, Sinauer Associate Inc., USA.
3. Paul W. Sherman and John Alcock, Exploring Animal Behaviour, Sinauer Associate Inc., Massachusetts, USA.
4. Chronobiology Biological Timekeeping: Jay. C. Dunlap, Jennifer. J. Loros Patricia J. De Coursey (ed). 2004, Sinauer Associates, Inc. Publishers, Sunderland, MA, USA
5. Insect Clocks D.S. Saunders, C.G.H. Steel, X., Afopoulou (ed.) R.D. Lewis. (3rdEd) 2002 Barens and Noble Inc. New York, USA
6. Biological Rhythms: Vinod Kumar (2002) Narosa Publishing House, Delhi/ Springer-Verlag, Germany.

DSE1P: Animal Behaviour and Chronobiology (Lab) **Credits 02**

List of Practical

1. To study nests and nesting habits of the birds and social insects.
2. To study the behavioural responses of wood lice to dry and humid conditions.
3. To study geotaxis behaviour in earthworm.
4. To study the phototaxis behaviour in insect larvae.
5. Visit to Forest/ Wild life Sanctuary/Biodiversity Park/Zoological Park to study behavioural activities of animals and prepare a short report.
6. Study and actogram construction of locomotor activity of suitable animal models.
7. Study of circadian functions in humans (daily eating, sleep and temperature patterns).

Or

DSE-1: Fish and Fisheries **Credits 06**

DSE1T: Fish and Fisheries **Credits 04**

Course Contents:

Unit 1: Introduction and Classification
General description of fish
Feeding habit, habitat and manner of reproduction
Classification of fish (up to Subclasses)

Unit 2: Morphology and Physiology
Types of fins and their modifications; Locomotion in fish; Hydrodynamics; Types of Scales, Use of scales in Classification and determination of age of fish; Gills and gas exchange; Swim Bladder: Types and role in Respiration, buoyancy; Osmoregulation in Elasmobranchs; Reproductive strategies (special reference to Indian fish); Electric organ, Bioluminescence

Unit 3: Fisheries
Inland Fisheries; Marine Fisheries; Environmental factors influencing the seasonal variations in fish catches in the Arabian Sea and the Bay of Bengal; Fishing crafts and Gears; Depletion of fisheries resources; Application of remote sensing and GIS in fisheries; Fisheries law and regulations

Unit 4: Aquaculture

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

Sustainable Aquaculture; Extensive, semi-intensive and intensive culture of fish; Pen and cage culture; Polyculture; Composite fish culture; Brood stock management; Induced breeding of fish; Management of finfish hatcheries; Preparation and maintenance of fish aquarium; Preparation of compound diets for fish; Role of water quality in aquaculture; Fish diseases: Bacterial, viral and parasitic; Preservation and processing of harvested fish, Fishery by-products

Unit 5: Fish in research
Transgenic fish
Zebrafish as a model organism in research

Suggested Readings:

1. Q Bone and R Moore, Biology of Fishes, Talyor and Francis Group, CRC Press, U.K.
2. D. H. Evans and J. D. Claiborne, The Physiology of Fishes, Taylor and Francis Group, CRC Press, UK von der Emde, R.J. Mogdans and B.G. Kapoor.The Senses of Fish: Adaptations for the Reception of Natural Stimuli Springer, Netherlands
3. C.B.L. Srivastava, Fish Biology, Narendra Publishing House J.R. Norman, A history of Fishes, Hill and Wang Publishers
4. Khanna and H.R. Singh, A text book of Fish Biology and Fisheries, Narendra Publishing House.

Note: Classification to be followed from: Romar A. S. (1959)

DSE1P: Fish and Fisheries (Lab) **Credits 02**

List of Practical

1. Morphometric and meristic characters of fishes
2. Study of *Petromyzon*, *Myxine*, *Pristis*, *Chimaera*, *Exocoetus*, *Hippocampus*, *Gambusia*, *Labeo*, *Heteropneustes*, *Anabas*
3. Study of different types of scales (through permanent slides/ photographs).
4. Study of crafts and gears used in Fisheries
5. Water quality criteria for Aquaculture: Assessment of pH, conductivity, Total solids, Total dissolved solids
6. Study of air breathing organs in *Channa*, *Heteropneustes*, *Anabas* and *Clarias*
7. Project Report on a visit to any fish farm/ pisciculture unit/Zebrafish rearing Lab.

Or

DSE-1: Reproductive Biology **Credits 06**

DSE1T: Reproductive Biology **Credits 04**

Course Contents:

Unit 1: Reproductive Endocrinology
Mechanism of action of steroids and glycoprotein hormones. hypothalamo – hypophyseal – gonadal axis, regulation of gonadotrophin secretion in human (male and female) Reproductive system:
Development and differentiation of gonads, genital ducts and external genitalia

Unit 2: Functional anatomy of male reproduction

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

Histoarchitechture of testis in human; Spermatogenesis; Kinetics and hormonal regulation; Androgen synthesis and metabolism; Accessory glands functions

Unit 3: Functional anatomy of female reproduction
Histoarchitechture of ovary in human; Oogenesis; Kinetics and hormonal regulation; Steroidogenesis and secretion of ovarian hormones; Reproductive cycles (human) and their regulation, fertilization; Hormonal control of implantation; Hormonal regulation of gestation, pregnancy diagnosis, foeto – maternal relationship; Mechanism of parturition and its hormonal regulation; Lactation and its Regulation

Unit 4: Reproductive Health
Infertility in male and female: causes, diagnosis and management Assisted Reproductive Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization Modern contraceptive technologies

Suggested Readings:

1. Ross & Pawlina. Histology: A text and Atlas. 6th edition.
2. Guyton & Hall. Medical Physiology. 11th edition.
3. Knobil, E. et al. (eds). The Physiology of Reproduction. Raven Press Ltd.
4. Hatcher, R.A. et al. The Essentials of Contraceptive Technology. Population Information Programme.

DSE1P: Reproductive Biology (Lab) **Credits 02**

List of Practicals:

1. Study of animal house: set up and maintenance of animal house, breeding techniques, care of normal and experimental animals.
2. Examination of vaginal smear rats from live animals.
3. Tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland
4. Examination of histological sections from photomicrographs/ permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.
5. Sperm count and sperm motility in rat

DSE-2: Animal Biotechnology **Credits 06**

DSE2T: Animal Biotechnology **Credits 04**

Course Contents:

Unit 1: Introduction
Organization of prokaryotic and eukaryotic genome, Concept of genomics

Unit 2: Molecular Techniques in Gene manipulation
Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors (characteristics).Restriction enzymes: Nomenclature, detailed

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

study of Type II. Transformation techniques: Calcium chloride method and electroporation. Construction of genomic and cDNA libraries and screening by colony and plaque hybridization Southern, Northern and Western blotting
DNA sequencing: Sanger method
Polymerase Chain Reaction, DNA Finger Printing and DNA micro array

Unit 3: Genetically Modified Organisms
Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection. Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knock out mice

Unit 4: Culture Techniques and Applications
Animal cell culture, expressing cloned genes in mammalian cells, Molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anemia)

Suggested Readings:

1. Brown, T.A. (1998). Molecular Biology Labfax II: Gene Cloning and DNA Analysis. II Edition, Academic Press, California, USA.
2. Glick, B.R. and Pasternak, J.J. (2009). Molecular Biotechnology - Principles and Applications of Recombinant DNA. IV Edition, ASM press, Washington, USA.
3. Weaver. Molecular Biology of Gene. 5th edition.
4. Primrose & Twyman. Principles of Gene Manipulation and Genomics. 7th edition.

DSE2P: Animal Biotechnology (Lab) **Credits 02**

List of Practical

1. Genomic DNA isolation from E. coli
2. Plasmid DNA isolation (pUC 18/19) from E. coli
3. Restriction digestion of plasmid DNA.
4. Construction of circular and linear restriction map from the data provided.
5. Calculation of transformation efficiency from the data provided.
6. To study following techniques through photographs
    a. Southern Blotting
    b. Northern Blotting
    c. Western Blotting
    d. DNA Sequencing (Sanger's Method)
    e. PCR
    f. DNA fingerprinting
7. Project report on animal cell culture

Or

DSE-2: Microbiology **Credits 06**

DSE2T: Microbiology **Credits 04**

Course Contents:

Unit 1: Introduction to Microbiology

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

Historical perspective of Microbiology, Prokaryotic pathogens, Eukaryotic pathogens

Unit 2: Bacterial taxonomy
Principles and modern approaches of bacterial taxonomy. Basic idea about Hackel and Whittaker's kingdom concept and domain concept of Carl Woose

Unit 3: Morphology of Bacteria and Virus
Cell wall (Structure of peptidoglycan), Cell envelope (Cell membrane, Differences between ram- positive and gram-negative species, External capsule and glycocalyx, Plasmids and episomes. Nuclear material, Bacterial Chromosome (Fundamental differences with eukaryotic chromosome). Reserve materials (carbon and phosphate reserve, cyanophycin), Cytoplasmic inclusions (Chlorosome, magnetosome, carboxysome, gas vesicles, ribosome). Structural organization of viruses, Prions and viroids

Unit 4: Normal flora
Distribution of normal flora in the body: Skin, eye, mouth, intestinal tract, urino-genital tract, Beneficial functions of normal flora. Harmful effects of normal flora

Unit 5: Pathogenicity of Microorganisms
Bacterial pathogenesis: Entry to the host, Adherence to host cells, Invasiveness, Bacterial toxins Exotoxins, Endotoxins, Antigenic switching.Viral Pathogenesis:Cellular level (Cell death, Transformation, Cell fusion, Cytopathic effect).Initial infections: Routes of entry and dissemination to secondary sites, Typical secondary sites of localization, Virus shedding and mode of transmission; Factors involved in termination of acute infection

Unit 6: Infection of pathogens to human populations
Communicable, Non-communicable, Endemic, Epidemic, Pandemic and Sporadic

Unit 7: Diagnostic Microbiology and Bacteria culture
Koch's postulates, Sensitivity and specificity of test results, Principles and applications: Simple staining, Gram-staining, Acid-fast staining, Collection of specimens, Growth requirements and Growth factors, Oxygen requirement. Culture Media: Simple media, Complex media, Selective media and Enriched media

Unit 8: Genetic recombination in bacteria
Transformation, Conjugation- F+, F-, Hfr & F' strain, Transduction, Generalised & specialized types.

Unit 9: Microbial Diseases
Name of pathogen, symptoms, pathogenesis, mode of action & preventive measures of following diseases: Bacterial (Polio, Typhoid, Staphylococcal Food Poisoning) , Viral (Dengue, AIDS)

Suggested Readings:

1. Alexander, M. (1977). Introduction to Soil Microbiology. John Wiley and Sons, New York.
2. Atlas, R. M. and Bartha, R. (1997). Microbial Ecology: Fundamentals and Applications, 4th ed.
3. Benjamin/ Cummings. Black, J. G. (2011). Microbiology: Principles and Explorations. 8th ed. John Wiley and Sons, New York.
4. Campbell, R. (1983). Microbial Ecology. 2nd ed. Oxford, Blackwell.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

5. Pinehuk, G. (2003). Schaum's outline Series: Theory and Problems of Immunology.
6. McGrawHill.
7. Presscott, L. M., Harley, J. P. and Klein, D. A. (2011). Microbiology, 8th ed. McGrawHill, New York.
8. Schlegel, H. G. (1993). General Microbiology. 7th ed. Cambridge University Press.
9. Slonczeweski, J.L. and Foster, J.W. (2009). Microbiology- An Evolving Science. Norton.
10. Stanier, R. Y., Adelberg, E. A. and Ingraham, J. L. (1986). General Microbiology. 5th ed. Macmillan.
11. Talaro, K. and Talaro, A. (1999). Foundations in Microbiology. 3rd ed. Dubuque, McGraw Hill.
12. Tortora, G. J., Funke, B. R., and Case. C. L. (2008). Microbiology. An Introduction. 9th ed. Benjamin/Cummings Publishing. Menlo Park Calif.
13. Voyleys, B. A. (2002). The biology of viruses, 2nd ed. McGraw-Hill.

DSE2P: Microbiology (Lab) **Credits 02**

List of Practical:

1. Simple staining and Gram's staining of bacteria.
2. Preparation of liquid media (broth) and solid media for routine cultivation of bacteria.
3. Preparation of slant and stab.
4. Pure culture techniques: Spread plate, Pour plate and Streak plate
5. Biochemical test for characterization:
   Catalase, Nitrate-reduction, Indole production, Methyl Red and Voges-Proskauer Test.
6. Microbiological examination of milk (Methylene blue reductase test).
7. Sugar fermentation test.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:57:55; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons5.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Zoology [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 13		**C13T**: Developmental Biology	Core Course-13	4	0	0	6	75
		- Lab		0	0	4		
CC- 14		**C14T:** Evolutionary Biology	Core Course-14	4	0	0	6	75
		- Lab		0	0	4		
DSE-3		TBD	Discipline Specific Elective - 3	4	0	0	6	75
				0	0	4		
DSE-4		TBD	Discipline Specific Elective -4	4	0	0	6	75
				0	0	4		
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

Semester-VI

List of Core Course (CC)

CC-13: Developmental Biology

CC-14: Evolutionary Biology

Discipline Specific Electives (DSE)

DSE-3: Parasitology
Or
DSE-3: Endocrinology

DSE-4: Biology of Insects
Or
DSE-4: Wild Life Conservation and Management

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

Semester-VI

Core Courses (CC)

CC-13: Developmental Biology — Credits 06

C13T: Developmental Biology — Credits 04

Course Contents:

Unit 1: Introduction
Basic concepts: Phases of Development, Cell cell interaction, Differentiation and growth, Differential gene expression.

Unit 2: Early Embryonic Development
Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Changes in gametes, Blocks to polyspermy; Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers.

Unit 3: Late Embryonic Development
Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta).

Unit 4: Post Embryonic Development
Development of brain and Eye in Vertebrate. Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each).

Unit 5: Implications of Developmental Biology 8 Class
Teratogenesis: Teratogenic agents and their effects on embryonic development; In vitro fertilization, Stem cell (ESC), Amniocentesis.

Suggested Readings:

1. Gilbert, S. F. (2010). Developmental Biology, IX Edition, Sinauer Associates, Publishers, Sunderland, Massachusetts, USA
2. Slack JMW , Essential Developmental Biology Inc.,

C13P: Developmental Biology Lab — Credits 02

List of Practical

1. Study of whole mounts of developmental stages of chick through permanent slides: Primitive streak (13 and 18 hours), 21, 24, 28, 33, 36, 48, 72, and 96 hours of incubation (Hamilton and Hamburger stages).
2. Study of the developmental stages and life cycle of Drosophila from stock culture.
3. Study of different sections of placenta (photomicropgraph/ slides).
4. Project report on Drosophila culture/chick embryo development.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

CC-14: Evolutionary Biology Credits 06

C14T: Evolutionary Biology Credits 04

Course Contents:

Evolutionary Biology

Unit-1: Life's Beginnings: Chemogeny, RNA world, Biogeny, Origin of photosynthesis, volution of eukaryotes.

Unit-2: Historical review of Evolutionary concepts, Lamarkism, Darwinism and Neo Darwinism.

Unit-3: Geological time scale, Fossil records of Hominids (from *Australopithacus* to *Homo sapiens*), evolution of horse. Neutral theory of molecular evolution, Molecular clock.

Unit-4: Sources of variations: Heritable variations and their role in evolution.

Unit-5: Population genetics: Hardy-Weinberg Law (statement and derivation of equation, application Of law to biallelic Population); Evolutionary forces upsetting H-W equilibrium; Natural selection (concept of fitness, types of selection, selection coefficient, mode of selection heterozygous superiority).Genetic Drift mechanism (founder's effect, bottleneck phenomenon)**.** Role of Migration and Mutation in changing allele frequencies.

Unit-6: Species concept, Isolating mechanisms, modes of speciation. Adaptive radiation /macroevolution (exemplified by Galapagos finches).

Unit-7: Extinctions, Back ground and mass extinctions (causes and effects), detailed example of K-T extinction.

Unit-8: Origin and Evolution of Man, Unique Hominin characteristics contrasted with primate characteristic Molecular analysis of human origin.

Unit-9: Phylogenetic trees, Construction & interpretation of Phylogenetic tree using parsimony, Convergent & Divergent evolution.

Suggested Readings:

1. Campbell, N.A. and Reece J.B (2011). Biology. IX Edition. Pearson, Benjamin, Cummings.
2. Douglas, J. Futuyma (1997). Evolutionary Biology. Sinauer Associates.
3. Geneics: A Molecular Approach. 3rd edition. Peter. J. Russell.

C14P: Evolutionary Biology Lab Credits 02

List of Practical

1. Study of fossils from models/ pictures
2. Study of homology and analogy from suitable specimens
3. Study and verification of Hardy-Weinberg Law by chi square analysis
4. Graphical representation and interpretation of data of height/ weight of a sample of 100 humans in relation to their age and sex.

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

Discipline Specific Electives (DSE)

DSE-3: Parasitology — Credits 06

DSE3T: Parasitology — Credits 04

Course Contents:

Unit-1: Introduction to Parasitology

Brief introduction of Parasitism, Parasite, Parasitoid and Vectors (mechanical and biological vector Host parasite relationship

Unit-2: Parasitic Protists

Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Giardia intestinalis, Trypanosoma gambiense, Leishmania donovani.*

Unit-3: Parasitic Platyhelminthes

Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Schistosoma haematobium*, *Taenia sajinata*

Unit-4: Parasitic Nematodes

Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Ascaris lumbricoides, Ancylostoma duodenale, Wuchereria bancrofti* and *Trichinella spiralis, Brugia malayi*; Nematode plant interaction; Gall formation.

Unit-5: Parasitic Arthropods

Biology, importance and control of ticks (Soft tick *Ornithodoros,* Hard tick *Ixodes*), mites (*Sarcoptes*), Lice (*Pediculus*), Flea (*Xenopsylla*) and Bug (*Cimex*).

Unit-6: Parasite Vertebrates

Brief account of Cookicutter Shark, Hood Mocking bird, Vampire bat.

Suggested Readings:

1. Arora, D. R and Arora, B. (2001) Medical Parasitology. II Edition. CBS Publications and Distributors

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

2. E.R. Noble and G.A. Noble (1982) Parasitology: The biology of animal parasites. V Edition, Lea & Febiger
3. Ahmed, N., Dawson, M., Smith, C. and Wood, Ed. (2007) Biology of Disease.
4. Taylor and Francis Group
5. Parija, S. C. Textbook of medical parasitology, protozoology & helminthology (Text and colour Atlas), II Edition, All India Publishers & Distributers, Medical Books Publishers, Chennai, Delhi
6. Rattan Lal Ichhpujani and Rajesh Bhatia. Medical Parasitology, III Edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.
7. Page66Meyer, Olsen & Schmidt's Essentials of Parasitology, Murray, D. Dailey, W.C. Brown Publishers.
8. K. D. Chatterjee (2009). Parasitology: Protozoology and Helminthology. XIII Edition, CBS Publishers & Distributors (P) Ltd.

DSE3P: Parasitology Lab **Credits 02**

List of Practical:

1. Study of life stages of *Giardia intestinalis*, *Trypanosoma gambiense*, *Leishmania donovani* through permanent slides/micro photographs.
2. Study of adult and life stages of *Schistosoma haematobium, Taenia sajinata* through permanent slides/micro photographs.
3. Study of adult and life stages of *Ancylostoma duodenale*, *Brugia malayi* and *Trichinella spiralis* through permanent slides/micro photographs.
4. Study of plant parasitic root knot nematode, Meloidogyne from the soil sample.
5. Study of *Pediculus humanus, Xenopsylla cheopis* and *Cimex lectularius* through permanent slides/ photographs.
6. Study of monogenea from the gills of fresh/marine fish [Gills can be procured from fish market as by product of the industry].
7. Study of nematode/cestode parasites from the intestines of Poultry bird [Intestine can be procured from poultry/market as a by-product.

Submission of a brief report on parasitic vertebrates.

Or

DSE-3: Endocrinology **Credits 06**

DSE3T: Endocrinology **Credits 04**

Course Contents:

Unit-1: Introduction to Endocrinology

General idea of Endocrine systems, Classification, Characteristic and Transport of Hormones, Neurosecretions and Neurohormones

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

Unit-2: Epiphysis, Hypothalamo-hypophysial Axis

Structure of pineal gland, Secretions and their functions in biological rhythms and reproduction. Structure and functions of hypothalamus and Hypothalamic nuclei, Regulation of neuroendocrine glands, Feedback mechanisms Structure of pituitary gland, Hormones and their functions, Hypothalamo-hypophysial portal system, Disorders of pituitary gland.

Unit-3: Peripheral Endocrine Glands

Structure, Hormones, Functions and Regulation of Thyroid gland, Parathyroid, Thymus, Adrenal, Pancreas, Ovary and Testis. Hormones in homeostasis, Disorders of endocrine glands

Unit-4: Regulation of Hormone Action

Mechanism of action of steroidal, non-steroidal hormones with receptors. Bioassays of hormones using RIA & ELISA. Estrous cycle in rat and menstrual cycle in human. Multifaceted role of Vasopressin & Oxytocin. Hormonal regulation of parturition.

Suggested Readings:

1. Guyton and Hall. Textbook of Medical Physiology. 13th Edition
2. Histology: A Text and Atlas. Sixth Edition. Ross & Pawlina. Lippincott Williams & Wilkins.
3. Vertebrate Endocrinology by David O. Norris,

DSE3P: Endocrinology Lab — Credits 02

List of Practical

1. Dissect and display of Endocrine glands in laboratory bred rat.
2. Study of the permanent slides of all the endocrine glands
3. Tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland
4. Estimation of plasma level of any hormone using ELISA.
5. Designing of primers of any hormone.

DSE-4: Biology of Insects — Credits 06

DSE4T: Biology of Insects — Credits 04

Course Contents:

Unit-1: Introduction

General Features of Insects. Distribution and Success of Insects on the Earth.

Unit-2: Insect Taxonomy

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

Basis of insect classification; Classification of insects up to orders (according to Brusca and Brusca, 2016).

Unit-3: General Morphology of Insects
External Features; Head – Eyes, Types of antennae, Mouth parts w.r.t. feeding habits. Thorax: Wings and wing articulation, Types of Legs adapted to diverse habitat Abdominal appendages and genitalia.

Unit-4: Physiology of Insects
Structure and physiology of Insect body systems - Integumentary, digestive, excretory, circulatory, respiratory, endocrine, reproductive, and nervous system. Photoreceptors: Types, Structure and Function Metamorphosis: Types and Neuroendocrine control of metamorphosis.

Unit-5: Insect Society
Social insects with special reference to termites. Trophallaxis in social insects such as ants, termites and bees.

Unit-6: Insect Plant Interaction
Theory of co-evolution, role of allelochemicals in host plant mediation Host-plant selection by phytophagous insects, Major insect pests in paddy.

Unit-7: Insects as Vectors
Insects as mechanical and biological vectors, Brief discussion on houseflies and mosquitoes as important vectors.

Suggested Readings:

1. A general text book of entomology, Imms , A. D., Chapman & Hall, UK
2. The Insects: Structure and function, Chapman, R. F., Cambridge University Press, UK
3. Principles of Insect Morphology, Snodgrass, R. E., Cornell Univ. Press, USA
4. Introduction to the study of insects, Borror, D. J., Triplehorn, C. A., and Johnson, N. F.,M , Saunders College Publication, USA
5. The Insect Societies, Wilson, E. O., Harward Univ. Press, UK
6. Host Selection by Phytophagous insects, Bernays, E. A., and Chapman, R. F., Chapman and Hall, New York, USA
7. Physiological system in Insects, Klowden, M. J., Academic Press, USA
8. The Insects, An outline of Entomology, Gullan, P. J. , and Cranston, P. S., Wiley Blackwell, UK
9. Insect Physiology and Biochemistry, Nation, J. L., CRC Press, USA
10. Mosquito, Chandra G (2000), Sribhumi Pub. Co.
11. Medical Entomology, Hati A. K., Allied Book Agency, 2010

[Note: Classification to be followed from IMMS A. D. (1938)]

DSE4P: Biology of Insects Lab Credits 02

List of Practical

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

1. Study of life cycle of Mosquito
2. Study of different kinds of antennae, legs and mouth parts of insects
3. Mounting of insect wings, spiracles and genitalia of any insects
4. Methodology of collection, preservation and identification of insects.
5. Morphological studies of various castes of *Apis*, *Camponotus Odontotermes*
6. Study of major insect pests of paddy and their damages
7. Study of Mulberry silk moth as beneficial insect

Or

DSE-4: Wild Life Conservation and Management Credits 06

DSE4T: Wild Life Conservation and Management Credits 04

Course Contents:

Unit-1: Introduction to Wild Life
Values of wild life - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion; World conservation strategies.

Unit-2: Evaluation and management of wild life

Habitat analysis, Physical parameters: Topography, Geology, Soil and water
Biological Parameters: food, cover, forage, browse and cover estimation.
Standard evaluation procedures: remote sensing and GIS.

Unit-3: Management of habitats

Setting back succession; Grazing logging; Mechanical treatment; Advancing the successional process; Cover construction; Preservation of general genetic diversity Restoration of degraded habitats.

Unit-4: Population estimation

Population density, Natality, Birth rate, Mortality, fertility schedules and sex ratio computation; Faecal analysis of ungulates and carnivores; Pug marks and census method.

Unit-5: Aims and objectives of wildlife conservation

Wildlife conservation in India – through ages; different approaches of wildlife conservation; modes of conservation; in-situ conservation and ex-situ conservation: necessity for wildlife conservation.

Unit-6: Management planning of wild life in protected areas

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

Estimation of carrying capacity; Eco tourism / wild life tourism in forests; Concept of climax persistence; Ecology of perturbence.

Unit-7: Man and Wildlife

Causes and consequences of human-wildlife conflicts; mitigation of conflict – an overview; Management of excess population.

Unit-8: Protected areas

National parks & sanctuaries, Community reserve; Important features of protected areas in India; Tiger conservation - Tiger reserves in India; Management challenges in Tiger reserve.

Suggested Readings:

1. Caughley, G., and Sinclair, A.R.E. (1994). Wildlife Ecology and Management. Blackwell Science.
2. Woodroffe R., Thirgood, S. and Rabinowitz, A. (2005). People and Wildlife, Conflict or Co-existence? Cambridge University.
3. Bookhout, T.A. (1996). Research and Management Techniques for Wildlife and Habitats, 5 th edition. The Wildlife Society, Allen Press.
4. Sutherland, W.J. (2000). The Conservation Handbook: Research, Management and Policy. Blackwell Sciences
5. Hunter M.L., Gibbs, J.B. and Sterling, E.J. (2008). Problem-Solving in Conservation Biology and Wildlife Management: Exercises for Class, Field, and Laboratory. Blackwell Publishing.

DSE4P: Wild Life Conservation and Management Lab Credits 02

List of Practical

1. Identification of flora, mammalian fauna, avian fauna, herpeto-fauna.
2. Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System, Various types of Cameras and lenses).
3. Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers, etc.
4. Demonstration of different field techniques for flora and fauna.
5. PCQ, ten tree method, Circular, Square & rectangular plots, Parker's 2 Step and other methods for ground cover assessment, Tree canopy cover assessment, Shrub cover assessment.
6. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences).

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

Downloaded from Vidyasagar University by 223.176.41.112 on 26 November 2020 : 11:56:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Zoology_hons6.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B. Sc (General)
in

Zoology

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Zoology

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Animal Diversity - **Lab**	6	4-0-4	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
		Semester - I : Total			**20**				**275**
	II	SEMESTER-II							
		Core-4 (DSC-1B)		Comparative Anatomy and Development Biology of Vertebrates - **Lab**	6	4-0-4	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
		Semester - 2 : Total			**22**				**325**

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	**III**	**SEMESTER-III**					**CA**	**ESE**	**TOTAL**
		Core-7 (DSC-1C)		Physiology and Biochemistry - **Lab**	6	4-0-4	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0	10	40	50
		Semester - 3 : Total			**20**				**275**
	IV	**SEMESTER-IV**							
		Core-10 (DSC-1D)		Genetics and Evolution Biology - **Lab**	6	4-0-4	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0	10	40	50
		Semester - 4 : Total			**20**				**275**

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Zoology)	6	4-0-4	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0	10	40	50
		Semester - 5 : Total			**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Zoology)	6	4-0-4	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0	10	40	50
		Semester - 6 : Total			**20**				**275**
	Total in all semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

List of Core and Elective Courses

Core Courses (CC)

DSC-1A: **Animal Diversity**
DSC-1B: **Comparative Anatomy and Developmental Biology of Vertebrates**
DSC-1C: **Physiology and Biochemistry**
DSC-1D: **Genetics and Evolutionary Biology**

Discipline Specific Electives (DSE)

DSE-1: **Applied Zoology**
Or
DSE-1: **Aquatic Biology**
Or
DSE-1: **Immunology**
DSE-2: **Animal Biotechnology**
Or
DSE-2: **Reproductive Biology**
Or
DSE-2: **Insect, Vector and Diseases**
Or
DSE-2: **Project work**

Skill Enhancement Courses (SEC)

SEC-1: **Apiculture**
SEC-2: **Aquarium Fish Keeping**
SEC-3: **Medical Diagnostics**
Or
SEC-3: **Research Methodology**
SEC-4: **Sericulture**

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

List of the Core and Elective Courses

Core Courses

DSC-1A (CC-1): Animal diversity **Credits: 06**

DSC1AT: Animal diversity **Credits: 04**

Course Contents:

Unit 1: Kingdom Protista
General characters and classification up to classes; Locomotory Organelles and locomotion in Protozoa

Unit 2: Phylum Porifera
General characters and classification up to classes; Canal System in *Sycon*

Unit 3: Phylum Cnidaria
General characters and classification up to classes; Polymorphism in Hydrozoa

Unit 4: Phylum Platyhelminthes
General characters and classification up to classes; Life history of *Taenia solium*

Unit 5: Phylum Nemathelminthes
General characters and classification up to classes; Life history of *Ascaris lumbricoides* and its parasitic adaptations

Unit 6: Phylum Annelida
General characters and classification up to classes; Metamerism in Annelida

Unit 7: Phylum Arthropoda
General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects

Unit 8: Phylum Mollusca
General characters and classification up to classes; Torsion in gastropods

Unit 9: Phylum Echinodermata
General characters and classification up to classes; Water-vascular system in Asteroidea

Unit 10: Protochordates
General features and Phylogeny of Protochordata

Unit 11: Agnatha
General features of Agnatha and classification of cyclostomes up to classes

Unit 12: Pisces
General features and Classification up to orders; Osmoregulation in Fishes

Unit 13: Amphibia

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

General features and Classification up to orders; Parental care

Unit 14: Reptiles
General features and Classification up to orders; Poisonous and non-poisonous snakes, Biting mechanism in snakes

Unit 15: Aves
General features and Classification up to orders; Flight adaptations in birds

Unit 17: Mammals
Classification up to orders; Origin of mammals

Note: Classification of Unit 1-9 to be followed from "Barnes, R.D. (1982). *Invertebrate Zoology*, V Edition"

DSC1AP: Animal diversity (Practical) **Credits: 02**

1. Study of the following specimens:
Amoeba, *Euglena*, *Plasmodium*, *Paramecium*, *Sycon*, *Hyalonema*, and *Euplectella*, *Obelia*, *Physalia*, *Aurelia*, *Tubipora*, *Metridium*, *Taenia solium*, Male and female *Ascaris lumbricoides*, *Aphrodite*, *Nereis*, *Pheretima*, *Hirudinaria*, *Palaemon*, *Cancer*, *Limulus*, *Palamnaeus*, *Scolopendra*, *Julus*, *Periplaneta*, *Apis*, *Chiton*, *Dentalium*, *Pila*, *Unio*, *Loligo*, *Sepia*, *Octopus*, *Pentaceros*, *Ophiura*, *Echinus*, *Cucumaria* and *Antedon*, *Balanoglossus*, *Herdmania*, *Branchiostoma*, *Petromyzon*, *Sphyrna*, *Pristis*, *Torpedo*, *Labeo*, *Exocoetus*, *Anguilla*, *Ichthyophis/Ureotyphlus*, *Salamandra*, *Bufo*, *Hyla*, *Chelone*, *Hemidactylus*, *Chamaeleon*, *Draco*, *Vipera*, *Naja*, *Crocodylus*, *Gavialis*, Any six common birds from different orders, *Sorex*, Bat, *Funambulus*, *Loris*

2. Study of the following permanent slides:
1. T.S. and L.S. of *Sycon*,
2. Study of life history stages of *Taenia*,
3. T.S. of male and female *Ascaris*

3. Key for identification of poisonous and non-poisonous snakes
An "animal album" containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

Suggested Readings:

- Ruppert and Barnes, R.D. (2006). *Invertebrate Zoology*, VIII Edition. Holt Saunders International Edition.
- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science
- Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.
- Pough H. *Vertebrate life*, VIII Edition, Pearson International.
- Hall B.K. and Hallgrimsson B. (2008). *Strickberger's Evolution*. IV Edition. Jones and Bartlett Publishers Inc.

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

DSC-1B (CC-2): Comparative Anatomy and Developmental Biology of Vertebrates
Credits: 06

DSC1BT: Comparative Anatomy and Developmental Biology of Vertebrates
Credits: 04

Course Contents:

Unit 1: Integumentary System
Derivatives of integument w.r.t. glands and digital tips

Unit 2: Skeletal System
Evolution of visceral arches

Unit 3: Digestive System
Brief account of alimentary canal and digestive glands

Unit 4: Respiratory System
Brief account of gills, lungs, air sacs and swim bladder

Unit 5: Circulatory System
Evolution of heart and aortic arches

Unit 6: Urinogenital System
Succession of kidney, Evolution of urinogenital ducts

Unit 7: Nervous System
Comparative account of brain

Unit 8: Sense Organs
Receptors and its types.

Unit 9: Early Embryonic Development
Gametogenesis: Spermatogenesis and oogenesis w.r.t. mammals, vitellogenesis in birds; Fertilization: external (amphibians), internal (mammals), blocks to polyspermy; Early development of frog and humans (structure of mature egg and its membranes, patterns of cleavage, fate map, up to formation of gastrula);types of morphogenetic movements; Fate of germ layers; Neurulation in frog embryo.

Unit 10: Late Embryonic Development
Implantation of embryo in humans, Formation of human placenta and functions, other types of placenta on the basis of histology; Metamorphic events in frog life cycle and its hormonal regulation.

Unit 11: Control of Development
Fundamental processes in development (brief idea) – Gene activation, determination, induction, Differentiation, morphogenesis, intercellular communication, cell movements and cell death

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

DSC1BP: Comparative Anatomy and Developmental Biology of Vertebrates (Practical) Credits: 02

1. Osteology:
    a) Disarticulated skeleton of fowl and rabbit
    b) Carapace and plastron of turtle /tortoise
    c) Mammalian skulls: One herbivorous and one carnivorous animal.
2. Frog - Study of developmental stages - whole mounts and sections through permanent slides – cleavage stages, blastula, gastrula neurula, tail bud stage, tadpole external and internal gill stages.
3. Study of the different types of placenta- histological sections through permanent slides or photomicrographs.
4. Study of placental development in humans by ultrasound scans.
5. Examination of gametes - frog/rat - sperm and ova through permanent slides or photomicrographs.

Suggested Readings:

- Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution*. IV Edition. McGraw-Hill Higher Education.
- Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates*. IX Edition. The McGraw-Hill Companies.
- Hilderbrand, M and Gaslow G.E. *Analysis of Vertebrate Structure*, John Wiley and Sons.
- Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House.
- Gilbert, S. F. (2006). Developmental Biology, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA.
- Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press.
- Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.

DSC-1C (CC-3): Physiology and Biochemistry Credits: 06

DSC1CT: Physiology and Biochemistry Credits: 04

Course Contents:

Unit 1: Nerve and muscle
Structure of a neuron, Resting membrane potential, Graded potential, Origin of Action potential and its propagation in myelinated and non-myelinated nerve fibres, Ultra-structure of skeletal muscle, Molecular and chemical basis of muscle contraction

Unit 2: Digestion
Physiology of digestion in the alimentary canal; Absorption of carbohydrates, proteins, lipids

Unit 3: Respiration
Pulmonary ventilation, Respiratory volumes and capacities, Transport of oxygen and carbon dioxide in blood.

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Unit 4: Excretion
Structure of nephron, Mechanism of Urine formation, Counter-current Mechanism

Unit 5: Cardiovascular system
Composition of blood, Hemostasis, Structure of Heart, Origin and conduction of the cardiac impulse,Cardiac cycle

Unit 6: Reproduction and Endocrine Glands
Physiology of male reproduction: Hormonal control of spermatogenesis; Physiology of female reproduction: hormonal control of menstrual cycle Structure and function of pituitary, thyroid, parathyroid, pancreas and adrenal

Unit 7: Carbohydrate Metabolism
Glycolysis, Krebs Cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogen metabolism, Review of electron transport chain

Unit 8: Lipid Metabolism
Biosynthesis and β oxidation of palmitic acid

Unit 9: Protein metabolism
Transamination, Deamination and Urea cycle

Unit 10: Enzymes
Introduction, Mechanism of action, Enzyme kinetics, inhibition and regulation

DSC1CP: Physiology and Biochemistry (Practical): Credits: 02

1. Preparation of hemin and hemochromogen crystals.
2. Study of permanent histological sections of mammalian pituitary, thyroid, pancreas, adrenal gland.
3. Study of permanent slides of spinal cord, duodenum, liver, lung, kidney, bone, cartilage.
4. Qualitative tests to identify functional groups of carbohydrates in given solutions (Glucose, Fructose, Sucrose, Lactose).
5. Estimation of total protein in given solutions by Lowry's method.
6. Study of activity of salivary amylase under optimum conditions

Suggested Readings:

- Tortora, G.J. and Derrickson, B.H. (2009). *Principles of Anatomy and Physiology*, XII Edition, John Wiley & Sons, Inc.
- Widmaier, E.P., Raff, H. and Strang, K.T. (2008) *Vander's Human Physiology*, XI Edition., McGraw Hill
- Guyton, A.C. and Hall, J.E. (2011). T*extbook of Medical Physiology*, XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company
- Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006). *Biochemistry*. VI Edition. W.H Freeman and Co.

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

- Nelson, D. L., Cox, M. M. and Lehninger, A.L. (2009). *Principles of Biochemistry*. IV Edition. W.H. Freeman and Co.
- Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009). *Harper's Illustrated Biochemistry*. XXVIII Edition. Lange Medical Books/Mc Graw3Hill.

DSC-1D (CC-4): Genetics and Evolutionary Biology **Credits: 06**

DSC1DT: Genetics and Evolutionary Biology **Credits: 04**

Course Contents:

Unit 1: Introduction to Genetics
Mendel's work on transmission of traits, Genetic Variation, Molecular basis of genetic information

Unit 2: Mendelian Genetics and its Extension
Principles of Inheritance, Chromosome theory of inheritance, Incomplete dominance and codominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, sex linked inheritance, extra-chromosomal inheritance

Unit 3: Linkage, Crossing Over and Chromosomal Mapping
Linkage and crossing over, Recombination frequency as a measure of linkage intensity, two factor and three factor crosses, Interference and coincidence, Somatic cell genetics – an alternative approach to gene mapping

Unit 4: Mutations
Chromosomal Mutations: Deletion; Duplication; Inversion; Translocation; Aneuploidy and Polyploidy; Gene mutations: Induced versus Spontaneous mutations, Back versus Suppressor mutations,

Unit 5: Sex Determination
Chromosomal mechanisms, dosage compensation

Unit 6: History of Life
Major Events in History of Life

Unit 7: Introduction to Evolutionary Theories
Lamarckism, Darwinism, Neo-Darwinism

Unit 8: Direct Evidences of Evolution
Types of fossils, Incompleteness of fossil record, Dating of fossils, Phylogeny of horse

Unit 9: Processes of Evolutionary Change
Organic variations; Isolating Mechanisms; Natural selection (Example: Industrial melanism); Types of natural selection (Directional, Stabilizing, Disruptive), Artificial selection

Unit 10: Species Concept

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Biological species concept (Advantages and Limitations); Modes of speciation (Allopatric, Sympatric)

Unit 11: Macro-evolution
Macro-evolutionary Principles (example: Darwin's Finches)

Unit 12: Extinction
Mass extinction (Causes, Names of five major extinctions, K-T extinction in detail), Role of extinction in evolution

DSC1DP: Genetics and Evolutionary Biology (Practical) Credits: 02

1. Study of Mendelian inheritance and gene interactions (Non- Mendelian inheritance) using suitable examples. Verify the results using Chi-square test.
2. Study of Linkage, recombination, gene mapping using the data.
3. Study of Human Karyotypes (normal and abnormal).
4. Study of fossil evidences from plaster cast models and pictures
5. Study of homology and analogy from suitable specimens/ pictures
6. Charts:
    a. Phylogeny of horse with diagrams/ cut outs of limbs and teeth of horse ancestors
    b. Darwin's Finches with diagrams/ cut outs of beaks of different species
7. Visit to Natural History Museum and submission of report

Suggested Readings:

- Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008). *Principles of Genetics*. VIII Edition. Wiley India.
- Snustad, D.P., Simmons, M.J. (2009). *Principles of Genetics*. V Edition. John Wiley and Sons Inc.
- Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). *Concepts of Genetics*. X Edition. Benjamin Cummings.
- Russell, P. J. (2009). *Genetics- A Molecular Approach.* III Edition. Benjamin Cummings.
- Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B. *Introduction to Genetic Analysis*. IX Edition. W. H. Freeman and Co.
- Ridley, M. (2004). *Evolution*. III Edition. Blackwell Publishing
- Barton, N. H., Briggs, D. E. G., Eisen, J. A., Goldstein, D. B. and Patel, N. H. (2007). *Evolution*. Cold Spring, Harbour Laboratory Press.
- Hall, B. K. and Hallgrimsson, B. (2008). *Evolution*. IV Edition. Jones and Bartlett Publishers
- Campbell, N. A. and Reece J. B. (2011). *Biology*. IX Edition, Pearson, Benjamin, Cummings.
- Douglas, J. Futuyma (1997). *Evolutionary Biology*. Sinauer Associates.

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Discipline Specific Elective (DSE)

DSE - 1: Applied Zoology **Credits: 06**

DSE1T: Applied Zoology **Credits: 04**

Course Contents:

Unit 1: Introduction to Host-parasite Relationship
Host, Definitive host, Intermediate host, Parasitism, Symbiosis, Commensalism, Reservoir, Zoonosis

Unit 2: Epidemiology of Diseases
Transmission, Prevention and control of diseases: Tuberculosis, typhoid

Unit 3: Rickettsiae and Spirochaetes
Brief account of *Rickettsia prowazekii*, *Borrelia recurrentis* and *Treponema pallidum*

Unit 4: Parasitic Protozoa
Life history and pathogenicity of *Entamoeba histolytica*, *Plasmodium vivax* and *Trypanosoma gambiense*

Unit 5: Parasitic Helminthes
Life history and pathogenicity of *Ancylostoma duodenale* and *Wuchereria bancrofti*

Unit 6: Insects of Economic Importance
Biology, Control and damage caused by *Helicoverpa armigera*, *Pyrilla perpusilla* and *Papilio demoleus*, *Callosobruchus chinensis*, *Sitophilus oryzae* and *Tribolium castaneum*

Unit 7: Insects of Medical Importance
Medical importance and control of *Pediculus humanus corporis*, *Anopheles*, *Culex*, *Aedes*, *Xenopsylla cheopis*

Unit 8: Animal Husbandry
Preservation and artificial insemination in cattle; Induction of early puberty and synchronization of estrus in cattle

Unit 9: Poultry Farming
Principles of poultry breeding, Management of breeding stock and broilers, Processing and preservation of eggs

Unit 10: Fish Technology
Genetic improvements in aquaculture industry; Induced- breeding and transportation of fish seed

DSE1P: Applied Zoology (Practical) **Credits: 02**

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

1. Study of *Plasmodium vivax*, *Entamoeba histolytica*, *Trypanosoma gambiense*, *Ancylostoma duodenale* and *Wuchereria bancrofti* and their life stages through permanent slides/photomicrographs or specimens.
2. Study of arthropod vectors associated with human diseases: *Pediculus*, *Culex*, *Anopheles*, *Aedes* and *Xenopsylla.*
3. Study of insect damage to different plant parts/stored grains through damaged products/photographs.
4. Identifying feature and economic importance of *Helicoverpa* (*Heliothis*) *armigera*, *Papilio demoleus*, *Pyrilla perpusilla*, *Callosobruchus chinensis*, *Sitophilus oryzae* and *Tribolium castaneum*
5. Visit to poultry farm or animal breeding centre. Submission of visit report
6. Maintenance of freshwater aquarium

Suggested Readings:

- Park, K. *Preventive and Social Medicine*. XVI Edition. B.B Publishers.
- Arora, D. R and Arora, B. (2001). *Medical Parasitology*. II Edition. CBS Publications and Distributors.
- Kumar and Cotran. *Pathological Basis of Diseases*.
- Atwal, A.S. (1986). *Agricultural Pests of India and South East Asia*, Kalyani Publishers.
- Dennis, H. (2009). *Agricultural Entomology*. Timber Press.
- Hafez, E. S. E. (1962). *Reproduction in Farm Animals*. Lea & Fabiger Publisher
- Dunham R.A. (2004). *Aquaculture and Fisheries Biotechnology Genetic Approache*s. CABI publications, U.K.
- Pedigo, L.P. (2002). *Entomology and Pest Management*, Prentice Hall.

Or

DSE- 1: Aquatic biology **Credits: 06**

DSE1T: Aquatic biology **Credits: 04**

Course Contents:

UNIT 1: Aquatic Biomes

Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs.

UNIT 2: Freshwater Biology

Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico–chemical Characteristics: Light, Temperature, Thermal stratification, Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity; Dissolved gases (oxygen, carbon dioxide). Nutrient Cycles in Lakes-Nitrogen, Sulphur and Phosphorous.

Streams: Different stages of stream development, Physico-chemical environment, Adaptation of hill-stream fishes.

UNIT 3: Marine Biology

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Coral reefs, Sea weeds.

UNIT 4: Management of Aquatic Resources
Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD.

DSE1P: Aquatic Biology (Practical) **Credits: 02**

1. Determine the area of a lake using graphimetric and gravimetric method.
2. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.
3. Determine the amount of Turbidity/transparency, Dissolved oxygen, carbon dioxide, alkalinity (carbonates & bicarbonates) in water collected from a nearby lake/ water body.
4. Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler) and their significance.
5. A Project Report on a visit to a Sewage treatment plant/Marine bioreserve/ Fisheries Institutes.

Suggested Readings:

- Anathakrishnan : Bioresources Ecology 3rd Edition
- Goldman : Limnology, 2nd Edition
- Odum and Barrett : Fundamentals of Ecology, 5th Edition
- Pawlowski : Physicochemical Methods for Water and Wastewater Treatment, 1st Edition
- Wetzel : Limnology, 3rd edition
- Trivedi and Goyal : Chemical and biological methods for water pollution studies
- Welch : Limnology Vols. I-II

Or

DSE- 1: Immunology **Credits: 06**

DSE1T: Immunology **Credits: 04**

Course Contents:

Unit 1: **Overview of the Immune System**
Introduction to basic concepts in immunology, components of immune system, principles of innate and adaptive immune system

Unit 2: **Cells and Organs of the Immune System**
Haematopoeisis, Cells of immune system and organs (primary and secondary lymphoid organs) of the immune system

Unit 3: Antigens
Basic properties of antigens, B and T cell epitopes, haptens and adjuvants

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Unit 4: **Antibodies**
Structure, classes and function of antibodies, monoclonal antibodies, antigen antibody interactions as tools for research and diagnosis

Unit 5: **Working of the immune system**
Structure and functions of MHC, exogenous and endogenous pathways of antigen presentation and processing, Basic properties and functions of cytokines, Complement system: Components and pathways.
Unit 6: **Immune system in health and disease**
Gell and Coombs' classification and brief description of various types of hypersensitivities, Introduction to concepts of autoimmunity and immunodeficiency,

Unit 7: Vaccines
General introduction to vaccines, Various types of vaccines

DSE1P: Immunology (Practical) **Credits: 02**

1. Demonstration of lymphoid organs
2. Histological study of spleen, thymus and lymph nodes through slides/ photographs
3. Preparation of stained blood film to study various types of blood cells.
4. Ouchterlony's double immuno-diffusion method.
5. ABO blood group determination.
6. Cell counting and viability test from splenocytes of farm bred animals/cell lines.
7. Demonstration of
    a. ELISA
    b. Immunoelectrophoresis

(*Subject to UGC guidelines)

Suggested Readings:

- Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2006). *Immunology*, VI Edition. W.H. Freeman and Company.
- David, M., Jonathan, B., David, R. B. and Ivan R. (2006). *Immunology*, VII Edition, Mosby, Elsevier Publication.
- Abbas, K. Abul and Lechtman H. Andrew (2003.) *Cellular and Molecular Immunology*. V Edition. Saunders Publication.

DSE - 2: Animal Biotechnology **Credits: 06**

DSE2T: Animal Biotechnology **Credits: 04**

Course Contents:

Unit 1: Introduction
Concept and scope of biotechnology

Unit 2: Molecular Techniques in Gene manipulation

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors (characteristics) Restriction enzymes: nomenclature, detailed study of Type II. Transformation techniques: Calcium chloride method and electroporation. Construction of genomic and cDNA libraries and screening by colony and plaque hybridization Southern, Northern and Western blotting; DNA sequencing: Sanger method; Polymerase Chain Reaction, DNA Finger Printing and DNA micro array

Unit 3: Genetically Modified Organisms

Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection, Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knockout mice. Production of transgenic plants: *Agrobacterium* mediated transformation. Applications of transgenic plants: insect and herbicide resistant plants.

Unit 4: Culture Techniques and Applications

Animal cell culture, Expressing cloned genes in mammalian cells, Molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anemia); Recombinant DNA in medicines: Recombinant insulin and human growth hormone, Gene therapy

DSE2P: Animal Biotechnology (Practical): Credits: 02

1. Genomic DNA isolation from *E. coli*
2. Plasmid DNA isolation (pUC 18/19) from *E. coli*
3. Restriction digestion of plasmid DNA.
4. Construction of circular and linear restriction map from the data provided.
5. Calculation of transformation efficiency from the data provided.
6. To study following techniques through photographs
    a. Southern Blotting
    b. Northern Blotting
    c. Western Blotting
    d. DNA Sequencing (Sanger's Method)
    e. PCR
    f. DNA fingerprinting
7. Project report on animal cell culture

Suggested Readings:

- Brown, T.A. (1998). *Molecular Biology Labfax II: Gene Cloning and DNA Analysis*. II Edition, Academic Press, California, USA.
- Glick, B.R. and Pasternak, J.J. (2009). *Molecular Biotechnology - Principles and Applications of Recombinant DNA*. IV Edition, ASM press, Washington, USA.
- Griffiths, A.J.F., J.H. Miller, Suzuki, D.T., Lewontin, R.C. and Gelbart, W.M. (2009). *An Introduction to Genetic Analysis*. IX Edition. Freeman and Co., N.Y., USA.
- Snustad, D.P. and Simmons, M.J. (2009). *Principles of Genetics*. V Edition, John Wiley and Sons Inc.
- Watson, J.D., Myers, R.M., Caudy, A. and Witkowski, J.K. (2007). *Recombinant DNAGenes and Genomes- A Short Course*. III Edition, Freeman and Co., N.Y., USA.

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

➢ Beauchamp, T.I. and Childress, J.F. (2008). *Principles of Biomedical Ethics.* VI Edition, Oxford University Press. *CBCS Undergraduate Program in Zoology*

Or

DSE- 2: Reproductive Biology **Credits: 06**

DSE2T: Reproductive Biology **Credits: 04**

Course Contents:

Unit 1: Reproductive Endocrinology
Gonadal hormones and mechanism of hormone action, steroids, glycoprotein hormones, and prostaglandins, hypothalamo – hypophyseal – gonadal axis, regulation of gonadotrophin secretion in male and female; Reproductive System: Development and differentiation of gonads, genital ducts, external genitalia, mechanism of sex differentiation.

Unit 2: Functional anatomy of male reproduction
Outline and histological structure of male reproductive system in rat and human; Testis: Cellular functions, germ cell, system cell renewal; Spermatogenesis: kinetics and hormonal regulation; Androgen synthesis and metabolism; Epididymal function and sperm maturation;
Accessory glands functions; Sperm transportation in male tract

Unit 3: Functional anatomy of female reproduction
Outline and histological structure of female reproductive system in rat and human; Ovary: folliculogenesis, ovulation, corpus luteum formation and regression; Steroidogenesis and secretion of ovarian hormones; Reproductive cycles (rat and human) and their regulation, changes in the female tract; Ovum transport in the fallopian tubes; Sperm transport in the female tract, fertilization; Hormonal control of implantation; Hormonal regulation of gestation, pregnancy diagnosis, foeto – maternal relationship; Mechanism of parturition and its hormonal regulation; Lactation and its regulation

Unit 4: Reproductive Health
Infertility in male and female: causes, diagnosis and management; Assisted Reproductive Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST; Modern contraceptive technologies; Demographic terminology used in family planning

DSE2P: Reproductive Biology (Practical) **Credits: 02**

1. Study of animal house: set up and maintenance of animal house, breeding techniques, care of normal and experimental animals.
2. Examination of vaginal smear rats from live animals.
3. Surgical techniques: principles of surgery in endocrinology. Ovarectomy, hysterectomy, castration and vasectomy in rat.
4. Examination of histological sections from photomicrographs/ permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems;

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.

5. Human vaginal exfoliate cytology.
6. Sperm count and sperm motility in rat
7. Study of modern contraceptive devices

Suggested Readings:

- Austin, C.R. and Short, R.V. reproduction in Mammals. Cambridge University Press.
- Degroot, L.J. and Jameson, J.L. (eds). Endocrinology. W.B. Saunders and Company.
- Knobil, E. et al. (eds). The Physiology of Reproduction. Raven Press Ltd.
- Hatcher, R.A. et al. The Essentials of Contraceptive Technology. Population Information Programme.

Or

DSE- 2: Insect, Vector and Diseases **Credits: 06**

DSE2T: Insect, Vector and Diseases **Credits: 04**

Course Contents:

Unit I: Introduction to Insects

General Features of Insects, Morphological features, Head – Eyes, Types of antennae, Mouth parts w.r.t. feeding habits

Unit II: Concept of Vectors

Brief introduction of Carrier and Vectors (mechanical and biological vector), Reservoirs, Host-vector relationship, Vectorial capacity, Adaptations as vectors, Host Specificity

Unit III: Insects as Vectors

Classification of insects up to orders, detailed features of orders with insects as vectors – Diptera, Siphonaptera, Siphunculata, Hemiptera

Unit IV: Dipteran as Disease Vectors

Dipterans as important insect vectors – Mosquitoes, Sand fly, Houseflies; Study of mosquito-borne diseases – Malaria, Dengue, Chikungunya, Viral encephalitis, Filariasis; Control of mosquitoes Study of sand fly-borne diseases – Visceral Leishmaniasis, Cutaneous Leishmaniasis, Phlebotomus fever; Control of Sand fly Study of house fly as important mechanical vector, Myiasis, Control of house fly

Unit IV: Siphonaptera as Disease Vectors

Fleas as important insect vectors; Host-specificity, Study of Flea-borne diseases – Plague, Typhus fever; Control of fleas

Unit V: Siphunculata as Disease Vectors

Human louse (Head, Body and Pubic louse) as important insect vectors; Study of louse-borne diseases –Typhus fever, Relapsing fever, Trench fever, Vagabond's disease, Phthiriasis; Control of human louse

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Unit VI: Hempitera as Disease Vectors
Bugs as insect vectors; Blood-sucking bugs; Chagas disease, Bed bugs as mechanical vectors, Control and prevention measures

DSE2P: Insect Vector and Diseases (Practical) **Credits: 02**

1. Study of different kinds of mouth parts of insects
2. Study of following insect vectors through permanent slides/ photographs: *Aedes, Culex, Anopheles*, *Pediculus humanus capitis, Pediculus humanus corporis, Phithirus pubis, Xenopsylla cheopis, Cimex lectularius, Phlebotomus argentipes, Musca domestica,* through permanent slides/ photographs
3. Study of different diseases transmitted by above insect vectors
4. Submission of a project report on any one of the insect vectors and disease transmitted

Suggested Readings:

- Imms, A.D. (1977). *A General Text Book of Entomology*. Chapman & Hall, UK
- Chapman, R.F. (1998). *The Insects: Structure and Function.* IV Edition, Cambridge University Press, UK
- Pedigo L.P. (2002). *Entomology and Pest Management.* Prentice Hall Publication
- Mathews, G. (2011). *Integrated Vector Management: Controlling Vectors of Malaria and Other Insect Vector Borne Diseases*. Wiley-Blackwell

Or

DSE- 2: Project Work **Credits: 06**

Skill Enhancement Courses (SEC)

SEC - 1: Apiculture **Credits: 02**

SECT: Apiculture

Course Contents:

Unit 1: Biology of Bees
History, Classification and Biology of Honey Bees. Social Organization of Bee Colony

Unit 2: Rearing of Bees
Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth. Bee Pasturage. Selection of Bee Species for Apiculture. Bee Keeping Equipment. Methods of Extraction of Honey (Indigenous and Modern)

Unit 3: Diseases and Enemies
Bee Diseases and Enemies. Control and Preventive measures.

Unit 4: Bee Economy
Products of Apiculture Industry and its Uses (Honey, Bees Wax, Propolis), Pollen etc

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Unit 5: Entrepreneurship in Apiculture
Bee Keeping Industry – Recent Efforts, Modern Methods in employing artificial. Beehives for cross pollination in horticultural gardens

Suggested Readings:

- Prost, P. J. (1962). *Apiculture*. Oxford and IBH, New Delhi.
- Bisht D.S., *Apiculture*, ICAR Publication.
- Singh S., *Beekeeping in India*, Indian council of Agricultural Research, NewDelhi.

SEC - 2: Aquarium Fish Keeping **Credits: 02**

SEC2T: Aquarium Fish Keeping

Course Contents:

Unit1: Introduction to Aquarium Fish Keeping
The potential scope of Aquarium Fish Industry as a Cottage Industry, Exotic and Endemic species of Aquarium Fishes

Unit 2: Biology of Aquarium Fishes
Common characters and sexual dimorphism of Fresh water and Marine Aquarium fishes such as Guppy, Molly, Sword tail, Gold fish, Angel fish, Blue morph, Anemone fish and Butterfly fish

Unit 3: Food and feeding of Aquarium fishes
Use of live fish feed organisms. Preparation and composition of formulated fish feeds

Unit 4: Fish Transportation
Live fish transport - Fish handling, packing and forwarding techniques.

Unit 5: Maintenance of Aquarium
General Aquarium maintenance – budget for setting up an Aquarium Fish Farm as a Cottage Industry

SEC-3: Medical Diagnostics **Credits: 02**

SEC3T: Medical Diagnostics

Course Contents:

Unit 1: Introduction to Medical Diagnostics and its Importance

Unit 2: Diagnostics Methods Used for Analysis of Blood
Blood composition, Preparation of blood smear and Differential Count (D.C) using Leishman's stain, Platelet count using haemocytometer, Erythrocyte Sedimentary Rate (E.S.R), Packed Cell Volume (P.C.V.)

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Unit 3: Diagnostic Methods Used for Urine Analysis
Urine Analysis: Physical characteristics; Abnormal constituents

Unit 4:Non-infectious Diseases
Causes, types, symptoms, complications, diagnosis and prevention of Diabetes (Type I and Type II), Hypertension (Primary and secondary), Testing of blood glucose using Glucometer/Kit

Unit 5: Infectious Diseases
Causes, types, symptoms, diagnosis and prevention of Tuberculosis and Hepatitis

Unit 6: Tumours
Types (Benign/Malignant), Detection and metastasis; Medical imaging: X-Ray of Bone fracture, PET, MRI and CT Scan (using photographs).

Suggested Readings:

- Park, K. (2007), *Preventive and Social Medicine*, B.B. Publishers
- Godkar P.B. and Godkar D.P. *Textbook of Medical Laboratory Technology*, II Edition, Bhalani Publishing House
- Cheesbrough M., *A Laboratory Manual for Rural Tropical Hospitals, A Basis for Training Courses*
- Guyton A.C. and Hall J.E. T*extbook of Medical Physiology*, Saunders
- Robbins and Cortan, *Pathologic Basis of Disease,* VIIIEdition, Saunders
- Prakash, G. (2012), *Lab Manual on Blood Analysis and Medical Diagnostics*, S. Chand and Co. Ltd.

Or

SEC- 3: Research Methodology **Credits: 02**

SEC3T: Research Methodology

Course Contents:

Unit 1: Foundations of Research
Meaning, Objectives, Motivation: Research Methods *vs* Methodology, Types of Research: Analytical *vs* Descriptive, Quantitative *vs* Qualitative, Basic *vs* Applied

Unit 2: Research Design
Need for research design: Features of good design, Important concepts related to good design- Observation and Facts, Prediction and Explanation, Development of Models. Developing a research plan: Problem identification, Experimentation,
Determining experimental and sample designs

Unit 3: Data Collection, Analysis and Report Writing
Observation and Collection of Data-Methods of data collection- Sampling Methods, Data Processing and Analysis Strategies, Technical Reports and Thesis writing, Preparation of Tables and Bibliography. Data Presentation using digital technology

Unit 4: Ethical Issues

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

Intellectual property Rights, Commercialization, Copy Right, Royalty, Patent law, Plagiarism, Citation, Acknowledgement

Suggested Readings:

- Anthony, M, Graziano, A.M. and Raulin, M.L. 2009. Research Methods: A Process of Inquiry, Allyn and Bacon.
- Walliman, N. 2011.Research Methods- The Basics. Taylor and Francis, London, New York.
- Wadhera, B.L.: Law Relating to Patents, Trade Marks, Copyright Designs and Geographical Indications, 2002, Universal Law publishing
- C.R.Kothari: Research Methodology, New Age International, 2009
- Coley, S.M. and Scheinberg, C.A. 1990, "Proposal writing". Stage Publications.

SEC - 4: Sericulture **Credits: 02**

SEC4T: Sericulture

Course Contents:

Unit 1: Introduction
Sericulture: Definition, history and present status; Silk route, Types of silkworms, Distribution and Races, Exotic and indigenous races, Mulberry and non-mulberry Sericulture

Unit 2: Biology of Silkworm
Life cycle of *Bombyx mori*, Structure of silk gland and secretion of silk

Unit 3: Rearing of Silkworms
Selection of mulberry variety and establishment of mulberry garden, Rearing house and rearing appliances, Disinfectants: Formalin, bleaching powder, RKO, Silkworm rearing technology: Early age and Late age rearing, Types of mountages, Spinning, harvesting and storage of cocoons

Unit 4: Pests and Diseases
Pests of silkworm: Uzi fly, dermestid beetles and vertebrates, Pathogenesis of silkworm diseases: Protozoan, viral, fungal and bacterial. Control and prevention of pests and diseases

Unit 5: Entrepreneurship in Sericulture
Prospectus of Sericulture in India: Sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture. Visit to various, sericulture centres.

Suggested Readings:

- Handbook of Practical Sericulture: S.R. Ullal and M.N. Narasimhanna CSB, Bangalore
- Appropriate Sericultural Techniques; Ed. M. S. Jolly, Director, CSR & TI, Mysore.
- Handbook of Silkworm Rearing: Agriculture and Technical Manual-1, Fuzi Pub. Co. Ltd., Tokyo, Japan.
- Manual of Silkworm Egg Production; M. N. Narasimhanna, CSB, Bangalore.

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

- Silkworm Rearing; Wupang—Chun and Chen Da-Chung, Pub. By FAO, Rome.
- A Guide for Bivoltine Sericulture; K. Sengupta, Director, CSR & TI, Mysore.
- Improved Method of Rearing Young age silkworm; S. Krishnaswamy, reprinted CSB, Bangalore,

Downloaded from Vidyasagar University by 66.249.82.215 on 15 February 2019 : 19:20:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Zoology_General.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3 -Year B Sc (HONOURS)
in
Botany

Under Choice Based Credit System (CBCS)
w.e.f 2017-2018

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

VIDYASAGAR UNIVERSITY

B Sc (Honours) in Botany

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: Algae and Microbiology	6	4-0-0	15	60	75
				CP1: Algae and Microbiology-**Lab**		0-0-4			
		Core-2		CT2: Biomolecule and Cell Biology	6	4-0-0	15	60	75
				CP2: Biomolecule and Cell Biology-**Lab**		0-0-4			
		GE-1		TBD	6	4/5	15	60	75
				TBD		2/1			
		AECC-1		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: Mycology and Phytopathology	6	4-0-0	15	60	75
				CP3: Mycology and Phytopathology -**Lab**		0-0-4			
		Core-4		CT4: Archegoniate	6	4-0-0	15	60	75
				CP4: Archegoniate-**Lab**		0-0-4			
		GE-2		TBD	6	4/5	15	60	75
				TBD		2/1			
		AECC-2		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
2	**Semester-III**								
	III	Core-5		CT5: Morphology and Anatomy	6	4-0-0	15	60	75
				CP5: Morphology and Anatomy - **Lab**		0-0-4			
		Core-6		CT6: Economic Botany	6	4-0-0	15	60	75
				CP6: Economic Botany-**Lab**		0-0-4			
		Core-7		CT7: Genetics	6	4-0-0	15	60	75
				CP7: Genetics -**Lab**		0-0-4			
		GE-3		TBD	6	4/5	15	60	75
						2/1			
		SEC-1		TBD	2		10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		CT8: Molecular Biology	6	4-0-0	15	60	75
				CP8: Molecular Biology -**Lab**		0-0-4			
		Core-9		CT9: Plant Ecology and Phytogeography	6	4-0-0	15	60	75
				CP9: Plant Ecology and Phytogeography **-Lab**		0-0-4			
		Core-10		CT10: Plant Systematics	6	4-0-0	15	60	75
				CP10: Plant Systematics-**Lab**		0-0-4			
		GE-4		TBD	6	4/5	15	60	75
						2/1			
		SEC-2		TBD	2		10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
3	V	**Semester-V**							
		Core-11		CT11: Reproductive Biology Angiosperms	6	4-0-0	15	60	75
				CP11: Reproductive Biology Angiosperms -**Lab**		0-0-4			
		Core-12		CT12: Plant Physiology	6	4-0-0	15	60	75
				CP12: Plant Physiology -**Lab**		0-0-4			
		DSE-1		TBD	6	4-0-0	15	60	75
						0-0-4			
		DSE-2		TBD	6	4-0-0	15	60	75
						0-0-4			
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: Plant Metabolism	6	4-0-0	15	60	75
				CP13: Plant Metabolism -**Lab**		0-0-4			
		Core-14		CT14: Plant Biotechnology	6	4-0-0	15	60	75
				CP14: Plant Biotechnology-**Lab**		0-0-4			
		DSE-3		TBD	6	4-0-0	15	60	75
						0-0-4			
		DSE-4		TBD	6	4-0-0	15	60	75
						0-0-4			
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

List of Core Course (CC)

CC-1: Phycology and Microbiology
CC-2: Bio-molecules and Cell Biology
CC-3: Mycology and Phytopathology
CC-4: Archegoniate
CC-5: Anatomy of Angiosperms
CC-6: Economic Botany
CC-7: Genetics
CC-8: Molecular Biology
CC-9: Plant Ecology and Phytogeography
CC-10: Plant Systematics
CC-11: Reproductive Biology of Angiosperms
CC-12: Plant Physiology
CC-13: Plant Metabolism
CC-14: Plant Biotechnology

Discipline Specific Electives (DSE)

DSE-1: Natural Resource Management
Or
DSE-1: Biostatistics
DSE-2: Plant Breeding
Or
DSE-2: Stress Biology
DSE-3: Industrial and Environmental Microbiology
Or
DSE-3: Bioinformatics
DSE-4: Analytical Techniques in Plant Sciences
Or
DSE- 4: Research Methodology

Skill Enhancement Course (SEC)

SEC-1: Biofertilizers
Or
SEC- 1: Floriculture

SEC-2: Medicinal Botany
Or
SEC-2: Mushroom Culture Technology

Generic Electives (GE)

GE-1: Biodiversity (Microbes, Algae, Fungi and Archegoniate)
GE-2 : Plant Ecology and Taxonomy
GE-3: Economic Botany and Plant Biotechnology
GE-4: Plant Anatomy and Embryology
Or
GE-4: Plant Physiology and Metabolism

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Core Courses(CC)

CC-1: Phycology and Microbiology **Credits 06**

C1T: Phycology and Microbiology **Credits 04**

Course Contents:

Unit 1: Introduction to microbial world
Microbial nutrition, growth and metabolism. Economic importance of viruses with reference to vaccine production, role in research, medicine and diagnostics, as causal organisms of plant diseases. Economic importance of bacteria with reference to their role in agriculture and industry (fermentation and medicine).

Unit 2: Viruses
Discovery, physiochemical and biological characteristics; classification (Baltimore), general structure with special reference to viroids and prions; replication (general account), DNA virus (T-phage), lytic and lysogenic cycle; RNA virus (TMV).

Unit 3: Bacteria
Discovery, general characteristics; Types-archaebacteria, eubacteria, wall-less forms (mycoplasma and spheroplasts); Cell structure; Nutritional types; Reproduction-vegetative, asexual and recombination (conjugation, transformation and transduction).

Unit 4: Algae
General characteristics; Ecology and distribution; range of thallus organization; Cell structure and components; cell wall, pigment system, reserve food (of only groups represented in the syllabus), flagella; methods of reproduction; Classification; criteria, system of Fritsch, and evolutionary classification of Lee (only upto groups) and Van – den Hoek et.al(1982); Significant contributions of important phycologists (F.E. Fritsch, G.M. Smith, R.N. Singh, T.V. Desikachary, H.D. Kumar, M.O.P. Iyengar). Role of algae in the environment, agriculture, biotechnology and industry.

Unit 5: Cyanophyta and Xanthophyta
Ecology and occurrence; Range of thallus organization; Cell structure; Reproduction, Morphology and life-cycle of *Nostoc* and *Vaucheria.*

Unit 6: Chlorophyta and Charophyta
General characteristics; Occurrence; Range of thallus organization; Cell structure; Reproduction. Morphology and life-cycles of *Chlamydomonas, Volvox, Oedogonium, Coleochaete, Chara.*
Evolutionary significance of *Prochloron.*

Unit 7: Phaeophyta and Rhodophyta
Characteristics; Occurrence; Range of thallus organization; Cell structure; Reproduction. Morphology and life-cycles of *Ectocarpus, Fucus* and *Polysiphonia.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

C1P: Phycology and Microbiology (Practical) **Credits 02**

(Practical)

Microbiology

1. Electron micrographs/Models of viruses – T-Phage and TMV, Line drawings/ Photographs of Lytic and Lysogenic Cycle.
2. Types of Bacteria to be observed from temporary/permanent slides/photographs. Electron micrographs of bacteria, binary fission, endospore, conjugation, root Nodule.
3. Gram staining.
4. Endospore staining with malachite green using the (endospores taken from soil bacteria).
5. Study of bacteria from root nodules/Curd sample.

Phycology

Study of vegetative and reproductive structures of *Nostoc, Chlamydomonas* (electron micrographs), Volvox, *Oedogonium,Coleochaete, Chara, Vaucheria, Ectocarpus, Fucus and Polysiphonia, Procholoron* through electron micrographs, temporary preparations and permanent slides.

Suggested Readings:

- Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
- Wiley JM, Sherwood LM and Woolverton CJ. (2013) Prescott's Microbiology. 9th Edition. McGraw
- Hill International.
- Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi.
- 4.Sahoo, D. (2000). Farming the ocean: seaweeds cultivation and utilization. Aravali International,New Delhi.
- Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A. Minorsky P.V., Jackson
- R.B. (2008). Biology, Pearson Benjamin Cummings, USA. 8th edition.
- Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.

CC-2 : Bio-molecules and Cell Biology **Credits 06**

C2T : Bio-molecules and Cell Biology **Credits 04**

Course Contents:

Unit-1: Biomolecules

Types and significance of chemical bonds; Structure and properties of water; pH and buffers.

Carbohydrates: Nomenclature and classification; Monosaccharides ; Disaccharides; Oligosaccharides and polysaccharides.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Lipids: Definition and major classes of storage and structural lipids; Fatty acids structure and functions; Essential fatty acids; Triacyl glycerols structure, functions and properties; Phosphoglycerides.
Proteins: Structure of amino acids; Levels of protein structure-primary, secondary, tertiary and quarternary; Protein denaturation and biological roles of proteins.

Nucleic acids: Structure of nitrogenous bases; Structure and function of nucleotides; Types of nucleic acids; Structure of A, B, Z types of DNA; Types of RNA; Structure of tRNA.

Unit- 2: Bioenergenetics
Laws of thermodynamics, concept of free energy, endergonic and exergonic reactions, coupled reactions, redox reactions. ATP: structure, its role as a energy currency molecule.

Unit- 3: Enzymes
Structure of enzyme: holoenzyme, apoenzyme, cofactors, coenzymes and prosthetic group; Classification of enzymes; Features of active site, substrate specificity, mechanism of action (activation energy, lock and key hypothesis, induced - fit theroy), Michaelis – Menten equation, enzyme inhibition and factors affecting enzyme activity.

Unit-4: The cell
Cell as a unit of structure and function; Characteristics of prokaryotic and eukaryotic cells; Origin ofeukaryotic cell (Endosymbiotic theory).

Unit- 5: Cell wall and plasma membrane
Chemistry, structure and function of Plant cell wall. Overview of membrane function; fluid mosaic model; Chemical composition of membranes; Membrane transport – Passive, active and facilitated transport, endocytosis and exocytosis.

Unit- 6: Cell organelles
Nucleus: Structure-nuclear envelope, nuclear pore complex, nuclear lamina, molecular organization of chromatin; nucleolus. **Cytoskeleton:** Role and structure of microtubules, microfilaments and intermediary filament. **Chloroplast, mitochondria and peroxisomes:** Structural organization; Function; Semiautonomous nature of mitochondria and chloroplast. **Endomembrane system:** Endoplasmic Reticulum – Structure, targeting and insertion of proteins in the ER, protein folding, processing; Smooth ER and lipid synthesis, export of proteins and lipids; Golgi Apparatus – organization, protein glycosylation, protein sorting and export from Golgi Apparatus; Lysosomes

Unit -7: Cell division
Phases of eukaryotic cell cycle, mitosis and meiosis; Regulation of cell cycle- checkpoints, role of protein kinases.

C2P : Bio-molecules and Cell Biology **Credits 02**

(Practical)

1. Qualitative tests for carbohydrates, reducing sugars, non-reducing sugars, lipids and proteins.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

2. Study of plant cell structure with the help of epidermal peel mount of Onion/*Rhoeo/Crinum*.
3. Demonstration of the phenomenon of protoplasmic streaming in *Hydrilla* leaf.
4. Measurement of cell size by the technique of micrometry.
5. Counting the cells per unit volume with the help of haemocytometer. (Yeast / pollen grains).
6. Study of cell and its organelles with the help of electron micrographs.
7. Cytochemical staining of : DNA- Feulgen Acto carmin and Aceto Orcrin stain and cell wall in the epidermal peel of onion using Periodic Schiff's (PAS) staining technique.
8. Study the phenomenon of plasmolysis and deplasmolysis.
9. Study the effect of organic solvent and temperature on membrane permeability.
10. Study different stages of mitosis and meiosis.

Suggested Readings:

- Campbell, MK (2012) Biochemistry, 7th ed., Published by Cengage Learning
- Campbell, PN and Smith AD (2011) Biochemistry Illustrated, 4th ed., Published by Churchill Livingstone
- Tymoczko JL, Berg JM and Stryer L (2012) Biochemistry: A short course, 2nd ed., W.H.Freeman
- Berg JM, Tymoczko JL and Stryer L (2011) Biochemistry, W.H.Freeman and Company
- Nelson DL and Cox MM (2008) Lehninger Principles of Biochemistry, 5th Edition., W.H. Freeman and Company.
- Karp, G. (2010). Cell Biology, John Wiley & Sons, U.S.A. 6th edition.
- Hardin, J., Becker, G., Skliensmith, L.J. (2012). Becker's World of the Cell, Pearson Education Inc. U.S.A. 8th edition.
- Cooper, G.M. and Hausman, R.E. (2009) The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.
- Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009) The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco

CC-3 : Mycology and Phytopathology **Credits 06**

C3 T : Mycology and Phytopathology **Credits 04**

Course Contents:

Unit- 1: Introduction to true fungi

General characteristics; Affinities with plants and animals; Thallus organization; Cell wall composition; Nutrition; Classification.

Unit- 2: Chytridiomycota and Zygomycota

Characteristic features; Ecology and significance; Thallus organisation; Reproduction; Life cycle with reference to *Synchytrium, Rhizopus* .

Unit-3: Ascomycota

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

General characteristics (asexual and sexual fruiting bodies); Ecology; Life cycle, Heterokaryosis and parasexuality; Life cycle and classification with reference to *Saccharomyces, Aspergillus, Penicillium, Alternaria, Neurospora* and *Peziza.*

Unit- 4: Basidiomycota
General characteristics; Ecology; Life cycle and Classification with reference to black stem rust on wheat *Puccinia* (Physiological Specialization), loose and covered smut (symptoms only), *Agaricus*; Bioluminescence, Fairy Rings and Mushroom Cultivation with special reference to Oyster Mashroom..

Unit- 5: Allied Fungi
General characteristics; Status of Slime molds, Classification; Occurrence; Types of plasmodia; Types of fruiting bodies.

Unit- 6: Oomycota
General characteristics; Ecology; Life cycle and classification with reference to *Phytophthora, Albugo.*

Unit -7: Symbiotic associations
Lichen – Occurrence; General characteristics; Growth forms and range of thallus organization; Nature of associations of algal and fungal partners; Reproduction; Mycorrhiza-Ectomycorrhiza, Endomycorrhiza and their significance.

Unit- 8: Applied Mycology
Role of fungi in biotechnology; Application of fungi in food industry (Flavour & texture, Fermentation, Baking, Organic acids, Enzymes, Mycoproteins); Secondary metabolites (Pharmaceutical preparations); Agriculture (Biofertilizers); Mycotoxins; Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides, Myconematicides); Medical mycology.

Unit- 9: Phytopathology
Terms and concepts; General symptoms; Geographical distribution of diseases; Etiology; Symptomology; Host-Pathogen relationships; Disease cycle and environmental relation; prevention and control of plant diseases, and role of quarantine.
Bacterial diseases – Citrus canker and angular leaf spot of cotton. Viral diseases – Tobacco Mosaic viruses, vein clearing. Fungal diseases – Early blight of potato, Black stem rust of wheat, White rust of crucifers.

C3P: Mycology and Phytopathology **Credits 02**

Practical
1. Introduction to the world of fungi (Unicellular, coenocytic/septate mycelium, ascocarps & basidiocarps).
2. *Rhizopus*: study of asexual stage from temporary mounts and sexual structures through permanent slides.
3. *Aspergillus* and *Penicillium*: study of asexual stage from temporary mounts. Study of Sexual stage from permanent slides/photographs.
4. *Peziza*: Ascobulus sectioning through ascocarp.
5. *Alternaria:* Specimens/photographs and temporary mounts.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

6. *Puccinia*: Herbarium specimens of Black Stem Rust of Wheat and infected Barberry leaves; sections/ mounts of spores on wheat and permanent slides of both the hosts.
7. *Agaricus*: Specimens of button stage and full grown mushroom; sectioning of gills of *Agaricus*, fairy rings and bioluminescent mushrooms to be shown.
8. Study of phaneroplasmodium from actual specimens and /or photograph. Study of *Stemonitis* sporangia.
9. *Albugo:* Study of symptoms of plants infected with *Albugo*; asexual phase study through section/ temporary mounts and sexual structures through permanent slides.
10. Lichens: Study of growth forms of lichens (crustose, foliose and fruticose) on different substrates. Study of thallus and reproductive structures (soredia and apothecium) through permanent slides. Mycorrhizae: ectomycorrhiza and endomycorrhiza (Photographs)
11. Phytopathology : Herbarium specimens of bacterial diseases; Citrus Canker; Angular leaf spot of cotton, Viral diseases: TMV, Vein clearing, Fungal diseases: Early blight of potato, Black stem rust of wheat and White rust of crucifers.

Suggested Readings:

- Agrios, G.N. (1997) Plant Pathology, 4th edition, Academic Press, U.K.
- Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley & Sons (Asia) Singapore. 4th edition.
- Webster, J. and Weber, R. (2007). Introduction to Fungi, Cambridge University Press, Cambridge. 3rd edition.
- Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi and Their Allies, Macmillan Publishers India Ltd.
- Sharma, P.D. (2011). Plant Pathology, Rastogi Publication, Meerut, India.

CC-4: Archegoniate **Credits 06**

C4T: Archegoniate **Credits 04**

Course Contents:

Unit 1: Introduction

Unifying features of archegoniates; Transition to land habit; Alternation of generations.

Unit 2: Bryophytes

General characteristics; Adaptations to land habit; Classification; Range of thallus organization.

Unit 3: Type Studies- Bryophytes

Classification (up to family), morphology, anatomy and reproduction of *Riccia, Marchantia, Pellia, Porella, Anthoceros, Sphagnum and Funaria*; Pogonatum,Reproduction and evolutionary trends in *Riccia, Marchantia, Plagichasma Anthoceros* and *Funaria* (developmental stages not included). Ecological and economic importance of bryophytes with special reference to *Sphagnum*.

Unit 4: Pteridophytes

General characteristics; Classification; Early land plants (*Cooksonia* and *Rhynia*).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit 5: Type Studies- Pteridophytes
Classification (up to family), morphology, anatomy and reproduction of *Psilotum*, *Selaginella*, *Equisetum* and *Pteris* (Developmental details not to be included).Apogamy, and apospory, heterospory andseed habit, telome theory, stelar evolution; Ecological and economic importance.

Unit 6: Gymnosperms
General characteristics, classification (up to family), morphology, anatomy and reproduction of *Cycas*, *Pinus* and *Gnetum* (Developmental details not to be included); Ecological and economic importance.

C4P : Archegoniate **Credits 02**

Practical

1. ***Riccia*** – Morphology of thallus.

2. ***Marchantia***- Morphology of thallus, whole mount of rhizoids & Scales, vertical sectionof thallus through Gemma cup, whole mount of Gemmae (all temporary slides), vertical section of Antheridiophore, Archegoniophore, longitudinal section of Sporophyte (all permanent slides).

3. ***Anthoceros***- Morphology of thallus, dissection of sporophyte (to show stomata, spores, pseudoelaters, columella) (temporary slide), vertical section of thallus (permanent slide).

4. ***Pellia, Porella***- Permanent slides.

5. ***Sphagnum***- Morphology of plant, whole mounts of leaf (permanent slide only).

6. ***Funaria***- Pogonatum/ Polytrichum Morphology, whole mount of leaf, rhizoids, operculum, peristome, annulus, spores (temporary slides); permanent slides showing antheridial and archegonial heads, longitudinal section of capsule and protonema.

7. ***Psilotum***- Study of specimen, transverse section of synangium (permanent slide).

8. ***Selaginella***- Morphology, whole mount of leaf with ligule, transverse section of stem, whole mount of strobilus, whole mount of microsporophyll and megasporophyll (temporary slides), longitudinal section of strobilus (permanent slide).

9. ***Equisetum***- Morphology, transverse section of internode, longitudinal section of strobilus, transverse section of strobilus, whole mount of sporangiophore, whole mount of spores (wet and dry) (temporary slide), transverse section of rhizome (permanent slide).

10. ***Pteris***- Morphology, transverse section of rachis, vertical section of sporophyll, wholemount of sporangium, whole mount of spores (temporary slides), transverse section of rhizome, whole mount of prothallus with sex organs and young sporophyte (permanent slide).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

11. ***Cycas***- Morphology (coralloid roots, bulbil, leaf), whole mount of microsporophyll, transverse section of coralloid root, transverse section of rachis, vertical section of leaflet, vertical section of microsporophyll, whole mount of spores (temporary slides), longitudinal section of ovule, transverse section of root (permanent slide).

12. ***Pinus***- Morphology (long and dwarf shoots, whole mount of dwarf shoot, male and female cones), transverse section of Needle, transverse section of stem, longitudinal section of / transverse section of male cone, whole mount of microsporophyll, whole mount of Microspores (temporary slides), longitudinal section of female cone, tangential longitudinal section &radial longitudinal sections stem (permanent slide).

13. ***Gnetum***- Morphology (stem, male & female cones), transverse section of stem, vertical section of ovule (permanent slide)

14. **Botanical excursion.**

Suggested Readings:

- Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand. Delhi, India.
- Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
- Parihar, N.S. (1991). An introduction to Embryophyta: Vol. I. Bryophyta. Central Book Depot. Allahabad.
- Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.
- Vanderpoorten, A. & Goffinet, B. (2009) Introduction to Bryophytes. Cambridge University Press.

CC-5: Anatomy of Angiosperms **Credits 06**

C5T: Anatomy of Angiosperms **Credits 04**

Course Contents:

Unit 1: Introduction and scope of Plant Anatomy: Applications in systematics, forensics and pharmacognosy**.**

Unit 2: Structure and Development of Plant Body

Internal organization of plant body: The three tissue systems, types of cells and tissues. Development of plant body: polarity, cytodifferentiation and organogenesis during embryogenic development, Root-stem transition, Nodal anatomy – Basic concept.

Unit 2: Tissues

Classification of tissues; Simple and complex tissues (no phylogeny); cytodifferentiation of tracheary elements and sieve elements; Pits and plasmodesmata; Wall ingrowths and transfer cells, adcrustation and incrustation, Ergastic substances. Hydathodes, cavities, lithocysts and laticifers.

Unit 3: Apical meristems

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Evolution of concept of organization of shoot apex (Apical cell theory, Histogen theory, Tunica Corpus theory, continuing meristematic residue, cytohistological zonation); Types of vascular bundles; Structure of dicot and monocot stem. Origin, development, arrangement and diversity in size and shape of leaves; Structure of dicot and monocot leaf, Kranz anatomy. Organization of root apex (Apical cell theory, Histogen theory, Korper-Kappe theory); Quiescent centre; Root cap; Structure of dicot and monocot root; Endodermis, exodermises and origin of lateral root.

Unit 4: Vascular Cambium and Wood

Structure, function and seasonal activity of cambium; Secondary growth in root and stem. Anomalous secondary growth in Bignonia, Boerhaavia , *Aristolochia* and Dracaena. Axially and radially oriented elements; Types of rays and axial parenchyma; Cyclic aspects and reaction wood; Sapwood and heartwood; Ring and diffuse porous wood; Early and late wood, tyloses; Dendrochronology. Development and composition of periderm, rhytidome and lenticels.

Unit 5: Adaptive and Protective Systems

Epidermal tissue system, cuticle, epicuticular waxes, trichomes(uni-and multicellular, glandular and nonglandular, two examples of each), stomata (classification); Adcrustation and incrustation; Anatomical adaptations of xerophytes and hydrophytes. Mechanical tissue – distribution and significance.

C5P: Anatomy of Angiosperms **Credits 02**

Practical

1. Study of anatomical details through permanent slides/temporary stain mounts/ macerations/museum specimens with the help of suitable examples.
2. Apical meristem of root, shoot and vascular cambium.
3. Distribution and types of parenchyma, collenchyma and sclerenchyma.
4. Xylem: Tracheary elements-tracheids, vessel elements; thickenings; perforation plates; xylem fibres.
5. Wood: ring porous; diffuse porous; tyloses; heart- and sapwood.
6. Phloem: Sieve tubes-sieve plates; companion cells; phloem fibres.
7. Epidermal system: cell types, stomata types; trichomes: non-glandular and glandular.
8. Root: monocot, dicot, secondary growth.
9. Stem: monocot, dicot - primary and secondary growth; periderm; lenticels.
10. Leaf: isobilateral, dorsiventral, C4 leaves (Kranz anatomy).
11. Adaptive Anatomy: xerophytes, hydrophytes.
12. Secretory tissues: cavities, lithocysts and laticifers.

Suggested Readings:

- Dickison, W.C. (2000). Integrative Plant Anatomy. Harcourt Academic Press, USA.
- Fahn, A. (1974). Plant Anatomy. Pergmon Press, USA.
- Mauseth, J.D. (1988). Plant Anatomy. The Benjammin/Cummings Publisher, USA.
- Evert, R.F. (2006) Esau's Plant Anatomy: Meristems, Cells, and Tissues of the Plant Body: Their Structure, Function and Development. John Wiley and Sons, Inc.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

CC-6: Economic Botany **Credits 06**

C6T: Economic Botany **Credits 04**

Course Contents:

Unit 1: Origin of Cultivated Plants
Concept of Centres of Origin, their importance with reference to Vavilov's work. Examples of major plant introductions; Crop domestication and loss of genetic diversity; evolution of new crops/varieties, importance of germplasm diversity.

Unit 2: Cereals
Wheat and Rice (origin, morphology, cultivation, management processing & uses); Brief account of millets.

Unit 3: Legumes
Origin, morphology cultivation, management and uses of Chick pea, Pigeon pea and fodder legumes. Importance to man and ecosystem.

Unit 4: Sources of sugars and starches

Morphology cultivation, management and processing of sugarcane, products and by-products of sugarcane industry. Potato – morphology, propagation & uses.

Unit 5: Spices
Listing of important spices, their family and part used. Economic importance with special reference to fennel, saffron, clove and black pepper

Unit 6: Beverages
Tea, Coffee (morphology, processing & uses)

Unit 7: Sources of oils and fats
General description, classification, extraction, their uses and health implications groundnut, coconut, linseed, soybean, mustard and coconut (Botanical name, family & uses). Essential Oils: General account, extraction methods, comparison with fatty oils & their uses.

Unit 8: Natural Rubber
Para-rubber: tapping, processing and uses.

Unit 9: Drug-yielding plants
Therapeutic and habit-forming drugs with special reference to C*inchona, Digitalis, Papaver* and *Cannabis*; Tobacco (Morphology, processing, uses and health hazards).

Unit 10: Timber plants
General account with special reference to teak and pine.

Unit 11: Fibers

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Classification based on the origin of fibers; Cotton, Coir and Jute (morphology, extraction and uses).

C6P: Economic Botany **Credits 02**

Practical

1. **Cereals**: Wheat (habit sketch, L. S/T.S. grain, starch grains, micro-chemical tests) Rice (habit sketch, study of paddy and grain, starch grains, micro-chemical tests).
2. **Legumes**: Soybean, Groundnut, (habit, fruit, seed structure, micro-chemical tests).
3. **Sources of sugars and starches**: Sugarcane (habit sketch; cane juice- micro-chemical tests), Potato (habit sketch, tuber morphology, T.S. tuber to show localization of starch grains, w.m. starch grains, micro-chemical tests).
4. **Spices:** Black pepper, Fennel and Clove (habit and sections).
5. **Beverages**: Tea (plant specimen, tea leaves), Coffee (plant specimen, beans).
6. **Sources of oils and fats**: Coconut- T.S. nut, Mustard–plant specimen, seeds; tests for fats in crushed seeds.
7. **Essential oil-yielding plants**: Habit sketch of *Rosa*, *Vetiveria*, *Santalum* and *Eucalyptus* (specimens/photographs).
8. **Rubber**: specimen, photograph/model of tapping, samples of rubber products.
9. **Drug-yielding plants**: Specimens of *Digitalis*, *Papaver* and *Cannabis.*
10. **Tobacco**: specimen and products of Tobacco.
11. **Woods:** *Tectona*, *Pinus*: Specimen, Section of young stem.
12. **Fiber-yielding plants**: Cotton (specimen, whole mount of seed to show lint and fuzz; whole mount of fiber and test for cellulose), Jute (specimen, transverse section of stem, test for lignin on transverse section of stem and fiber).

Suggested Readings:

- Kochhar, S.L. (2012). Economic Botany in Tropics, MacMillan & Co. New Delhi, India.
- Wickens, G.E. (2001). Economic Botany: Principles & Practices. Kluwer Academic Publishers, The Netherlands.
- Chrispeels, M.J. and Sadava, D.E. 1994 Plants, Genes and Agriculture. Jones & Bartlett_Publishers.

CC-7: Genetics **Credits 06**

C7T: Genetics **Credits 04**

Course Contents:

Unit 1: Mendelian genetics and its extension

Mendelism: History; Principles of inheritance; Chromosome theory of inheritance; Autosomes and sex chromosomes; Probability and pedigree analysis; Incomplete dominance and codominance; Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Recessive and Dominant traits, Penetrance and Expressivity, Numericals; Polygenic inheritance.

Unit 2: Extra-chromosomal Inheritance

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Chloroplast mutation: Variegation in Four o'clock plant; Mitochondrial mutations in yeast; Maternal effects-shell coiling in snail; Infective heredity- Kappa particles in *Paramecium.*

Unit 3: Linkage, crossing over and chromosome mapping
Linkage and crossing over-Cytological and molecular basis of crossing over; Recombination frequency, two factor and three factor crosses; Interference and coincidence; Numericals based on gene mapping; Sex Linkage.

Unit 4: Variation in chromosome number and structure
Deletion, Duplication, Inversion, Translocation, Position effect, Euploidy and Aneuploidy

Unit 5: Gene mutations
Types of mutations; Molecular basis of Mutations; Mutagens – physical and chemical (Base analogs, deaminating, alkylating and intercalating agents); Detection of mutations: ClB method. Role of Transposons in mutation.DNA repair mechanisms.

Unit 6: Fine structure of gene
Classical vs molecular concepts of gene; Cis-Trans complementation test for functional allelism; Structure of Phage T4, rII Locus.

Unit 6. Population and Evolutionary Genetics
Allele frequencies, Genotype frequencies, Hardy-Weinberg Law, role of natural selection, mutation, genetic drift. Genetic variation and Speciation.

C7P: Genetics **Credits 02**

Practical

1. Demonstration on pretreatment, fixation, staining and squash and smear preparation.
2. Study of Mitosis from Onion / Garlic / Lentil root.
3. Study of Meiosis with pollen mother cell (PMC) of Onion / Solanum / Datura by smear preparation.
4. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square.
5. Chromosome mapping using point test cross data.
6. Pedigree analysis for dominant and recessive autosomal and sex linked traits.
7. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4).
8. Blood Typing: groups & Rh factor.
9. Study of aneuploidy: Down's, Klinefelter's and Turner's syndromes.
10. Photographs/Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge.
11. Study of human genetic traits: Sickle cell anemia, Xeroderma Pigmentosum, Albinism, red-green Colour blindness, Widow's peak, Rolling of tongue, Hitchhiker's thumb and Attached ear lobe.

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

- Gardner, E.J., Simmons, M.J., Snustad, D.P. (1991). Principles of Genetics, John Wiley & sons, India. 8th edition.
- Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics, John Wiley & Sons Inc., India.5th edition.
- Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. Benjamin Cummings, U.S.A. 9th edition.
- Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W. H. Freeman and Co., U.S.A. 10th edition.

CC-8: Molecular Biology **Credits 06**

C8T: Molecular Biology **Credits 04**

Course Contents:

Unit- 1: Nucleic acids: Carriers of genetic information
Historical perspective; DNA as the carrier of genetic information (Griffith's, Hershey & Chase, Avery, McLeod & McCarty, Fraenkel-Conrat's experiment.

Unit -2. The Structures of DNA and RNA / Genetic Material
DNA Structure: Miescher to Watson and Crick- historic perspective, DNA structure, Salient features of double helix, Types of DNA, Types of genetic material, denaturation and renaturation, cot curves; Organization of DNA-Prokaryotes, Viruses, Eukaryotes.RNA Structure-Organelle DNA -- mitochondria and chloroplast DNA.The Nucleosome-Chromatin structure- Euchromatin, Heterochromatin- Constitutive and Facultative heterochromatin.

Unit- 2:The replication of DNA
Chemistry of DNA synthesis (Kornberg's discovery); General principles – bidirectional, semiconservative and semi discontinuous replication, RNA priming; Various models of DNA replication, including rolling circle, θ (theta) mode of replication, replication of linear ds-DNA, replication of the 5'end of linear chromosome; Enzymes involved in DNA replication.

Unit- 3: Central dogma and genetic code
Key experiments establishing-The Central Dogma (Adaptor hypothesis and discovery of mRNA template), Genetic code (deciphering & salient features**)**

Unit 4: Transcription
Transcription in prokaryotes and eukaryotes. Principles of transcriptional regulation;
Prokaryotes: Regulation of lactose metabolism and tryptophan synthesis in *E.coli.* Eukaryotes:transcription factors, heat shock proteins, steroids and peptide hormones; Gene silencing.

Unit 5: Processing and modification of RNA
Split genes-concept of introns and exons, removal of introns, spliceosome machinery, splicing pathways, group I and group II intron splicing, alternative splicing eukaryotic mRNA processing(5' cap, 3' polyA tail); Ribozymes; RNA editing and mRNA transport.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit 6: Translation

Ribosome structure and assembly, mRNA; Charging of tRNA, aminoacyl tRNA synthetases; Various steps in protein synthesis, proteins involved in initiation, elongation and termination of polypeptides; Fidelity of translation; Inhibitors of protein synthesis; Post-translational modifications of proteins.

C8P: Molecular Biology **Credits 02**

Practical

1. Preparation of LB medium and raising *E.Coli.*
2. Isolation of genomic DNA from *E.Coli.*
3. DNA isolation from cauliflower head.
4. DNA estimation by diphenylamine reagent/UV Spectrophotometry.
5. Study of DNA replication mechanisms through photographs (Rolling circle, Theta replication and semi-discontinuous replication).
6. Study of structures of prokaryotic RNA polymerase and eukaryotic RNA polymerase II through photographs.
7. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al,Griffith's, Hershey & Chase's and Fraenkel & Conrat's experiments)
8. Study of the following through photographs: Assembly of Spliceosome machinery; Splicing mechanism in group I & group II introns; Ribozyme and Alternative splicing.

Suggested Readings

- Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology of the Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.
- Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons Inc.,U.S.A. 5th edition.
- Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. Benjamin Cummings. U.S.A. 9th edition.
- Russell, P. J. (2010). i-Genetics- A Molecular Approach. Benjamin Cummings, U.S.A. 3rd edition.
- Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W. H. Freeman and Co., U.S.A. 10th edition.

CC-9: Plant Ecology and Phytogeography **Credits 06**

C9T: Plant Ecology and Phytogeography **Credits 04**

Course Contents:

Unit 1: Introduction

Basic concepts; Levels of organization. Inter-relationships between the living world and the environment, the components and dynamism, homeostasis.

Unit 2: Soil

Importance; Origin; Formation; Composition; Physical; Chemical and Biological components; Soil profile; Role of climate in soil development.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit 3: Water
Importance: States of water in the environment; Atmospheric moisture; Precipitation types (rain, fog, snow, hail, dew); Hydrological Cycle; Water in soil; Water table.

Unit 4: Light, temperature, wind and fire
Variations; adaptations of plants to their variation.

Unit 5: Ecosystems
Structure; Processes; Trophic organisation; Food chains and Food webs; Ecological pyramids.

Unit 6: Population ecology
Characteristics and Dynamics .Ecological Speciation

Unit 7: Plant communities
Concept of ecological amplitude; Habitat and niche; Characters: analytical and synthetic; Ecotone and edge effect; Dynamics: succession – processes, types; climax concepts.

Unit 8: Biotic interactions
Trophic organization, basic source of energy, autotrophy, heterotrophy; symbiosis, commensalism, parasitism; food chains and webs; ecological pyramids; biomass, standing crop.

Unit 9: Functional aspects of ecosystem
Principles and models of energy flow; Production and productivity; Ecological efficiencies; Biogeochemical cycles; Cycling of Carbon, Nitrogen and Phosphorus.

Unit 10: Phytogeography
Principles; Continental drift; Theory of tolerance; Endemism; Brief description of major terrestrial biomes (one each from tropical, temperate & tundra); Phytogeographical division of India; Local Vegetation.

C9P: Plant Ecology and Phytogeography **Credits 02**

Practical

1. Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.

2. Determination of pH of various soil and water samples (pH meter, universal indicator/Lovibond comparator and pH paper)
3. Analysis for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency from
4. two soil samples by rapid field tests.
5. Determination of organic matter of different soil samples by Walkley & Black rapid titration
6. method.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

7. Comparison of bulk density, porosity and rate of infiltration of water in soils of three habitats.
8. Determination of dissolved oxygen of water samples from polluted and unpolluted sources.
9. (a). Study of morphological adaptations of hydrophytes and xerophytes (four each).
   (b). Study of biotic interactions of the following: Stem parasite (*Cuscuta*), Root parasite (*Orobanche*) Epiphytes, Predation (Insectivorous plants).
10. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus, by species area curve method (species to be listed).
11. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law.
12. Quantitative analysis of herbaceous vegetation for density and abundance in the college campus.
13. Field visit to familiarise students with ecology of different sites.

Suggested Readings:

- Odum, E.P. (2005). Fundamentals of ecology. Cengage Learning India Pvt. Ltd., New Delhi. 5th edition.
- Singh, J.S., Singh, S.P., Gupta, S. (2006). Ecology Environment and Resource Conservation.
- Anamaya Publications, New Delhi, India.
- Sharma, P.D. (2010). Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
- Wilkinson, D.M. (2007). Fundamental Processes in Ecology: An Earth Systems Approach.
- Oxford University Press. U.S.A.
- Kormondy, E.J. (1996). Concepts of ecology. PHI Learning Pvt. Ltd., Delhi, India. 4th edition.

CC-10: Plant Systematics **Credits 06**

C10T: Plant Systematics **Credits 04**

Course Contents:

Unit 1: Significance of Plant systematics

Introduction to systematics; Plant identification, Classification, Nomenclature. Evidences from palynology, cytology, phytochemistry and molecular data. Field inventory; Functions of Herbarium; Important herbaria and botanical gardens of the world and India; Virtual herbarium; E-flora; Documentation: Flora, Monographs, Journals; Keys:Single access and Multi-access.

Unit 2: Taxonomic hierarchy

Concept of taxa (family, genus, species); Categories and taxonomic hierarchy; Species concept (taxonomic, biological, evolutionary).

Unit 3: Botanical nomenclature

Principles and rules (ICN); Ranks and names; Typification, author citation, valid publication, rejection of names, principle of priority and its limitations; Names of hybrids.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit 4: Systems of classification
Major contributions of Theophrastus, Bauhin, Tournefort, Linnaeus, Adanson, de Candolle, Bessey, Hutchinson, Takhtajan and Cronquist; Classification systems of Bentham and Hooker (upto series) and Engler and Prantl (upto series); Brief reference of Angiosperm Phylogeny Group (APG III) classification.

Unit 5: Biometrics, numerical taxonomy and cladistics
Characters; Variations; OTUs, character weighting and coding; Cluster analysis; Phenograms, cladograms (definitions and differences).

Unit 6: Phylogeny of Angiosperms
Terms and concepts (primitive and advanced, homology and analogy, parallelism and convergence, monophyly, Paraphyly, polyphyly and clades). Origin and evolution of angiosperms; Co-evolution of angiosperms and animals; Methods of illustrating evolutionary relationship (phylogenetic tree, cladogram).

C10P: Plant Systematics **Credits 02**

Practical
1. Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification):
   1. Ranunculaceae - *Ranunculus, Delphinium.*
   2. Brassicaceae - *Brassica, Alyssum / Iberis.*
   3. Malvaceae – *Sida Sp. Urena lobota.*
   4. Myrtaceae - *Eucalyptus, Callistemon*
   5. Umbelliferae - *Coriandrum /Anethum / Foeniculum.*
   6. Asteraceae - *Sonchus/Launaea, Vernonia/Ageratum, Eclipta/Tridax.*
   7. Solanaceae - *Solanum nigrum/Withania, Nicotina, Plumbaginefolia.*
   8. Lamiaceae - *Salvia/Ocimum.*
   9. Euphorbiaceae - *Euphorbia hirta/E.milii, Jatropha.*
   10. Fasaceae – *Tephrosia Sp.,Crotalaria Sp.,*
   11. Caesalpineaeceae – *Cassia* Sp.,
   12. Asclepiadaeceae- *Pesgularia Gygnema,*
   13. Apocynaceae – *Hollorhen, Catharanthus.*
   14. Rubiaceae – *Oldenladeae, Spermoeoceae,*
   15. Liliaceae - *Asphodelus/Lilium/Allium.*
   16. Poaceae - *Triticum/Hordeum/Avena.*

2. Field visit (local) – Subject to grant of funds from the university.

3. Mounting of a properly dried and pressed specimen of any wild plant with herbarium label (to be submitted in the record book).

Suggested Readings:

- Singh, (2012). *Plant Systematics:* Theory and Practice Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

- Jeffrey, C. (1982). An Introduction to *Plant Taxonomy.* Cambridge University Press, Cambridge.
- Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F. (2002). Plant Systematics-A
- Phylogenetic Approach. Sinauer Associates Inc., U.S.A. 2nd edition.
- Maheshwari, J.K. (1963). *Flora* of Delhi. CSIR, New Delhi.
- Radford, A.E. (1986). Fundamentals of *Plant Systematics*. Harper and Row, New York.

CC-11: Reproductive Biology of Angiosperms **Credits 06**

C11T: Reproductive Biology of Angiosperms **Credits 04**

Course Contents:

Unit 1: Introduction
History (contributions of G.B. Amici, W. Hofmeister, E. Strasburger, S.G. Nawaschin, P. Maheshwari, B.M. Johri, W.A. Jensen, J. Heslop-Harrison) and scope.

Unit 2: Reproductive development
Induction of flowering; flower as a modified determinate shoot. Flower development: genetic and molecular aspects.

Unit 3: Anther and pollen biology
Anther wall: Structure and functions, microsporogenesis, callose deposition and its significance. Microgametogenesis; Pollen wall structure, MGU (Male Germ Unit) structure, NPC system; Palynology and scope (a brief account); Pollen wall proteins; Pollen viability, storage and germination; Abnormal features: Pseudomonads, polyads, massulae, pollinia.

Unit 4: Ovule
Structure; Types; Special structures–endothelium, obturator, aril, caruncle and hypostase; Female Gametophyte – megasporogenesis (monosporic, bisporic and tetrasporic) and megagametogenesis (details of *Polygonum* type); Organization and ultrastructure of mature embryo sac.

Unit 4: Pollination and fertilization
Pollination types and significance; adaptations; structure of stigma and style; path of pollen tube in pistil; double fertilization.

Unit 5: Self incompatibility
Basic concepts (interspecific, intraspecific, homomorphic, heteromorphic, GSI and SSI); Methods to overcome self- incompatibility: mixed pollination, bud pollination, stub pollination; Intra-ovarian and *in vitro* pollination; Modification of stigma surface, parasexual hybridization; Cybrids, *in vitro* fertilization.

Unit 6: Embryo, Endosperm and Seed
Structure and types; General pattern of development of dicot and monocot embryo and endosperm; Suspensor: structure and functions; Embryo-endosperm relationship; Nutrition

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

of embryo; Unusual features; Embryo development in *Paeonia*. Seed structure, importance and dispersal mechanisms

Units 7: Polyembryony and apomixis
Introduction; Classification; Causes and applications.

C11P: Reproductive Biology of Angiosperms **Credits 02**

Practical

1. Anther: Wall and its ontogeny; Tapetum (amoeboid and glandular); MMC, spore tetrads, uninucleate, bicelled and dehisced anther stages through slides/micrographs, male germ unit (MGU) through photographs and schematic representation.

2. Pollen grains: Fresh and acetolyzed showing ornamentation and aperture, psuedomonads, polyads, pollinia (slides/photographs,fresh material), ultrastructure of pollen wall(micrograph); Pollen viability: Tetrazolium test.germination: Calculation of percentage germination in different media using hanging drop method.

3. Ovule: Types-anatropous, orthotropous, amphitropous/campylotropous, circinotropous, unitegmic, bitegmic; Tenuinucellate and crassinucellate; Special structures: Endothelium, obturator, hypostase, caruncle and aril (permanent slides/specimens/photographs).

4. Female gametophyte through permanent slides/ photographs: Types, ultrastructure of mature egg apparatus.

5. Intra-ovarian pollination; Test tube pollination through photographs.

6. Endosperm: Dissections of developing seeds for endosperm with free-nuclear haustoria.

7. Embryogenesis: Study of development of dicot embryo through permanent slides; dissection of developing seeds for embryos at various developmental stages; Study of suspensor through electron micrographs.

Suggested Readings:

- Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms, Vikas Publishing House. Delhi. 5th edition.
- Shivanna, K.R. (2003). Pollen Biology and Biotechnology. Oxford and IBH Publishing Co. Pvt. Ltd. Delhi.
- Raghavan, V. (2000). Developmental Biology of Flowering plants, Springer, Netherlands.
- Johri, B.M. l (1984). Embryology of Angiosperms, Springer-Verlag, Netherlands.

CC-12: Plant Physiology **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

C12T: Plant Physiology **Credits 04**

Course Contents:

Unit 1: Plant-water relations
Water Potential and its components, water absorption by roots, aquaporins, pathway of water movement, symplast, apoplast, transmembrane pathways, root pressure, guttation. Ascent of sap – cohesion-tension theory.Transpiration and factors affecting transpiration, antitranspirants, mechanism of stomatal movement.

Unit 2: Mineral nutrition
Essential and beneficial elements, macro and micronutrients, methods of study and use of nutrient solutions, criteria for essentiality, mineral deficiency symptoms, roles of essential elements, chelating agents.

Unit 3: Nutrient Uptake
Soil as a nutrient reservoir, transport of ions across cell membrane, passive absorption, electrochemical gradient, facilitated diffusion, active absorption, role of ATP, carrier systems, proton ATPase pump and ion flux, uniport, co-transport, symport, antiport.

Unit 4: Translocation in the phloem
Experimental evidence in support of phloem as the site of sugar translocation. Pressure–Flow Model; Phloem loading and unloading; Source–sink relationship.

Unit 5: Plant growth regulators
Discovery, chemical nature (basic structure), bioassay and physiological roles of Auxin, Gibberellins, Cytokinin, Abscisic acid, Ethylene, Brassinosteroids and Jasmonic acid.

Unit 6: Physiology of flowering
Photoperiodism, flowering stimulus, florigen concept, vernalization, seed dormancy.

Unit 7: Phytochrome , crytochromes and phototropins
Discovery, chemical nature, role in photomorphogenesis, low energy responses (LER) and high irradiance responses (HIR), mode of action.

C12P: Plant Physiology **Credits 02**

Practical

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. Determination of water potential of given tissue (potato tuber) by weight method.
3. Study of the effect of wind velocity and light on the rate of transpiration in excised twig/leaf.
4. Calculation of stomatal index and stomatal frequency from the two surfaces of leaves of a mesophyte and xerophyte.
5. To calculate the area of an open stoma and percentage of leaf area open through stomata in a mesophyte and xerophyte (both surfaces).
6. To study the phenomenon of seed germination (effect of light).
7. To study the effect of different concentrations of IAA on *Avena* coleoptile elongation (IAA Bioassay).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

8. To study the induction of amylase activity in germinating barley grains.

Demonstration experiments

1. To demonstrate suction due to transpiration.
2. Fruit ripening/Rooting from cuttings (Demonstration).
3. Bolting experiment/*Avena* coleptile bioassay (demonstration).

Suggested Readings:

- Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons. U.S.A. 4th edition.
- Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
- Bajracharya D. (1999). Experiments in Plant Physiology-A Laboratory Manual. Narosa Publishing House, New Delhi.

CC-13: Plant Metabolism **Credits 06**

C13T: Plant Metabolism **Credits 04**

Course Contents:

Unit 1: Concept of metabolism

Introduction, anabolic and catabolic pathways, regulation of metabolism, role of regulatory enzymes (allosteric ,covalent modulation and Isozymes).

Unit 2: Carbon assimilation

Historical background, photosynthetic pigments, role of photosynthetic pigments (chlorophylls and accessory pigments), antenna molecules and reaction centres, photochemical reactions, photosynthetic electron transport, PSI, PSII, Q cycle, CO2 reduction, photorespiration, C4 pathways; Crassulacean acid metabolism; Factors affecting CO2 reduction.

Unit 3: Carbohydrate metabolism

Synthesis and catabolism of sucrose and starch.

Unit 4: Carbon Oxidation

Glycolysis, fate of pyruvate, regulation of glycolysis, oxidative pentose phosphate pathway, oxidative decarboxylation of pyruvate, regulation of PDH, NADH shuttle; TCA cycle,amphibolic role, anaplerotic reactions, regulation of the cycle, mitochondrial electron transport, oxidative phosphorylation, cyanide-resistant respiration, factors affecting respiration.

Unit 5: ATP-Synthesis

Mechanism of ATP synthesis, substrate level phosphorylation, chemiosmotic mechanism (oxidative and photophosphorylation), ATP synthase, Boyers conformational model, Racker's experiment, Jagendorf's experiment; role of uncouplers.

Unit 6: Lipid metabolism

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Synthesis and breakdown of triglycerides, β-oxidation, glyoxylate cycle, gluconeogenesis and its role in mobilisation of lipids during seed germination, α oxidation.

Unit 7: Nitrogen metabolism
Nitrate assimilation, biological nitrogen fixation (examples of legumes and non-legumes); Physiology and biochemistry of nitrogen fixation; Ammonia assimilation and transamination.

Unit 8: Mechanisms of signal transduction
Receptor-ligand interactions; Second messenger concept, Calcium calmodulin, MAP kinase cascade.

C13P: Plant Metabolism **Credits 02**

Practical

1. Chemical separation of photosynthetic pigments.
2. Experimental demonstration of Hill's reaction.
3. To study the effect of light intensity on the rate of photosynthesis.
4. Effect of carbon dioxide on the rate of photosynthesis.
5. To compare the rate of respiration in different parts of a plant.
6. To demonstrate activity of Nitrate reductase in germinating leaves of different plant sources.
7. To study the activity of lipases in germinating oilseeds and demonstrate mobilization of lipids
1. during germination.
8. Demonstration of fluorescence by isolated chlorophyll pigments.
9. Demonstration of absorption spectrum of photosynthetic pigments.

Suggested Readings

- Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons. U.S.A. 4th edition.
- Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
- Harborne, J.B. (1973). Phytochemical Methods. John Wiley & Sons. New York.

CC-14: Plant Biotechnology **Credits 06**

C14T: Plant Biotechnology **Credits 04**

Course Contents:

Unit -1: Plant Tissue Culture
Historical perspective; Composition of media; Nutrient and hormone requirements (role of vitamins and hormones); Totipotency; Organogenesis; Embryogenesis (somatic and zygotic); Protoplast isolation, culture and fusion; Tissue culture applications (micropropagation, androgenesis, virus elimination, secondary metabolite production, haploids, triploids and hybrids; Cryopreservation; Germplasm Conservation).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit- 2: Recombinant DNA technology

Restriction Endonucleases (History, Types I-IV, biological role and application); Restriction

Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector; Eukaryotic Vectors (YAC).

Unit- 3:Gene Cloning

Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCRmediated gene cloning; Gene Construct; construction of genomic and cDNA libraries, screening DNA libraries to obtain gene of interest by genetic selection; complementation, colony hybridization; PCR

Unit- 4: Methods of gene transfer

Agrobacterium-mediated, Direct gene transfer by Electroporation, Microinjection, Microprojectile bombardment; Selection of transgenics– selectable marker and reporter genes (Luciferase, GUS, GFP).

Unit - 5: Applications of Biotechnology

Pest resistant (Bt-cotton); herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Gentically Engineered Products–Human Growth Hormone; Humulin; Biosafety concerns.

C14P: Plant Biotechnology **Credits 02**

Practical

1. (a) Preparation of MS medium.
   (b) Demonstration of *in vitro* sterilization and inoculation methods using leaf and nodal explants of tobacco, *Datura*, *Brassica* etc.
2. Study of anther, embryo and endosperm culture, micropropagation, somatic embryogenesis & artificial seeds through photographs.
3. Isolation of protoplasts.
4. Construction of restriction map of circular and linear DNA from the data provided.
5. Study of methods of gene transfer through photographs: *Agrobacterium*-mediated, direct gene
6. transfer by electroporation, microinjection, microprojectile bombardment.
7. Study of steps of genetic engineering for production of Bt cotton, Golden rice, Flavr Savr tomato through photographs.
8. Isolation of plasmid DNA.
9. Restriction digestion and gel electrophoresis of plasmid DNA.

Suggested Readings:

- Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
- Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

- Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms. Vikas Publication House Pvt. Ltd., New Delhi. 5th edition.
- Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons, U.K. 5th edition.
- Stewart, C.N. Jr. (2008). Plant Biotechnology & Genetics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A.

Discipline Specific Electives (DSE)

DSE-1: Natural Resource Management **Credits 06**

DSE1T: Natural Resource Management **Credits 04**

Course Contents:

Unit- 1: Natural resources : Definition and types.

Unit- 2: Sustainable utilization : Concept, approaches (economic, ecological and socio-cultural).

Unit- 3: Land : Utilization (agricultural, pastoral, horticultural, silvicultural); Soil degradation and management.

Unit- 4: Water
Fresh water (rivers, lakes, groundwater, aquifers, watershed); Marine; Estuarine; Wetlands; Threats and management strategies.

Unit- 5: Biological Resources
Biodiversity-definition and types; Significance; Threats; Management strategies; Bio-prospecting; IPR; CBD; National Biodiversity Action Plan).

Unit - 6: Forests
Definition, Cover and its significance (with special reference to India); Major and minor Forest products; Depletion; Management.

Unit- 7: Energy : Renewable and non-renewable sources of energy

Unit- 8: Contemporary practices in resource management
EIA, GIS, Participatory Resource Appraisal, Ecological Footprint with emphasis on carbon footprint, Resource Accounting; Waste management.

Unit- 9: National and international efforts in resource management and conservation

DSE-1P: Natural Resource Management **Credits 02**

Practical

1. Estimation of solid waste generated by a domestic system (biodegradable and nonbiodegradable) and its impact on land degradation.
2. Collection of data on forest cover of specific area.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

3. Measurement of dominance of woody species by DBH (diameter at breast height) method.
4. Calculation and analysis of ecological footprint.
5. Ecological modeling.

Suggested Readings:

- Vasudevan, N. (2006). Essentials of Environmental Science. Narosa Publishing House, New Delhi.
- Singh, J. S., Singh, S.P. and Gupta, S. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications, New Delhi.
- Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.

Or

DSE-1: Biostatistics **Credits 06**

DSE1T: Biostatistics **Credits 04**

Course Contents:

Unit 1: Biostatistics

Definition - statistical methods - basic principles. Variables - measurements, functions, limitations and uses of statistics.

Unit 2: Collection of data primary and secondary

Types and methods of data collection procedures - merits and demerits. Classification - tabulation and presentation of data - sampling methods.

Unit 3:Measures of central tendency

Mean, median, mode, geometric mean - merits & demerits. Measures of dispersion - range, standard deviation, mean deviation, quartile deviation - merits and demerits; Co-efficient of variations.

Unit 4: Correlation

Types and methods of correlation, regression, simple regression equation, fitting prediction, similarities and dissimilarities of correlation and regression

Unit 5: Statistical inference

Hypothesis - simple hypothesis - student 't' test - chi square test.

DSE1P: Biostatistics **Credits 02**

Practical

1. Calculation of mean, standard deviation and standard error
2. Calculation of correlation coefficient values and finding out the probability
3. Calculation of ‘F’ value and finding out the probability value for the F value.

Suggested Readings

- Biostatistic, Danniel, W.W., 1987.New York, John Wiley Sons.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

- An introduction to Biostatistics, 3rd edition, Sundarrao, P.S.S and Richards, J. Christian Medical College, Vellore
- Statistical Analysis of epidemiological data, Selvin, S., 1991. New York University Press. Statistics for Biology, Boston, Bishop, O.N. Houghton, Mifflin.
- The Principles of scientific research, Freedman, P. New York, Pergamon Press.
- Statistics for Biologists, Campbell, R.C., 1998.Cambridge University Press.

DSE-2: Plant Breeding **Credits 06**

DSE2T: Plant Breeding **Credits 04**

Course Contents:

Unit -1: Plant Breeding

Introduction and objectives. Breeding systems: modes of reproduction in crop plants. Important achievements and undesirable consequences of plant breeding.

Unit -2: Methods of Crop improvement

Introduction: Centres of origin and domestication of crop plants, plant genetic resources; Acclimatization; Selection methods: For self pollinated, cross pollinated and vegetatively propagated plants; Hybridization: For self, cross and vegetatively propagated plants – Procedure, advantages and limitations.

Unit -3: Quantitative inheritance

Concept, mechanism, examples of inheritance of Kernel colour in wheat, Skin colour in human beings. Monogenic vs polygenic Inheritance.

Unit - 4: Inbreeding depression and heterosis

History, genetic basis of inbreeding depression and heterosis : Applications.

Unit - 5: Crop improvement and breeding

Role of mutations; Polyploidy; Distant hybridization and role of biotechnology in crop improvement.

DSE2P: Plant Breeding (Practical) **Credits 02**

Practical

1. Identification of offspring's having parental genotypes and recombinant genotypes, based on combination of morphological attributes in a dihybrid cross.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

2. Processes of emaculation –

a) By applying higher temperature,
b) By amputing anthers.

3. Determination of genetic inheritance of characters in monohybrid and dihybrid crosses by Chi-square test (including Mendelian ratios and the ratios of gene interactions e.g. Dominant Epistasis, Supplementary gene action, Polymeric Gene action, Complementary Gene action, Inhibitory Gene action and Duplicating Gene action.

4. Identification of fertile and sterile pollens with carmine stain and TTC test.

Suggested Readings:

1. Singh, B.D. (2005). Plant Breeding: Principles and Methods. Kalyani Publishers. 7th edition.
2. Chaudhari, H.K. (1984). Elementary Principles of Plant Breeding. Oxford-IBH. 2nd edition.
3. Acquaah, G. (2007). Principles of Plant Genetics & Breeding. Blackwell Publishing.

Or

DSE-2: Stress Biology **Credits 06**

DSE2T: Stress Biology **Credits 04**

Course Contents:

Unit 1: Defining plant stress: Acclimation and adaptation.

Unit 2: Environmental factors: Water stress; Salinity stress, High light stress; Temperature stress; Hypersensitive reaction; Pathogenesis– related (PR) proteins; Systemic acquired resistance; Mediation of insect and disease resistance by jasmonates.

Unit 3: Stress sensing mechanisms in plants: Calcium modulation, Phospholipid signaling

Unit 4: Developmental and physiological mechanisms that protect plants against environmental stress: Adaptation in plants; Changes in root: shoot ratio; Aerenchyna development; Osmotic adjustment; Compatible solute production.

Unit 5: Reactive oxygen species–Production and scavenging mechanisms.

DSE2P: Stress Biology **Credits 02**

Practical

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

1. Quantitative estimation of peroxidase activity in the seedlings in the absence and presence of salt stress.
2. Superoxide activity in seedlings in the absence and presence of salt stress.
3. Zymographic analysis of peroxidase.
4. Zymographic analysis of superoxide dismutase activity.
5. Quantitative estimation and zymographic analysis of catalase.
6. Quantitative estimation and zymographic analysis of glutathione reductase.
7. Estimation of superoxide anions.

Suggested Readings:

- Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons. U.S.A. 4th edition.
- Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.

DSE-3: Industrial and Environmental Microbiology **Credits 06**

DSE-3T: Industrial and Environmental Microbiology **Credits 04**

Course Contents:

Unit 1: Scope of microbes in industry and environment

Unit 2: Bioreactors / Fermenters and fermentation processes
Solid-state and liquid-state (stationary and submerged) fermentations; Batch and continuous fermentations. Components of a typical bioreactor, Types of bioreactors-laboratory, pilotscale and production fermenters; Constantly stirred tank fermenter, tower fermenter, fixed bed and fluidized bed bioreactors and air-lift fermenter.

A visit to any educational institute/ industry to see an industrial fermenter, and other downstream processing operations.

Unit 3: Microbial production of industrial products

Microorganisms involved, media, fermentation conditions, downstream processing and uses; Filtration, centrifugation, cell disruption, solvent extraction, precipitation and ultrafiltration, lyophilization, spray drying; Hands on microbial fermentations for the production and estimation (qualitative and quantitative) of Enzyme: amylase or lipase activity, Organic acid (citric acid or glutamic acid), alcohol (Ethanol) and antibiotic (Penicillin)

Unit 4: Microbial enzymes of industrial interest and enzyme immobilization

Microorganisms for industrial applications_and hands on screening microorganisms for casein hydrolysis; starch hydrolysis; cellulose hydrolysis. Methods of immobilization, advantages and applications of immobilization, large scale applications of immobilized enzymes (glucose isomerase and penicillin acylase**).**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit 5: Microbes and quality of environment.
Distribution of microbes in air; Isolation of microorganisms from soil, air and water.

Unit 6: Microbial flora of water.

Water pollution, role of microbes in sewage and domestic waste water treatment systems. Determination of BOD, COD, TDS and TOC of water samples; Microorganisms as indicators of water quality, check coliform and fecal coliform in water samples.

Unit 7: Microbes in agriculture and remediation of contaminated soils.

Biological fixation; Mycorrhizae; Bioremediation of contaminated soils. Isolation of root nodulating bacteria, arbuscular mycorrhizal colonization in plant roots.

DSE-3P: Industrial and Environmental Microbiology Credits 02

Practical

1. Principles and functioning of instruments in microbiology laboratory
2. Hands on sterilization techniques and preparation of culture media.

Suggested Readings:

- Pelzar, M.J. Jr., Chen E.C. S., Krieg, N.R. (2010). Microbiology: An application based approach. Tata McGraw Hill Education Pvt. Ltd., Delhi.
- Tortora, G.J., Funke, B.R., Case. C.L. (2007). Microbiology. Pearson Benjamin Cummings, San Francisco, U.S.A. 9th edition.

OR

DSE-3: Bioinformatics Credits 06

DSE3T: Bioinformatics Credits 04

Course Contents:

Unit 1. Introduction to Bioinformatics
Introduction, Branches of Bioinformatics, Aim, Scope and Research areas of Bioinformatics.

Unit 2. Databases in Bioinformatics
Introduction, Biological Databases, Classification format of Biological Databases, Biological Database Retrieval System.

Unit 3. Biological Sequence Databases
National Center for Biotechnology Information (NCBI): Tools and Databases of NCBI, Database Retrieval Tool, Sequence Submission to NCBI, Basic local alignment search tool (BLAST), Nucleotide Database, Protein Database, Gene Expression Database. EMBL Nucleotide Sequence Database (EMBL-Bank): Introduction, Sequence Retrieval, Sequence Submission to EMBL, Sequence analysis tools. DNA Data Bank of Japan (DDBJ): Introduction, Resources at DDBJ, Data Submission at DDBJ. Protein

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Information Resource (PIR): About PIR, Resources of PIR, Databases of PIR, Data Retrieval in PIR. Swiss-Prot: Introduction and Salient Features.

Unit 4. Sequence Alignments
Introduction, Concept of Alignment, Multiple Sequence Alignment (MSA), MSA by CLUSTALW, Scoring Matrices, Percent Accepted Mutation (PAM), Blocks of Amino Acid Substitution Matrix (BLOSUM).

Unit 5. Molecular Phylogeny

Methods of Phylogeny, Software for Phylogenetic Analyses, Consistency of Molecular Phylogenetic Prediction.

Unit 6. Applications of Bioinformatics
Structural Bioinformatics in Drug Discovery, Quantitative structure-activity relationship (QSAR) techniques in Drug Design, Microbial genome applications, Crop improvement

DSE3P: Bioinformatics **Credits 02**

Practical
1. Nucleic acid and protein databases.
2. Sequence retrieval from databases.
3. Sequence alignment.
4. Sequence homology and Gene annotation.
5. Construction of phylogenetic tree.

Suggested Readings:

- Ghosh Z. and Bibekanand M. (2008) Bioinformatics: Principles and Applications. Oxford University Press.
- Pevsner J. (2009) Bioinformatics and Functional Genomics. II Edition. Wiley-Blackwell.
- Campbell A. M., Heyer L. J. (2006) Discovering Genomics, Proteomics and Bioinformatics. II Edition. Benjamin Cummings.

DSE-4: Analytical Techniques in Plant Sciences **Credits 06**

DSE4T: Analytical Techniques in Plant Sciences **Credits 04**

Course Contents:

Unit- 1: Imaging and related techniques
Principles of microscopy; Light microscopy; Fluorescence microscopy; Confocal microscopy; Use of fluorochromes: (a) Flow cytometry (FACS); (b) Applications of fluorescence microscopy: Chromosome banding, FISH, chromosome painting; Transmission and Scanning electron microscopy – sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freeze etching.

Unit- 2: Cell fractionation

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Centrifugation: Differential and density gradient centrifugation, sucrose density gradient, CsCl2gradient, analytical centrifugation, ultracentrifugation, marker enzymes.

Unit- 3: Radioisotopes
Use in biological research, auto-radiography, pulse chase experiment.

Unit- 4: Spectrophotometry
Principle and its application in biological research.

Unit- 5: Chromatography
Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography.

Unit- 6: Characterization of proteins and nucleic acids
Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE

Unit- 7: Biostatistics
Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical; Measures of central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit.

DSE4P: Analytical Techniques in Plant Sciences **Credits 02**

Practical

1. Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs.
2. Demonstration of ELISA.
3. To separate nitrogenous bases by paper chromatography.
4. To separate sugars by thin layer chromatography.
5. Isolation of chloroplasts by differential centrifugation.
6. To separate chloroplast pigments by column chromatography.
7. To estimate protein concentration through Lowry's methods.
8. To separate proteins using PAGE.
9. To separation DNA (marker) using AGE.
10. Study of different microscopic techniques using photographs/micrographs (freeze fracture, freeze etching, negative staining, positive staining, fluorescence and FISH).
11. Preparation of permanent slides (double staining).

Suggested Readings:

- Plummer, D.T. (1996). An Introduction to Practical Biochemistry. Tata McGraw-Hill Publishing Co. Ltd. New Delhi. 3rd edition.
- Ruzin, S.E. (1999). Plant Microtechnique and Microscopy, Oxford University Press, New York. U.S.A.
- Ausubel, F., Brent, R., Kingston, R. E., Moore, D.D., Seidman, J.G., Smith, J.A., Struhl, K. (1995). Short Protocols in Molecular Biology. John Wiley & Sons. 3rd edition.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

- Zar, J.H. (2012). Biostatistical Analysis. Pearson Publication. U.S.A. 4th edition.

OR

DSE-4: Research Methodology **Credits 06**

DSE4T: Research Methodology **Credits 04**

Course Contents:

Unit 1: Basic concepts of research

Research-definition and types of research (Descriptive vs analytical; applied vs fundamental; quantitative vs qualitative; conceptual vs emperical).Research methods vs methodology. Literature-review and its consolidation; Library research; field research; laboratory research.

Unit 2: General laboratory practices
Common calculations in botany laboratories. Understanding the details on the label of reagent bottles. Molarity and normality of common acids and bases.Preparation of solutions. Dilutions. Percentage solutions. Molar, molal and normal solutions.Technique of handling micropipettes; Knowledge about common toxic chemicals and safety measures in their handling.

Unit 3: Data collection and documentation of observations
Maintaining a laboratory record; Tabulation and generation of graphs. Imaging of Tissue specimens and application of scale bars. The art of field photography.

Unit 4: Overview of Biological Problems
History; Key biology research areas, Model organisms in biology (A Brief overview): Genetics, Physiology, Biochemistry, Molecular Biology, Cell Biology, Genomics, Proteomics Transcriptional regulatory network.

Unit 5: **Methods to study plant cell/tissue structure**
Whole mounts, peel mounts, squash preparations, clearing, maceration and sectioning; Tissue preparation: living vs fixed, physical vs chemical fixation, coagulating fixatives, non-coagulant fixatives; tissue dehydration using graded solvent series; Paraffin and plastic infiltration; Preparation of thin and ultrathin sections.

Unit 6: Plant microtechniques
Staining procedures, classification and chemistry of stains. Staining equipment. Reactive dyes and fluorochromes (including genetically engineered protein labeling with GFP and other tags). Cytogenetic techniques with squashed plant materials.

Unit 7: The art of scientific writing and its presentation
Numbers, units, abbreviations and nomenclature used in scientific writing. Writing references. Powerpoint presentation. Poster presentation. Scientific writing and ethics, Introduction to copyright-academic misconduct/plagiarism.

DSE4P: Research Methodology **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Practical

1. Experiments based on chemical calculations.
2. Plant microtechnique experiments.
3. The art of imaging of samples through microphotography and field photography.
4. Poster presentation on defined topics.
5. Technical writing on topics assigned.

Suggested Readings:

- Dawson, C. (2002). Practical research methods. UBS Publishers, New Delhi.
- Stapleton, P., Yondeowei, A., Mukanyange, J., Houten, H. (1995). Scientific writing for agricultural research scientists – a training reference manual. West Africa Rice Development Association, Hong Kong.
- Ruzin, S.E. (1999). Plant microtechnique and microscopy. Oxford University Press, New York, U.S.A.

Skill Enhancement Course (SEC)

SEC-1: Biofertilizers **Credits 02**

SEC1T: Biofertilizers **Credits 02**

Course Contents:

Unit- 1: General account about the microbes used as biofertilizer – Rhizobium – isolation, identification, mass multiplication, carrier based inoculants, Actinorrhizal symbiosis.

Unit- 2: *Azospirillum:* isolation and mass multiplication – carrier based inoculant, associative effect of different microorganisms.*Azotobacter*: classification, characteristics – crop response to *Azotobacter* inoculum, maintenance and mass multiplication.

Unit- 3: Cyanobacteria (blue green algae), *Azolla* and *Anabaena azollae* association, nitrogen fixation, factors affecting growth, blue green algae and *Azolla* in rice cultivation.

Unit- 4: Mycorrhizal association, types of mycorrhizal association, taxonomy, occurrence and distribution, phosphorus nutrition, growth and yield – colonization of VAM – isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.

Unit-5: Organic farming – Green manuring and organic fertilizers, Recycling of biodegradable municipal, agricultural and Industrial wastes – biocompost making methods, types and method of vermicomposting – field Application.

Suggested Readings:

- Dubey, R.C., 2005 A Text book of Biotechnology S.Chand & Co, New Delhi.
- Kumaresan, V. 2005, Biotechnology, Saras Publications, New Delhi.
- John Jothi Prakash, E. 2004. Outlines of Plant Biotechnology. Emkay _Publication, New Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

- Sathe, T.V. 2004 Vermiculture and Organic Farming. Daya publishers.
- Subha Rao, N.S. 2000, Soil Microbiology, Oxford & IBH Publishers, New _Delhi.
- Vayas,S.C, Vayas, S. and Modi, H.A. 1998 Bio-fertilizers and organic _Farming Akta Prakashan, Nadiad

OR

SEC- 1: Floriculture **Credits 02**

SEC1T: Floriculture

Course Contents:

Unit 1: Introduction: History of gardening; Importance and scope of floriculture and landscape gardening.

Unit 2: Nursery Management and Routine Garden Operations: Sexual and vegetative methods of propagation; Soil sterilization; Seed sowing; Pricking; Planting and transplanting; Shading; Stopping or pinching; Defoliation; Wintering; Mulching; Topiary; Role of plant growth regulators.

Unit 3: Ornamental Plants: Flowering annuals; Herbaceous perennials; Divine vines; Shade and ornamental trees; Ornamental bulbous and foliage plants; Cacti and succulents; Palms and Cycads; Ferns and Selaginellas; Cultivation of plants in pots; Indoor gardening; Bonsai.

Unit 4: Principles of Garden Designs: English, Italian, French, Persian, Mughal and Japanese gardens; Features of a garden (Garden wall, Fencing, Steps, Hedge, Edging, Lawn, Flower beds, Shrubbery, Borders, Water garden. Some Famous gardens of India.

Unit 5: Landscaping Places of Public Importance: Landscaping highways and Educational institutions.

Unit 6: Commercial Floriculture: Factors affecting flower production; Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life; Cultivation of Important cut flowers (Carnation, Aster, Chrysanthemum, Dahlia, Gerbera, Gladiolous, Marigold,Rose, Lilium, Orchids).

Unit 7: Diseases and Pests of Ornamental Plants.

Suggested Readings:

- Randhawa, G.S. and Mukhopadhyay, A. 1986. Floriculture in India. Allied Publishers.

SEC-2: Medicinal Botany **Credits 02**

SEC-2T: Medicinal Botany

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit 1:
History, Scope and Importance of Medicinal Plants. Indigenous Medicinal Sciences; Definition and Scope - **Ayurveda**: History, origin, panchamahabhutas, saptadhatu and tridosha concepts, Rasayana, plants used in ayurvedic treatments, **Siddha:** Origin of Siddha medicinal systems, Basis of Siddha system, plants used in Siddha medicine. **Unani**: History, concept: Umoor-e- tabiya, tumors treatments/ therapy, polyherbal formulations.

Unit 2:
Conservation of endangered and endemic medicinal plants. Definition: endemic and endangered medicinal plants, Red list criteria; In situ conservation: Biosphere reserves, sacred groves, National Parks; Ex situ conservation: Botanic Gardens, Ethnomedicinal plant Gardens. Propagation of Medicinal Plants: Objectives of the nursery, its classification, important components of a nursery, sowing, pricking, use of green house for nursery production, propagation through cuttings, layering, grafting and budding.

Unit 3:
Ethnobotany and Folk medicines. Definition; Ethnobotany in India: Methods to study ethnobotany; Applications of Ethnobotany: National interacts, Palaeo-ethnobotany. Folk medicines of ethnobotany, ethnomedicine, ethnoecology, ethnic communities of India. Application of natural products to certain diseases- Jaundice, cardiac, infertility, diabetics, Blood pressure and skin diseases.

Suggested Readings:

- Trivedi P C, 2006. Medicinal Plants: Ethnobotanical Approach, Agrobios, India.
- Purohit and Vyas, 2008. Medicinal Plant Cultivation: A Scientific Approach, 2nd edn. Agrobios, India.

Or

SEC-2: Mushroom Culture Technology **Credits 02**

SEC-2T: Mushroom Culture Technology

Course Contents:

Unit 1:
Introduction, history. Nutritional and medicinal value of edible mushrooms; Poisonous mushrooms.Types of edible mushrooms available in India - *Volvariella volvacea, Pleurotus citrinopileatus, Agaricus bisporus.*

Unit 2:
Cultivation Technology : Infrastructure: substrates (locally available) Polythene bag, vessels, Inoculation hook, inoculation loop, low cost stove, sieves, culture rack, mushroom unit (Thatched house) water sprayer, tray, small polythene bag. Pure culture: Medium, sterilization, preparation of spawn, multiplication. Mushroom bed preparation - paddy straw, sugarcane trash, maize straw, banana leaves. Factors affecting the mushroom bed preparation - Low cost technology, Composting technology in mushroom production.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit 3:
Storage and nutrition: Short-term storage (Refrigeration - upto 24 hours) Long term Storage (canning, pickels, papads), drying, storage in saltsolutions. Nutrition - Proteins - amino acids, mineral elements nutrition - Carbohydrates, Crude fibre content - Vitamins.

Unit 4:
Food Preparation:Types of foods prepared from mushroom.Research Centres - National level and Regional level.Cost benefit ratio - Marketing in India and abroad, Export Value.

Suggested Readings:

- Marimuthu, T. Krishnamoorthy, A.S. Sivaprakasam, K. and Jayarajan. R (1991) Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.
- Swaminathan, M. (1990) Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore - 560018.
- Tewari, Pankaj Kapoor, S.C., (1988). Mushroom cultivation, Mittal Publications, Delhi.
- Nita Bahl (1984-1988) Hand book of Mushrooms, II Edition, Vol. I & Vol. II.

Generic Elective (GE)
[Interdisciplinary for other department]

GE-1: Biodiversity (Microbes, Algae, Fungi and Archegoniate) Credits 06

GE1T: Biodiversity (Microbes, Algae, Fungi and Archegoniate) Credits 04

Course Contents:

Unit 1: Microbes
Viruses – Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance; Bacteria – Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.

Unit 2: Algae
General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Classification of algae; Morphology and life-cycles of the following: *Nostoc*, *Chlamydomonas*, *Oedogonium*, *Vaucheria*, *Fucus*, *Polysiphonia*. Economic importance of algae.

Unit 3: Fungi
Introduction- General characteristics, ecology and significance, range of thallus organization,cell wall composition, nutrition, reproduction and classification; True Fungi-General characteristics, ecology and significance, life cycle of *Rhizopus* (Zygomycota) *Penicillium*,*Alternaria* (Ascomycota), *Puccinia, Agaricus* (Basidiomycota); Symbiotic

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Associations-Lichens:General account, reproduction and significance; Mycorrhiza: ectomycorrhiza and endomycorrhiza and their significance.

Unit 4: Introduction to Archegoniate
Unifying features of archegoniates, Transition to land habit, Alternation of generations.

Unit 5: Bryophytes
General characteristics, adaptations to land habit, Classification, Range of thallus organization.Classification (up to family), morphology, anatomy and reproduction of *Marchantia* and *Funaria*.(Developmental details not to be included).Ecology and economic importance of bryophytes with special mention of *Sphagnum*.

Unit 6: Pteridophytes
General characteristics, classification, Early land plants (*Cooksonia* and *Rhynia*). Classification (up to family), morphology, anatomy and reproduction of *Selaginella, Equisetum* and *Pteris*.(Developmental details not to be included).Heterospory and seed habit, stellar evolution. Ecological and economical importance of Pteridophytes.

Unit 4: Gymnosperms
General characteristics; Classification (up to family), morphology, anatomy and reproduction of *Cycas* and *Pinus* (Developmental details not to be included). Ecological and economical importance.

GE1P: Biodiversity (Microbes, Algae, Fungi and Archegoniate) (Practical) Credits 02

Practical:

1. EMs/Models of viruses – T-Phage and TMV, Line drawing/Photograph of Lytic and Lysogenic Cycle.

1. Types of Bacteria from temporary/permanent slides/photographs; EM bacterium; Binary Fission; Conjugation; Structure of root nodule.

2. Gram staining.

3. Study of vegetative and reproductive structures of *Nostoc, Chlamydomonas* (electron micrographs), *Oedogonium, Vaucheria, Fucus* and Polysiphonia* through temporary preparations and permanent slides. (* *Fucus* - Specimen and permanent slides).

4. *Rhizopus and Penicillium*: Asexual stage from temporary mounts and sexual Structures through permanent slides.

5. *Alternaria:* Specimens/photographs and tease mounts.

6. *Puccinia*: Herbarium specimens of Black Stem Rust of Wheat and infected Barberryleaves; section/tease mounts of spores on Wheat and permanent slides of both the hosts.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

7. *Agaricus*: Specimens of button stage and full grown mushroom; Sectioning of gills of *Agaricus*.
8. Lichens: Study of growth forms of lichens (crustose, foliose and fruticose)

9. Mycorrhiza: ecto mycorrhiza and endo mycorrhiza (Photographs)

10. *Marchantia*- morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemmacup, w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).

11. *Funaria*- morphology, w.m. leaf, rhizoids, operculum, peristome, annulus, spores (temporary slides); permanent slides showing antheridial and archegonial heads, l.s. capsule and protonema.
12. *Selaginella*- morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, w.m.microsporophyll and megasporophyll (temporary slides), l.s. strobilus (permanent slide).
14. *Equisetum*- morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore,w.m. spores (wet and dry)(temporary slides); t.s rhizome (permanent slide).
13. Pteris- morphology, t.s. rachis, v.s. sporophyll, w.m. sporangium, w.m. spores (temporary slides), t.s. rhizome, w.m. prothallus with sex organs and young sporophyte (permanent slide).
14. *Cycas*- morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet,v.s. micro sporophyll, w.m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).

15. *Pinus*- morphology (long and dwarf shoots, w.m. dwarf shoot, male and female), w.m.dwarf shoot, t.s. needle, t.s. stem, l.s./t.s. male cone, w.m. microsporophyll, w.m. microspores (temporary slides), l.s. female cone, t.l.s. &r.l.s. stem (permanent slide).

Suggested Readings:

- Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.
- Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
- Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.
- Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.
- Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
- Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
- Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

GE-2: Plant Ecology and Taxonomy **Credits 06**

GE2T: Plant Ecology and Taxonomy **Credits 04**

Course Contents:

Unit- 1: Introduction

Unit- 2: Ecological factors

Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes

Unit -3: Plant communities

Characters; Ecotone and edge effect; Succession; Processes and types

Unit- 4: Ecosystem

Structure; energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Bio-geochemical cycling; Cycling of carbon, nitrogen and Phosphorous

Unit- 5: Phytogeography

Principle of Biogeographical zone; Endemism.

Unit- 6: Introduction to plant taxonomy

Identification, Classification, Nomenclature.

Unit- 7 : Identification

Functions of Herbarium, important herbaria and botanical gardens of the world and India; Documentation: Flora, Keys: single access and multi-access

Unit 8 : Taxonomic evidences from palynology, cytology, phytochemistry and molecular data.

Unit 9 : Taxonomic hierarchy
Ranks, categories and taxonomic groups

Unit 10: Botanical nomenclature
Principles and rules (ICN); ranks and names; binominal system, typification, author citation, valid publication, rejection of names, principle of priority and its limitations.

Unit 11: Classification

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Types of classification-artificial, natural and phylogenetic. Bentham and Hooker (upto series), Engler and Prantl (upto series).

Unit 12: Biometrics, numerical taxonomy and cladistics
Characters; variations; OTUs, character weighting and coding; cluster analysis; phenograms, cladograms (definitions and differences).

GE2P: Practical **Credit 02**

Practical:

1. Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.
2. Determination of pH, and analysis of two soil samples for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field test.
3. Comparison of bulk density, porosity and rate of infiltration of water in soil of three habitats.
4. (a) Study of morphological adaptations of hydrophytes and xerophytes (four each). (b) Study of biotic interactions of the following: Stem parasite (*Cuscuta),* Root parasite (*Orobanche*), Epiphytes, Predation (Insectivorous plants).
5. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus by species area curve method. (species to be listed)
6. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law
7. Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification):Brassicaceae - *Brassica,Alyssum / Iberis;* Asteraceae -*Sonchus/Launaea, Vernonia/Ageratum, Eclipta/Tridax;* Solanaceae -*Solanum nigrum, Withania;* Lamiaceae -*Salvia, Ocimum*; Liliaceae - *Asphodelus / Lilium / Allium.*
8. Mounting of a properly dried and pressed specimen of any wild plant with herbarium label (to be submitted in the record book).

Suggested Readings:

1. Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall, U.S.A. 4th edition.
2. Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
3. Simpson, M.G. (2006). *Plant Systematics.* Elsevier Academic Press, San Diego, CA, U.S.A.
4. Singh, G. (2012). *Plant Systematics:* Theory and Practice. Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition

GE-3: Economic Botany and Plant Biotechnology **Credits 06**

GE3T: Economic Botany and Plant Biotechnology **Credits 04**

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

Unit 1: Origin of Cultivated Plants
Concept of centres of origin, their importance with reference to Vavilov's work.

Unit 2: Cereals

Wheat - Origin, morphology, uses

Unit 3: Legumes

General account with special reference to Gram and soybean

U nit 4: Spices

General account with special reference to clove and black pepper (Botanical name, family, part used morphology and uses)

U nit 5: Beverages

Tea (morphology, processing, uses)

Unit 6: Oils and Fats

General description with special reference to groundnut

Unit 7: Fibre Yielding Plants

General description with special reference to Cotton (Botanical name, family, part used, morphology and uses)

Unit 8: Introduction to biotechnology

Unit 9: Plant tissue culture

Micropropagation ; haploid production through androgenesis and gynogenesis; brief account of embryo and endosperm culture with their applications

Unit 10: Recombinant DNA Techniques

Blotting techniques: Northern, Southern and Western Blotting, DNA Fingerprinting; Molecular DNA markers i.e. RAPD, RFLP, SNPs; DNA sequencing, PCR and Reverse Transcriptase-PCR. Hybridoma and monoclonal antibodies, ELISA and Immuno detection. Molecular diagnosis of human disease, Human gene Therapy.

GE3P: Economic Botany and Plant Biotechnology **Credits 04**

Practical:

1. Study of economically important plants : Wheat, Gram, Soybean, Black pepper, Clove Tea, Cotton, Groundnut through specimens, sections and micro chemical tests

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

2. Familiarization with basic equipments in tissue culture.
3. Study through photographs: Anther culture, somatic embryogenesis, endosperm and embryo culture; micropropagation.
4. Study of molecular techniques: PCR, Blotting techniques, AGE and PAGE.

Suggested Readings:

- Kochhar, S.L. (2011). Economic Botany in the Tropics, MacMillan Publishers India Ltd., New Delhi. 4th edition.
- Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
- Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

GE-4: Plant Anatomy and Embryology **Credits 06**

GE4T: Plant Anatomy and Embryology **Credits 04**

Course Contents:

Unit 1: Meristematic and permanent tissues
Root and shoot apical meristems; Simple and complex tissues

U nit 2: Organs
Structure of dicot and monocot root stem and leaf.

Unit 3: Secondary Growth
Vascular cambium – structure and function, seasonal activity. Secondary growth in root and stem, Wood (heartwood and sapwood)

Unit 4: Adaptive and protective systems
Epidermis, cuticle, stomata; General account of adaptations in xerophytes and hydrophytes.

Unit 5: Structural organization of flower
Structure of anther and pollen; Structure and types of ovules; Types of embryo sacs, organization and ultrastructure of mature embryo sac.

Unit 6: Pollination and fertilization
Pollination mechanisms and adaptations; Double fertilization; Seed-structure appendages and dispersal mechanisms.

Unit 7: Embryo and endosperm
Endosperm types, structure and functions; Dicot and monocot embryo; Embryo endosperm relationship

Unit 8: Apomixis and polyembryony
Definition, types and Practical applications

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

GE4P: Plant Anatomy and Embryology **Credits 02**

Practical:

1. Study of meristems through permanent slides and photographs.
2. Tissues (parenchyma, collenchyma and sclerenchyma); Macerated xylary elements, Phloem (Permanent slides, photographs)
3. Stem: Monocot: *Zea mays;* Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).
4. Root: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).
5. Leaf: Dicot and Monocot leaf (only Permanent slides).
6. Adaptive anatomy: Xerophyte (*Nerium* leaf); Hydrophyte (*Hydrilla* stem).
7. Structure of anther (young and mature), tapetum (amoeboid and secretory) (Permanent slides).
8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/ campylotropous.
9. Female gametophyte: *Polygonum* (monosporic) type of Embryo sac Development (Permanent slides/photographs).
10. Ultrastructure of mature egg apparatus cells through electron micrographs.
11. Pollination types and seed dispersal mechanisms (including appendages, aril, caruncle) (Photographs and specimens).
12. Dissection of embryo/endosperm from developing seeds.
13. Calculation of percentage of germinated pollen in a given medium.

Suggested Readings:

1. Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of Angiosperms. Vikas Publication House Pvt. Ltd. New Delhi. 5th edition.
2. Mauseth, J.D. (1988). Plant Anatomy. The Benjamin/Cummings Publisher, USA.

OR

GE-4: Plant Physiology and Metabolism **Credits 06**

GE4T: Plant Physiology and Metabolism **Credits 04**

Course Contents:

Unit 1: Plant-water relations
Importance of water, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation.

U nit 2: Mineral nutrition
Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps.

Unit 3: Translocation in phloem.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

C omposition of phloem sap, girdling experiment; Pressure flow model; Phloem loading and unloading

Unit 4: Photosynthesis
Photosynthetic Pigments (Chl a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Electron transport and mechanism of ATP synthesis; C3, C4 and CAM pathways of carbon fixation; Photorespiration.

U nit 5: Respiration
Glycolysis, anaerobic respiration, TCA cycle; Oxidative phosphorylation, Glyoxylate, Oxidative Pentose Phosphate Pathway.

U nit 6: Enzymes
Structure and properties; Mechanism of enzyme catalysis and enzyme inhibition.

U nit 7: Nitrogen metabolism
Biological nitrogen fixation; Nitrate and ammonia assimilation.

Unit 8: Plant growth regulators
Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylene.

Unit 9: Plant response to light and temperature
Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on photomorphogenesis; Vernalization.

GE4P: Plant Physiology and Metabolism **Credits 02**

Practical

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. To study the effect of two environmental factors (light and wind) on transpiration by excised twig.
3. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.
4. Demonstration of Hill reaction.
5. Demonstrate the activity of catalase and study the effect of pH and enzyme concentration.
6. To study the effect of light intensity and bicarbonate concentration on O2 evolution in photosynthesis.
7. Comparison of the rate of respiration in any two parts of a plant.
8. Separation of amino acids by paper chromatography.

Demonstration experiments (any four)

1. Bolting.
2. Effect of auxins on rooting.
3. Suction due to transpiration.
4. R.Q.
5. Respiration in roots.

Suggested Readings

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

- Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
- Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.
- Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 11:59:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Botany_Hons.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year BSc (General)
in

Botany

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Botany

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	**I**	**SEMESTER-I**					**CA**	**ESE**	**TOTAL**
		Core-1 (DSC-1A)		Biodiversity (Microbes, Algae, Fungi and Archegoniate) - **Practical**	6	4-0-4	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
		Semester - I : Total			**20**				**275**
		SEMESTER-II							
	II	Core-4 (DSC-1B)		Plant Ecology and Taxonomy - **Practical**	6	4-0-4	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
		Semester - 2 : Total			**22**				**325**

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	**III**	**SEMESTER-III**					**CA**	**ESE**	**TOTAL**
		Core-7 (DSC-1C)		Plant Anatomy and Embryology - **Practical**	6	4-0-4	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		SEC-1: Biofertilizers Or Nursery and Gardening	2	1-1-0	10	40	50
		Semester - 3 : Total			**20**				**275**
		SEMESTER-IV							
	IV	Core-10 (DSC-1D)		Plant Physiology and Metabolism - **Practical**	6	4-0-4	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		SEC-2: Herbal Technology Or Mushroom Culture Technology	2	1-1-0	10	40	50
		Semester - 4 : Total			**20**				**275**

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Botany)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		SEC-3: Floriculture Or Ethnobotany	2	1-1-0	10	40	50
				Semester - 5 : Total	**20**				**275**
		SEMESTER-VI							
	VI	DSE-1B		Discipline-1(Botany)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		SEC-4: Medicinal Botany Or Plant Diversity and Human Welfare Or Intellectual Property Rights	2	1-1-0	10	40	50
				Semester - 6 : Total	**20**				**275**
		Total in all semester:			**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

List of Core Courses and Electives

Core Course (CC)

DSC-1A: Biodiversity (Microbes, Algae, Fungi and Archegoniate)
DSC-1B: Plant Ecology and Taxonomy
DSC-1C: Plant Anatomy and Embryology
DSC-1D: Plant Physiology and Metabolism

Discipline Specific Electives (DSE)

DSE-1: Cell and Molecular Biology
Or
DSE-1: Economic Botany and Biotechnology
Or
DSE-1: Bioinformatics

DSE-2: Genetics and Plant Breeding
Or
DSE-2: Analytical Techniques in Plant Sciences
Or
DSE-2: Research Methodology

Skill Enhancement Course (SEC)

SEC-1: Bio-fertilizers
Or
SEC-1: Nursery and Gardening

SEC-2: Herbal Technology
Or
SEC-2: Mushroom Culture Technology

SEC-3: Floriculture
Or
SEC-3: Ethnobotany

SEC-4: Medicinal Botany
Or
SEC-4: Plant Diversity and Human Welfare
Or
SEC-4: Intellectual Property Rights

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Core Course (CC)

DSC-1A(CC-1) : Biodiversity (Microbes, Algae, Fungi and Archegoniate)

Credits 06

DSC1AT(C1T) : Biodiversity (Microbes, Algae, Fungi and Archegoniate)

Credits 04

Unit 1: Microbes

Viruses – Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance; Bacteria – Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.

Unit 2: Algae

General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Classification of algae; Morphology and life-cycles of the following: *Nostoc*, *Chlamydomonas, Oedogonium, Vaucheria*, *Fucus*, *Polysiphonia*. Economic importance of algae

Unit 3: Fungi

Introduction - General characteristics, ecology and significance, range of thallus organization, cell wall composition , nutrition, reproduction and classification; True Fungi- General characteristics, ecology and significance, life cycle of *Rhizopus* (Zygomycota) *Penicillium, Alternaria* (Ascomycota), *Puccinia, Agaricus* (Basidiomycota); Symbiotic Associations-Lichens: General account, reproduction and significance; Mycorrhiza: ectomycorrhiza and endomycorrhiza and their significance

Unit 4: Introduction to Archegoniate

Unifying features of archegoniates, Transition to land habit, Alternation of generations.

U nit 5: Bryophytes

General characteristics, adaptations to land habit, Classification, Range of thallus organization. Classification (up to family), morphology, anatomy and reproduction of *Marchantia* and *Funaria*. (Developmental details not to be included). Ecology and economic importance of bryophytes with special mention of *Sphagnum*.

Unit 6: Pteridophytes

General characteristics, classification, Early land plants (*Cooksonia* and *Rhynia*). Classification (up to family), morphology, anatomy and reproduction of *Selaginella*, *Equisetum* and *Pteris*. (Developmental details not to be included). Heterospory and seed habit, stelar evolution. Ecological and economical importance of Pteridophytes.

U nit 4: Gymnosperms

General characteristics, classification. Classification (up to family), morphology, anatomy and reproduction of *Cycas* and *Pinus*. (Developmental details not to be included). Ecological and economical importance.

DSC1P(C1P) : Biodiversity (Microbes, Algae, Fungi and Archegoniate(Practical))

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

List of Practical **Credits : 02**

1. EMs/Models of viruses – T-Phage and TMV, Line drawing/Photograph of Lytic and Lysogenic Cycle.
2. Types of Bacteria from temporary/permanent slides/photographs; EM bacterium; Binary Fission; Conjugation; Structure of root nodule.Gram staining
3. Study of vegetative and reproductive structures of *Nostoc, Chlamydomonas* (electron micrographs), *Oedogonium, Vaucheria, Fucus* and Polysiphonia* through temporary preparations and permanent slides. (* *Fucus* - Specimen and permanent slides)
4. *Rhizopus and Penicillium*: Asexual stage from temporary mounts and sexual structures through permanent slides.
5. *Alternaria:* Specimens/photographs and tease mounts.
6. *Puccinia*: Herbarium specimens of Black Stem Rust of Wheat and infected Barberry leaves; section/tease mounts of spores on Wheat and permanent slides of both the hosts.
7. *Agaricus*: Specimens of button stage and full grown mushroom; Sectioning of gills of *Agaricus*.
8. Lichens: Study of growth forms of lichens (crustose, foliose and fruticose)
9. Mycorrhiza: ecto mycorrhiza and endo mycorrhiza (Photographs)
10. *Marchantia*- morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemma cup, w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).
11. *Funaria*- morphology, w.m. leaf, rhizoids, operculum, peristome, annulus, spores (temporary slides); permanent slides showing antheridial and archegonial heads, l.s. capsule and protonema.
12. *Selaginella* - morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, w.m. microsporophyll and megasporophyll (temporary slides), l.s. strobilus (permanent slide).
13. *Equisetum* - morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore, w.m. spores (wet and dry)(temporary slides); t.s rhizome (permanent slide).
14. *Pteris* - morphology, t.s. rachis, v.s. sporophyll, w.m. sporangium, w.m. spores (temporary slides), t.s. rhizome, w.m. prothallus with sex organs and young sporophyte (permanent slide).
15. *Cycas* - morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet, v.s. microsporophyll, w.m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).
16. *Pinus* - morphology (long and dwarf shoots, w.m. dwarf shoot, male and female), w.m. dwarf shoot, t.s. needle, t.s. stem, , l.s./t.s. male cone, w.m. microsporophyll, w.m. microspores (temporary slides), l.s. female cone, t.l.s. & r.l.s. stem (permanent slide).

Suggested Readings:

- Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.
- Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
- Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

- Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.
- Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
- Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
- Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.

DSC-1B(CC-2): Plant Ecology and Taxonomy **Credits 06**

DSC1B(C2T): Plant Ecology and Taxonomy **Credits 04**

Unit 1: Introduction

Unit 2: Ecological factors
Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes.

U nit 3: Plant communities
Characters; Ecotone and edge effect; Succession; Processes and types.

Unit 4: Ecosystem
Structure; energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Biogeochemical cycling; Cycling of carbon, nitrogen and Phosphorous

Unit 5: Phytogeography
Principle biogeographical zones; Endemism

U nit 6 Introduction to plant taxonomy
Identification, Classification, Nomenclature.

Unit 7: Identification
Functions of Herbarium, important herbaria and botanical gardens of the world and India; Documentation: Flora, Keys: single access and multi-access

Unit 8:Taxonomic evidences from palynology, cytology, phytochemistry and molecular data.

Unit 9: Taxonomic hierarchy
Ranks, categories and taxonomic groups

Unit 10: Botanical nomenclature
Principles and rules (ICN); ranks and names; binominal system, typification, author citation, valid publication, rejection of names, principle of priority and its limitations.

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

U nit 11: Classification

Types of classification-artificial, natural and phylogenetic. Bentham and Hooker (upto series), Engler and Prantl (upto series).

Unit 12: Biometrics, numerical taxonomy and cladistics

Characters; variations; OTUs, character weighting and coding; cluster analysis; phenograms, cladograms (definitions and differences).

DSC1BP(C2P): Plant Ecology and Taxonomy(Practical) Credits 02

Practical:

1. Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.
2. Determination of pH, and analysis of two soil samples for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field test.
3. Comparison of bulk density, porosity and rate of infiltration of water in soil of three habitats.
    a. Study of morphological adaptations of hydrophytes and xerophytes (four each).
    b. Study of biotic interactions of the following: Stem parasite (*Cuscuta),* Root parasite (Orobanche), Epiphytes, Predation (Insectivorous plants)
4. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus by species area curve method. (species to be listed)
5. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law
6. Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification):Brassicaceae - *Brassica, Alyssum / Iberis;* Asteraceae -*Sonchus/Launaea, Vernonia/Ageratum, Eclipta/Tridax;* Solanaceae -*Solanum nigrum, Withania;* Lamiaceae -*Salvia, Ocimum*; Liliaceae - *Asphodelus / Lilium / Allium.*
7. Mounting of a properly dried and pressed specimen of any wild plant with herbarium label (to be submitted in the record book).

Suggested Readings:

- Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall, U.S.A. 4th edition.
- Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
- Simpson, M.G. (2006). *Plant Systematics.* Elsevier Academic Press, San Diego, CA, U.S.A.
- Singh, G. (2012). *Plant Systematics:* Theory and Practice. Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition.

DSC-1C(CC-3) : Plant Anatomy and Embryology Credits 06

DSC 1CT(C3T) : Plant Anatomy and Embryology Credits 04

Unit 1: Meristematic and permanent tissues

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Root and shoot apical meristems; Simple and complex tissues.

U nit 2: Organs
Structure of dicot and monocot root stem and leaf.

Unit 3: Secondary Growth
Vascular cambium – structure and function, seasonal activity. Secondary growth in root and stem, Wood (heartwood and sapwood).

U nit 4: Adaptive and protective systems
Epidermis, cuticle, stomata; General account of adaptations in xerophytes and hydrophytes.

Unit 5: Structural organization of flower
Structure of anther and pollen; Structure and types of ovules; Types of embryo sacs, organization and ultrastructure of mature embryo sac.

Unit 6: Pollination and fertilization
Pollination mechanisms and adaptations; Double fertilization; Seed-structure appendages and dispersal mechanisms.

Unit 7: Embryo and endosperm
Endosperm types, structure and functions; Dicot and monocot embryo; Embryo endosperm relationship.

Unit 8: Apomixis and polyembryony
Definition, types and practical applications.

DSC1CP(C3P) : Plant Anatomy and Embryology(Practical) Credits 02

Practical

1. Study of meristems through permanent slides and photographs.
2. Tissues (parenchyma, collenchyma and sclerenchyma); Macerated xylary elements, Phloem (Permanent slides, photographs)
3. Stem: Monocot: *Zea mays;* Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).
4. Root: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).
5. Leaf: Dicot and Monocot leaf (only Permanent slides).
6. Adaptive anatomy: Xerophyte (*Nerium* leaf); Hydrophyte (*Hydrilla* stem).
7. Structure of anther (young and mature), tapetum (amoeboid and secretory) (Permanent slides).
8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/ campylotropous.
9. Female gametophyte: *Polygonum* (monosporic) type of Embryo sac Development (Permanent slides/photographs).
10. Ultrastructure of mature egg apparatus cells through electron micrographs.
11. Pollination types and seed dispersal mechanisms (including appendages, aril, caruncle) (Photographs and specimens).
12. Dissection of embryo/endosperm from developing seeds.

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

13. Calculation of percentage of germinated pollen in a given medium.

Suggested Readings:

- Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of Angiosperms. Vikas Publication House Pvt. Ltd. New Delhi. 5th edition.
- Mauseth, J.D. (1988). Plant Anatomy. The Benjamin/Cummings Publisher, USA.

DSC-1D(CC-4): Plant Physiology and Metabolism **Credits 06**

DSC1DT(C4T): Plant Physiology and Metabolism **Credits 04**

Unit 1: Plant-water relations

Importance of water, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation.

U nit 2: Mineral nutrition

Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps.

Unit 3: Translocation in phloem

Composition of phloem sap, girdling experiment; Pressure flow model; Phloem loading and unloading.

Unit 4: Photosynthesis

Photosynthetic Pigments (Chl a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Electron transport and mechanism of ATP synthesis; C3, C4 and CAM pathways of carbon fixation; Photorespiration.

Unit 5: Respiration

Glycolysis, anaerobic respiration, TCA cycle; Oxidative phosphorylation, Glyoxylate, Oxidative Pentose Phosphate Pathway.

Unit 6: Enzymes

Structure and properties; Mechanism of enzyme catalysis and enzyme inhibition.

Unit 7: Nitrogen metabolism

Biological nitrogen fixation; Nitrate and ammonia assimilation.

Unit 8: Plant growth regulators

Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylene.

Unit 9: Plant response to light and temperature

Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on photomorphogenesis; Vernalization.

DSC1DP(C4P): Plant Physiology and Metabolism (Practical) **Credits 02**

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Practical

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. To study the effect of two environmental factors (light and wind) on transpiration by excised twig.
3. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.
4. Demonstration of Hill reaction.
5. Demonstrate the activity of catalase and study the effect of pH and enzyme concentration.
6. To study the effect of light intensity and bicarbonate concentration on O2 evolution in photosynthesis.
7. Comparison of the rate of respiration in any two parts of a plant.
8. Separation of amino acids by paper chromatography.

Demonstration experiments (any four)

1. Bolting.
2. Effect of auxins on rooting.
3. Suction due to transpiration.
4. R.Q.
5. Respiration in roots.

Suggested Readings:

- Taiz, L., Zeiger, E., (2010). Plant Physiology. Sinauer Associates Inc., U.S.A. 5thEdition.
- Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.
- Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.

Discipline Specific Electives (DSE)

DSE-1: Cell and Molecular Biology **Credits 06**

DSE1T: Cell and Molecular Biology **Credits 04**

Unit 1: Techniques in Biology

Principles of microscopy; Light Microscopy; Phase contrast microscopy; Fluorescence microscopy; Confocal microscopy; Sample Preparation for light microscopy;
Electron microscopy (EM) - Scanning EM and Scanning Transmission EM (STEM); Sample preparation for electron microscopy; X-ray diffraction analysis.

Unit 2: Cell as a unit of Life

The Cell Theory; Prokaryotic and eukaryotic cells; Cell size and shape; Eukaryotic Cell components.

Unit 3: Cell Organelles

Mitochondria : Structure, marker enzymes, composition; Semiautonomous nature; Symbiont hypothesis; Proteins synthesized within mitochondria; mitochondrial DNA. Chloroplast Structure, marker enzymes, composition; semiautonomous nature, chloroplast

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

DNA. ER, Golgi body & Lysosomes : Structures and roles. Peroxisomes and Glyoxisomes :Structures, composition, functions in animals and plants and biogenesis. Nucleus :Nuclear Envelope- structure of nuclear pore complex; chromatin; molecular organization, DNA packaging in eukaryotes, euchromatin and heterochromatin, nucleolus and ribosome structure (brief).

Unit 4: Cell Membrane and Cell Wall

The functions of membranes; Models of membrane structure; The fluidity of membranes; Membrane proteins and their functions; Carbohydrates in the membrane; Faces of the membranes; Selective permeability of the membranes; Cell wall.

Unit 5: Cell Cycle

Overview of Cell cycle, Mitosis and Meiosis; Molecular controls.

Unit 6: Genetic material

DNA : Miescher to Watson and Crick- historic perspective, Griffith's and Avery's transformation experiments, Hershey-Chase bacteriophage experiment, DNA structure, types of DNA, types of genetic material.

DNA replication (Prokaryotes and eukaryotes): bidirectional replication, semi–conservative, semi discontinuous RNA priming, Ø (theta) mode of replication, replication of linear, ds-DNA, replicating the 5´end of linear chromosome including replication enzymes.

Unit 7: Transcription (Prokaryotes and Eukaryotes)

Types of structures of RNA (mRNA, tRNA, rRNA), RNA polymerase - various types; Translation (Prokaryotes and eukaryotes), genetic code.

Unit 8: Regulation of gene expression

Prokaryotes:Lac operon and Tryptophan operon ; and in Eukaryotes.

DSE1P: Cell and Molecular Biology (Practical) Credits 02

Practical

1. To study prokaryotic cells (bacteria), viruses, eukaryotic cells with the help of light and electron micrographs.
2. Study of the photomicrographs of cell organelles
3. To study the structure of plant cell through temporary mounts.
4. To study the structure of animal cells by temporary mounts-squamous epithelial cell and nerve cell.
5. Preparation of temporary mounts of striated muscle fiber
6. To prepare temporary stained preparation of mitochondria from striated muscle cells /cheek epithelial cells using vital stain Janus green.
7. Study of mitosis and meiosis (temporary mounts and permanent slides).
8. Study the effect of temperature, organic solvent on semi permeable membrane.
9. Demonstration of dialysis of starch and simple sugar.
10. Study of plasmolysis and deplasmolysis on *Rhoeo* leaf.
11. Measure the cell size (either length or breadth/diameter) by micrometry.
12. Study the structure of nuclear pore complex by photograph (from Gerald Karp)

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

13. Study of special chromosomes (polytene & lampbrush) either by slides or photographs.
14. Study DNA packaging by micrographs.
15. Preparation of the karyotype and ideogram from given photograph of somatic metaphase chromosome.

Suggested Readings :

- Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. John Wiley & Sons. Inc.
- De Robertis, E.D.P. and De Robertis, E.M.F. 2006. Cell and Molecular Biology. 8th edition. Lippincott Williams and Wilkins, Philadelphia.
- Cooper, G.M. and Hausman, R.E. 2009. The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.
- Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. 2009. The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco.

Or

DSE-1 : Economic Botany and Biotechnology **Credits 06**

DSE1T : Economic Botany and Biotechnology **Credits 04**

Unit 1: Origin of Cultivated Plants
Concept of centres of origin, their importance with reference to Vavilov's work

Unit 2: Cereals
Wheat -Origin, morphology, uses

U nit 3: Legumes
General account with special reference to Gram and soybean

U nit 4: Spices
General account with special reference to clove and black pepper (Botanical name, family, part used, morphology and uses)

U nit 5: Beverages
Tea (morphology, processing, uses)

U nit 6: Oils and Fats
General description with special reference to groundnut

Unit 7: Fibre Yielding Plants
General description with special reference to Cotton (Botanical name, family, part used, morphology and uses)

Unit 8: Introduction to biotechnology

U nit 9: Plant tissue culture
Micropropagation ; haploid production through androgenesis and gynogenesis; brief account of embryo & endosperm culture with their applications

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Unit 10: Recombinant DNA Techniques
Blotting techniques: Northern, Southern and Western Blotting, DNA Fingerprinting; Molecular DNA markers i.e. RAPD, RFLP, SNPs; DNA sequencing, PCR and Reverse Transcriptase-PCR. Hybridoma and monoclonal antibodies, ELISA and Immunodetection. Molecular diagnosis of human disease, Human gene Therapy.

DSE1P : Economic Botany and Biotechnology(Practical) Credits 02

Practical

1. Study of economically important plants : Wheat, Gram, Soybean, Black pepper, Clove Tea, Cotton, Groundnut through specimens, sections and microchemical tests
2. Familiarization with basic equipments in tissue culture.
3. Study through photographs: Anther culture, somatic embryogenesis, endosperm and embryo culture; micropropagation.
4. Study of molecular techniques: PCR, Blotting techniques, AGE and PAGE.

Suggested Readings

- Kochhar, S.L. (2011). Economic Botany in the Tropics, MacMillan Publishers India Ltd., New Delhi. 4th edition.
- Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
- Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

Or

DSE-1: Bioinformatics Credits 06

DSE1T: Bioinformatics Credits 04

Unit 1: Introduction to Bioinformatics
Introduction, Branches of Bioinformatics, Aim, Scope and Research areas of Bioinformatics.

Unit 2: Databases in Bioinformatics
Introduction, Biological Databases, Classification format of Biological Databases, Biological Database Retrieval System.

Unit 3 : Biological Sequence Databases
National Center for Biotechnology Information (NCBI): Tools and Databases of NCBI, Database Retrieval Tool, Sequence Submission to NCBI, Basic local alignment search tool (BLAST), Nucleotide Database, Protein Database, Gene Expression Database.
EMBL Nucleotide Sequence Database (EMBL-Bank): Introduction, Sequence Retrieval, Sequence Submission to EMBL, Sequence analysis tools. DNA Data Bank of Japan (DDBJ): Introduction, Resources at DDBJ, Data Submission at
DDBJ. Protein Information Resource (PIR): About PIR, Resources of PIR, Databases of PIR, Data Retrieval in PIR. Swiss-Prot: Introduction and Salient Features.

Unit 4: Sequence Alignments

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Introduction, Concept of Alignment, Multiple Sequence Alignment (MSA), MSA by CLUSTALW, Scoring Matrices, Percent Accepted Mutation (PAM), Blocks of Amino Acid Substitution Matrix (BLOSUM).

Unit 5: Molecular Phylogeny
Methods of Phylogeny, Software for Phylogenetic Analyses, Consistency of Molecular Phylogenetic Prediction.

Unit 6: Applications of Bioinformatics
Structural Bioinformatics in Drug Discovery, Quantitative structure-activity relationship (QSAR) techniques in Drug Design, Microbial genome applications, Crop improvement.

DSE1P: Bioinformatics (Practical) Credits 02

Practical

1. Nucleic acid and protein databases.
2. Sequence retrieval from databases.
3. Sequence alignment.
4. Sequence homology and Gene annotation.
5. Construction of phylogenetic tree.

Suggested Readings:

- Ghosh Z. and Bibekanand M. (2008) Bioinformatics: Principles and Applications. Oxford University Press.
- Pevsner J. (2009) Bioinformatics and Functional Genomics. II Edition. Wiley-Blackwell.
- Campbell A. M., Heyer L. J. (2006) Discovering Genomics, Proteomics and Bioinformatics. _II Edition. Benjamin Cummings.

DSE-2: Genetics and Plant Breeding Credits 06

DSE2T: Genetics and Plant Breeding Credits 04

Unit 1: Heredity

1. Brief life history of Mendel
2. Terminologies
3. Laws of Inheritance
4. Modified Mandelian Ratios: 2:1- lethal Genes; 1:2:1- Co - dominance, incomplete dominance;- 9:7; 9:4:3; 13:3; 12:3:1.
5. Chi Square
6. Pedigree Analysis
7. Cytoplasmic Inheritance: Shell Coiling in Snail, Kappa particles in Paramecium, leaf variegation in Mirabilis jalapa, Male sterility.
8. Multiple allelism
9. Pleiotropism
10. Chromosome theory of Inheritance.

Unit 2: Sex-determination and Sex-linked Inheritance

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Unit 3: **Linkage and Crossing over**
Linkage: concept & history, complete & incomplete linkage, bridges experiment, coupling & repulsion, recombination frequency, linkage maps based on two and three factor crosses. Crossing over: concept and significance, cytological proof of crossing over.

Unit 4: Mutations and Chromosomal Aberrations
Types of mutations, effects of physical & chemical mutagens. Numerical chromosomal changes: Euploidy, Polyploidy and Aneuploidy ; Structural chromosomal changes: Deletions, Duplications, Inversions & Translocations.

Unit 5: Plant Breeding
Introduction and objectives. Breeding systems: modes of reproduction in crop plants. Important achievements and undesirable consequences of plant breeding.

Unit 6: Methods of crop improvement
Introduction: Centres of origin and domestication of crop plants, plant genetic resources; Acclimatization; Selection methods: For self pollinated, cross pollinated and vegetatively propagated plants; Hybridization: For self, cross and vegetatively propagated plants – Procedure, advantages and limitations.

Unit 7: Quantitative inheritance
Concept, mechanism, examples. Monogenic vs polygenic Inheritance.

Unit 8: Inbreeding depression and heterosis
History, genetic basis of inbreeding depression and heterosis; Applications.

Unit 9: Crop improvement and breeding
Role of mutations; Polyploidy; Distant hybridization and role of biotechnology in crop improvement.

DSE2P: Genetics and Plant Breeding(Practical) Credits 02

Practical

1. Mendel's laws through seed ratios. Laboratory exercises in probability and chisquare.
2. Chromosome mapping using point test cross data.
3. Pedigree analysis for dominant and recessive autosomal and sex linked traits.
4. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4).
5. Study of aneuploidy: Down's, Klinefelter's and Turner's syndromes through photographs.
6. Photographs/Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge.
7. Hybridization techniques - Emasculation, Bagging (For demonstration only).
8. Induction of polyploidy conditions in plants (For demonstration only).

Suggested Readings:

- Gardner EJ, Simmons MJ, Snustad DP (2008). Principles of Genetics. 8th Ed. Wiley- India.

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

- Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics, John Wiley & Sons Inc., India. 5th edition.
- Klug WS, Cummings MR, Spencer, C, Palladino, M (2011). Concepts of Genetics, 10th Ed., Benjamin Cummings
- Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W. H. Freeman and Co., U.S.A. 10th edition.
- Pierce BA (2011) Genetics: A Conceptual Approach, 4th Ed., Macmillan Higher Education Learning
- Singh, B.D. (2005). Plant Breeding: Principles and Methods. Kalyani Publishers. 7th edition.
- Chaudhari, H.K. (1984). Elementary Principles of Plant Breeding. Oxford – IBH. 2nd edition.
- Acquaah, G. (2007). Principles of Plant Genetics & Breeding. Blackwell Publishing.

Or

DSE-2: Analytical Techniques in Plant Sciences **Credits 06**

DSE2T: Analytical Techniques in Plant Sciences **Credits 04**

Unit 1: Imaging and related techniques
Principles of microscopy; Light microscopy; Fluorescence microscopy; Confocal microscopy; Use of fluorochromes: (a) Flow cytometry (FACS); (b) Applications of fluorescence microscopy: Chromosome banding, FISH, chromosome painting; Transmission and Scanning electron microscopy – sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freeze etching.

Unit 2: Cell fractionation
Centrifugation: Differential and density gradient centrifugation, sucrose density gradient, CsCl2 gradient, analytical centrifugation, ultracentrifugation, marker enzymes.

Unit 3: Radioisotopes
Use in biological research, auto-radiography, pulse chase experiment.

Unit 4: Spectrophotometry
Principle and its application in biological research.

Unit 5: Chromatography
Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ionexchange chromatography; Molecular sieve chromatography; Affinity chromatography.

Unit 6: Characterization of proteins and nucleic acids
Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE

Unit 7: Biostatistics

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical; Measures of central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit.

DSE2P: Analytical Techniques in Plant Sciences **Credits 02**

Practical

1. Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs.
2. Demonstration of ELISA.
3. To separate nitrogenous bases by paper chromatography.
4. To separate sugars by thin layer chromatography.
5. Isolation of chloroplasts by differential centrifugation.
6. To separate chloroplast pigments by column chromatography.
7. To estimate protein concentration through Lowry's methods.
8. To separate proteins using PAGE.
9. To separate DNA (marker) using AGE.
10. Study of different microscopic techniques using photographs/micrographs (freeze fracture, freeze etching, negative staining, positive staining, fluorescence and FISH).
11. Preparation of permanent slides (double staining).

Suggested Readings:

- Plummer, D.T. (1996). An Introduction to Practical Biochemistry. Tata McGraw-Hill Publishing Co. Ltd. New Delhi. 3rd edition.
- Ruzin, S.E. (1999). Plant Microtechnique and Microscopy, Oxford University Press, New York. U.S.A.
- Ausubel, F., Brent, R., Kingston, R. E., Moore, D.D., Seidman, J.G., Smith, J.A., Struhl, K. (1995). Short Protocols in Molecular Biology. John Wiley & Sons. 3rd edition.
- Zar, J.H. (2012). Biostatistical Analysis. Pearson Publication. U.S.A. 4th edition.

Or

DSE-2: Research Methodology **Credits 06**

DSE2T: Research Methodology **Credits 04**

Unit 1: Basic concepts of research

Research-definition and types of research (Descriptive vs analytical; applied vs fundamental; quantitative vs qualitative; conceptual vs emperical). Research methods vs methodology. Literature-review and its consolidation; Library research; field research; laboratory research.

Unit 2: General laboratory practices

Common calculations in botany laboratories. Understanding the details on the label of reagent bottles. Molarity and normality of common acids and bases. Preparation of solutions. Dilutions. Percentage solutions. Molar, molal and normal solutions. Technique

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

of handling micropipettes; Knowledge about common toxic chemicals and safety measures in their handling.

Unit 3: Data collection and documentation of observations
Maintaining a laboratory record; Tabulation and generation of graphs. Imaging of tissue specimens and application of scale bars. The art of field photography.

Unit 4: Overview of Biological Problems
History; Key biology research areas, Model organisms in biology (A Brief overview): Genetics, Physiology, Biochemistry, Molecular Biology, Cell Biology, Genomics, Proteomics-Transcriptional regulatory network.

Unit 5: **Methods to study plant cell/tissue structure**
Whole mounts, peel mounts, squash preparations, clearing, maceration and sectioning; Tissue preparation: living vs fixed, physical vs chemical fixation, coagulating fixatives, noncoagulant fixatives; tissue dehydration using graded solvent series; Paraffin and plastic infiltration; Preparation of thin and ultrathin sections.

Unit 6: Plant microtechniques
Staining procedures, classification and chemistry of stains. Staining equipment. Reactive dyes and fluorochromes (including genetically engineered protein labeling with GFP and other tags). Cytogenetic techniques with squashed plant materials.

Unit 7: The art of scientific writing and its presentation
Numbers, units, abbreviations and nomenclature used in scientific writing. Writing references. Powerpoint presentation. Poster presentation. Scientific writing and ethics, Introduction to copyright-academic misconduct/plagiarism.

DSE2P: Research Methodology **Credits 02**

Practical

1. Experiments based on chemical calculations.
2. Plant microtechnique experiments.
3. The art of imaging of samples through microphotography and field photography.
4. Poster presentation on defined topics.
5. Technical writing on topics assigned.

Suggested Readings:

1. Dawson, C. (2002). Practical research methods. UBS Publishers, New Delhi.
2. Stapleton, P., Yondeowei, A., Mukanyange, J., Houten, H. (1995). Scientific writing for agricultural research scientists – a training reference manual. West Africa Rice
3. Development Association, Hong Kong.
4. Ruzin, S.E. (1999). Plant microtechnique and microscopy. Oxford University Press, New York, U.S.A.

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Skill Enhancement Course(SEC)

SEC-1: Bio-fertilizers **Credits 02**

SEC1T: Bio-fertilizers

Unit 1: General account about the microbes used as biofertilizer – Rhizobium – isolation, identification, mass multiplication, carrier based inoculants, Actinorrhizal symbiosis.

Unit 2:*Azospirillum:* isolation and mass multiplication – carrier based inoculant, associative effect of different microorganisms. *Azotobacter*: classification, characteristics – crop response to *Azotobacter* inoculum, maintenance and mass multiplication.

Unit 3: Cyanobacteria (blue green algae), *Azolla* and *Anabaena azollae* association, nitrogen fixation, factors affecting growth, blue green algae and *Azolla* in rice cultivation.

Unit 4: Mycorrhizal association, types of mycorrhizal association, taxonomy, occurrence and distribution, phosphorus nutrition, growth and yield – colonization of VAM – isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.

Unit 5: Organic farming – Green manuring and organic fertilizers, Recycling of biodegradable municipal, agricultural and Industrial wastes – biocompost making methods, types and method of vermicomposting – field Application.

Suggested Readings:

- Dubey, R.C., 2005 A Text book of Biotechnology S.Chand & Co, New Delhi.
- Kumaresan, V. 2005, Biotechnology, Saras Publications, New Delhi.
- John Jothi Prakash, E. 2004. Outlines of Plant Biotechnology. Emkay _Publication, New Delhi.
- Sathe, T.V. 2004 Vermiculture and Organic Farming. Daya publishers.
- Subha Rao, N.S. 2000, Soil Microbiology, Oxford & IBH Publishers, New _Delhi.
- Vayas,S.C, Vayas, S. and Modi, H.A. 1998 Bio-fertilizers and organic _Farming Akta Prakashan, Nadiad

Or

SEC-1: Nursery and Gardening **Credits 02**

SEC1T: Nursery and Gardening

Unit-1: Nursery: definition, objectives and scope and building up of infrastructure fornursery, planning and seasonal activities - Planting - direct seeding and transplants.

Unit-2:Seed: Structure and types - Seed dormancy; causes and methods of breaking dormancy - Seed storage: Seed banks, factors affecting seed viability, genetic erosion – Seed production technology - seed testing and certification.

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Unit-3: Vegetative propagation: air-layering, cutting, selection of cutting, collecting season, treatment of cutting, rooting medium and planting of cuttings - Hardening of plants – green house - mist chamber, shed root, shade house and glass house.

Unit-4: Gardening: definition, objectives and scope - different types of gardening - landscape and home gardening - parks and its components - plant materials and design - computer applications in landscaping - Gardening operations: soil laying, manuring, watering, management of pests and diseases and harvesting.

Unit-5: Sowing/raising of seeds and seedlings - Transplanting of seedlings - Study of cultivation of different vegetables: cabbage, brinjal, lady's finger, onion, garlic, tomatoes, and carrots - Storage and marketing procedures.

Suggested Readings:

- Bose T.K. & Mukherjee, D., 1972, Gardening in India, Oxford & IBH PublishingCo., New Delhi.
- Sandhu, M.K., 1989, Plant Propagation, Wile Eastern Ltd., Bangalore, Madras.
- Kumar, N., 1997, Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
- Edmond Musser & Andres, Fundamentals of Horticulture, McGraw Hill Book Co.,New Delhi.
- Agrawal, P.K. 1993, Hand Book of Seed Technology, Dept. of Agriculture andCooperation, National _Seed Corporation Ltd., NewDelhi.
- Janick Jules. 1979. Horticultural Science. (3rd Ed.), W.H. Freeman and Co., SanFrancisco, USA.

SEC-2: Herbal Technology **Credits 02**

SEC2T: Herbal Technology

Unit-1: Herbal medicines: history and scope - definition of medical terms - role of medicinal plants in Siddha systems of medicine; cultivation - harvesting - processing - storage - marketing and utilization of medicinal plants.

Unit-2: Pharmacognosy - systematic position m edicinal uses of the following herbs in curing various ailments; Tulsi, Ginger, Fenugreek, Indian Goose berry and Ashoka.

Unit-3: Phytochemistry - active principles and methods of their testing - identification andutilization of the medicinal herbs; *Catharanthus roseus* (cardiotonic), *Withania somnifera* (drugs acting on nervous system), *Clerodendron phlomoides* (anti-rheumatic) and *Centella asiatica* (memory booster).

Unit-4: Analytical pharmacognosy: Drug adulteration - types, methods of drug evaluation -Biological testing of herbal drugs - Phytochemical screening tests for secondary metabolites (alkaloids, flavonoids, steroids, triterpenoids, phenolic compounds)

Unit-5: Medicinal plant banks micro propagation of important species (*Withania somnifera*, neem and tulsi- Herbal foods-future of pharmacognosy)

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Suggested Readings:

- Glossary of Indian medicinal plants, R.N.Chopra, S.L.Nayar and I.C.Chopra, 1956. C.S.I.R, New Delhi.
- The indigenous drugs of India, Kanny, Lall, Dey and Raj Bahadur, 1984. International Book _Distributors.
- Herbal plants and Drugs Agnes Arber, 1999. Mangal Deep Publications.
- Ayurvedic drugs and their plant source. V.V. Sivarajan and Balachandran Indra 1994. Oxford IBH _publishing Co.
- Ayurveda and Aromatherapy. Miller, Light and Miller, Bryan, 1998. Banarsidass, Delhi.
- Principles of Ayurveda, Anne Green, 2000. Thomsons, London.
- Pharmacognosy, Dr.C.K.Kokate et al. 1999. Nirali Prakashan.

Or

SEC-2: Mushroom Culture Technology **Credits 02**

SEC2T: Mushroom Culture Technology

Unit-1: Introduction, history. Nutritional and medicinal value of edible mushrooms;Poisonous mushrooms. Types of edible mushrooms available in India - *Volvariella volvacea, Pleurotus citrinopileatus, Agaricus bisporus.*

Unit-2: Cultivation Technology : Infrastructure: substrates (locally available) Polythene bag, vessels, Inoculation hook, inoculation loop, low cost stove, sieves, culture rack, mushroom unit (Thatched house) water sprayer, tray, small polythene bag. Pure culture: Medium, sterilization, preparation of spawn, multiplication. Mushroom bed preparation - paddy straw, sugarcane trash, maize straw, banana leaves. Factors affecting the mushroom bed preparation - Low cost technology, Composting technology in mushroom production.

Unit-3: Storage and nutrition : Short-term storage (Refrigeration - upto 24 hours) Long term Storage (canning, pickels, papads), drying, storage in saltsolutions. Nutrition - Proteins - amino acids, mineral elements nutrition - Carbohydrates, Crude fibre content - Vitamins.

Unit-4: Food Preparation_: Types of foods prepared from mushroom. Research Centres - National level and Regional level._Cost benefit ratio - Marketing in India and abroad, Export Value.

Suggested Readings:

- Marimuthu, T. Krishnamoorthy, A.S. Sivaprakasam, K. and Jayarajan. R (1991) Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.
- Swaminathan, M. (1990) Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore - 560018.
- Tewari, Pankaj Kapoor, S.C., (1988). Mushroom cultivation, Mittal Publications, Delhi.
- Nita Bahl (1984-1988) Hand book of Mushrooms, II Edition, Vol. I & Vol. II.

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

SEC-3: Floriculture **Credits 02**

SEC3T Floriculture

Unit-1: Introduction: History of gardening; Importance and scope of floriculture andl andscape gardening.

Unit-2: Nursery Management and Routine Garden Operations: Sexual and vegetative methods of propagation; Soil sterilization; Seed sowing; Pricking; Planting and transplanting; Shading; Stopping or pinching; Defoliation; Wintering; Mulching; Topiary; Role of plant growth regulators.

Unit-3: Ornamental Plants: Flowering annuals; Herbaceous perennials; Divine vines; Shade and ornamental trees; Ornamental bulbous and foliage plants; Cacti and succulents; Palms and Cycads; Ferns and Selaginellas; Cultivation of plants in pots; Indoor gardening; Bonsai.

Unit-4: Principles of Garden Designs: English, Italian, French, Persian, Mughal and Japanese gardens; Features of a garden (Garden wall, Fencing, Steps, Hedge, Edging, Lawn, Flower beds, Shrubbery, Borders, Water garden. Some Famous gardens of India.
Unit-5: Landscaping Places of Public Importance: Landscaping highways and Educational institutions.

Unit-6: Commercial Floriculture: Factors affecting flower production; Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life; Cultivation of Important cut flowers (Carnation, Aster, Chrysanthemum, Dahlia, Gerbera, Gladiolous, Marigold,Rose, Lilium, Orchids).

Unit-7: **Diseases and Pests of Ornamental Plants**.

Suggested Readings:

- Randhawa, G.S. and Mukhopadhyay, A. 1986. Floriculture in India. Allied Publishers.

Or

SEC-3: Ethnobotany **Credits 02**

SEC3T: Ethnobotany
Unit-1: Ethnobotany
Introduction, concept, scope and objectives; Ethnobotany as an interdisciplinary science. The relevance of ethnobotany in the present context; Major and minor ethnic groups or Tribals of India, and their life styles. Plants used by the tribals: a) Food plants b) intoxicants and beverages c) Resins and oils and miscellaneous uses.

Unit-2: Methodology of Ethnobotanical studies
a) Field work b) Herbarium c) Ancient Literature d) Archaeological findings e) temples and sacred places.

Unit-3: Role of ethnobotany in modern Medicine

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Medico-ethnobotanical sources in India;Significance of the following plants in ethno botanical practices (along with their habitat and morphology) a) *Azadiractha indica* b) *Ocimum sanctum* c) *Vitex negundo*. d) *Gloriosa superba* e) *Tribulus terrestris* f) *Pongamia pinnata* g) *Cassia auriculata* h) *Indigofera tinctoria*. Role of ethnobotany in modern medicine with special example *Rauvolfia sepentina, Trichopus zeylanicus, Artemisia,Withania*.
Role of ethnic groups in conservation of plant genetic resources. Endangered taxa and forest management (participatory forest management).

Unit-4: Ethnobotany and legal aspects
Ethnobotany as a tool to protect interests of ethnic groups. Sharing of wealth concept with few examples from India. Biopiracy, Intellectual Property Rights and Traditional Knowledge.

Suggested Readings:

- S.K. Jain, Manual of Ethnobotany, Scientific Publishers, Jodhpur, 1995.
- S.K. Jain (ed.) Glimpses of Indian. Ethnobotny, Oxford and I B H, New Delhi – 1981
- S.K. Jain (ed.) 1989. Methods and approaches in ethnobotany. Society of ethnobotanists, Lucknow, India.
- S.K. Jain, 1990. Contributions of Indian ethnobotny. Scientific publishers, Jodhpur.
- Colton C.M. 1997. Ethnobotany – Principles and applications. John Wiley and sons – Chichester
- Rama Ro, N and A.N. Henry (1996). The Ethnobotany of Eastern Ghats in Andhra Pradesh, India. Botanical Survey of India. Howrah._8) Rajiv K. Sinha – Ethnobotany The Renaissance of Traditional Herbal Medicine – INA –SHREE Publishers, Jaipur-1996_9)

SEC-4: Medicinal Botany **Credits 02**

SEC4T: Medicinal Botany

Unit-1: History, Scope and Importance of Medicinal Plants. Indigenous Medicinal Sciences; Definition and Scope-Ayurveda: History, origin, panchamahabhutas, saptadhatu and tridoshaconcepts, Rasayana, plants used in ayurvedic treatments, Siddha: Origin of Siddha medicinal systems, Basis of Siddha system, plants used in Siddha medicine. Unani: History, concept: Umoor-e- tabiya, tumors treatments/ therapy, polyherbal formulations.

Unit-2: Conservation of endangered and endemic medicinal plants. Definition: endemic and endangered medicinal plants, Red list criteria; In situ conservation: Biosphere reserves, sacred groves, National Parks; Ex situ conservation: Botanic Gardens, Ethnomedicinal plant Gardens. Propagation of Medicinal Plants: Objectives of the nursery, its classification, important components of a nursery, sowing, pricking, use of green house for nursery production, propagation through cuttings, layering, grafting and budding.
Unit- 3: Ethnobotany and Folk medicines. Definition; Ethnobotany in India: Methods to study ethnobotany; Applications of Ethnobotany: National interacts, Palaeo-ethnobotany. folk medicines of ethnobotany, ethnomedicine, ethnoecology, ethnic communities of

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

India. Application of natural products to certain diseases- Jaundice, cardiac, infertility, diabetics, Blood pressure and skin diseases.

Suggested Readings

- Trivedi P C, 2006. Medicinal Plants: Ethnobotanical Approach, Agrobios, India.
- Purohit and Vyas, 2008. Medicinal Plant Cultivation: A Scientific Approach, 2nd edn. Agrobios, India.

Or

SEC-4: Plant Diversity and Human Welfare **Credits 02**

SEC4T: Plant Diversity and Human Welfare

Unit-1: Plant diversity and its scope - Genetic diversity, Species diversity, Plant diversity at the ecosystem level, Agro biodiversity and cultivated plant taxa, wild taxa. Values and uses of Biodiversity: Ethical and aesthetic values, Precautionary principle, Methodologies for valuation, Uses of plants, Uses of microbes.

Unit-2: Loss of Biodiversity: Loss of genetic diversity, Loss of species diversity, Loss of ecosystem diversity, Loss of agro-biodiversity, Projected scenario for biodiversity loss,

Management of Plant Biodiversity: Organizations associated with biodiversity management-Methodology for execution-IUCN, UNEP, UNESCO, WWF, NBPGR; Biodiversity legislation and conservations, Biodiversity information management and communication.

Unit-3: Conservation of Biodiversity: Conservation of genetic diversity, species diversity and ecosystem diversity, *In situ* and *ex situ* conservation, Social approaches to conservation, Biodiversity awareness programmes, Sustainable development.

Unit-4: Role of plants in relation to Human Welfare a) Importance of forestry their utilization and commercial aspects b) Avenue trees, c) Ornamental plants of India. d) Alcoholic beverages through ages. Fruits and nuts: Important fruit crops their commercial importance. Wood and its uses.

Suggested Readings:

- Krishnamurthy, K.V. (2004). An Advanced Text Book of Biodiversity – Principles and Practices. Oxford and IBH Publications Co. Pvt. Ltd. New Delhi

Or

SEC-4: Intellectual Property Rights **Credits 02**

SEC4T: Intellectual Property Rights

Unit-1: Introduction to Intellectual Property Right (IPR)
Concept and kinds. Economic importance. IPR in India and world: Genesis and scope, some important examples.IPR and WTO (TRIPS, WIPO).

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Unit-2 : Patents
Objectives, Rights, Patent Act 1970 and its amendments. Procedure of obtaining patents, Working of patents. Infringement.

Unit-3: Copyrights
Introduction, Works protected under copyright law, Rights, Transfer of Copyright, Infringement.

Unit-4: Trademarks
Objectives, Types, Rights, Protection of goodwill, Infringement, Passing off, Defences, Domain name.

Unit-5: Geographical Indications
Objectives, Justification, International Position, Multilateral Treaties, National Level, Indian Position.

Unit-6: Protection of Traditional Knowledge
Objective, Concept of Traditional Knowledge, Holders, Issues concerning, Bio-Prospecting and Bio-Piracy, Alternative ways, Protectability, needfor a Sui-Generis regime, Traditional Knowledge on the International Arena, at WTO, at National level, Traditional Knowledge Digital Library.

Unit-7: Industrial Designs
Objectives, Rights, Assignments, Infringements, Defences of Design Infringement

Unit-8: Protection of Plant Varieties
Plant Varieties Protection-Objectives, Justification, International Position, Plant varieties protection in India. Rights of farmers, Breeders and Researchers.National gene bank, Benefit sharing.Protection of Plant Varieties and Farmers' Rights Act, 2001.

Unit-9:Information Technology Related Intellectual Property Rights
Computer Software and Intellectual Property, Database and Data Protection, Protection of Semi-conductor chips, Domain Name Protection

Unit-10: Biotechnology and Intellectual Property Rights.
Patenting Biotech Inventions: Objective, Applications, Concept of Novelty, Concept of inventive step, Microorganisms, Moral Issues in Patenting Biotechnological inventions.

Suggested Readings:

- N.K. Acharya: Textbook on intellectual property rights, Asia Law House (2001).
- Manjula Guru & M.B. Rao, Understanding Trips: Managing Knowledge in Developing Countries, Sage Publications (2003).
- P. Ganguli, Intellectual Property Rights: Unleashing the Knowledge Economy, TataMcGraw-Hill (2001).
- Arthur Raphael Miller, Micheal H.Davis; Intellectual Property: Patents, Trademarks and Copyright in a Nutshell, West Group Publishers (2000).
- Jayashree Watal, Intellectual property rights in the WTO and developing countries, Oxford University Press, Oxford.

Downloaded from Vidyasagar University by 152.58.139.123 on 17 April 2023 : 20:55:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Botany_General.pdf

Syllabus (DRAFT)
for
MA / M.Sc. Course in Geography

REVISED IN 2022: EFFECTIVE FROM THE ACADEMIC SESSION 2022-2023

Department of Geography
Vidyasagar University
Midnapore, Paschim Medinipur, West Bengal PIN – 721102

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

DIVISION OF MARKS

Total marks: 1100 (Core) + 100 (Elective/CBCS)

For Internal Students				Elective/CBCS
Semesters	**Theoretical**	**Practical**	**Total**	**Total**
Semesters-I	200	100	300	-
Semesters-II	150	100	250	50
Semesters-III	150	100	250	50
Semesters-IV	200	100	300	-
Total	**700**	**400**	**1100**	**100**

STRUCTURE OF SYLLABUS

SEMESTER-I
(Duration: July – December)

Type	Paper	Unit	Marks				Credit	Total Class Hours
			End-term Exam.	Internal Exam	Unit Total	Paper Total		
Theory	**GEO 101: Earth's Surface Processes**	GEO 101.1: Geotectonics	20	5	25	50	4	60 hours
		GEO 101.2: Geomorphology	20	5	25			
	GEO 102: Hydrospheric Sciences	GEO 102.1: Ocean Science	20	5	25	50	4	60 hours
		GEO 102.2: Hydrology	20	5	25			
	GEO 103:Climate Science and Regional Geomorphology	GEO 103.1: Climate Science	20	5	25	50	4	60 hours
		GEO 103.2: Regional Geomorphology of India	20	5	25			
	GEO 104: Environmental Geography and Ecological Planning	GEO 104.1:Foundations in Biogeography and Environment	20	5	25	50	4	60 hours
		GEO 104.2:Landscape Ecology & Planning	20	5	25			
Practical	**GEO 195:Hydrological Techniques and Geological & Topographical Maps**	GEO 195.1:Hydrological Techniques	25	-	25	50	4	60 hours
		GEO 195.2: Geological and Topographical Maps	25	-	25			
	GEO 196: Climate Change Techniques and Environmental Mapping	GEO 196.1:Climate Change Assessment Techniques	25	-	25	50	4	60 hours
		GEO 196.2:Ecological Census Techniques	25	-	25			

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

SEMESTER-II
(Duration: January – June)

Type	Paper	Unit	Marks				Credit	Total Class Hours
			End-term Exam.	Internal Exam	Unit Total	Paper Total		
Theory	**GEO 201:Geographical Thought and Population Geography**	GEO 201.1: Geographical Thought	20	5	25	50	4	60 hours
		GEO 201.2: Population Geography	20	5	25			
	GEO 202: Social, Cultural & Rural Geography	GEO 202.1: Social & Cultural Geography	20	5	25	50	4	60 hours
		GEO 202.2: Rural Geography	20	5	25			
	GEO 203: Geopolitics and Environmental Ethics	GEO 203.1: Global Economic Crisis and Geopolitics	20	5	25	50	4	60 hours
		GEO 203.2: Environmental Ethics	20	5	25			
	ELECTIVE PAPER (THEORY)							
	C-GEO 204: Resource Management and Earth System Science	C-GEO 204.1 : Resource and its Management	20	5	25	50	4	60 hours
		C-GEO 204.2 : Earth System Science	20	5	25			
Practical	**GEO 295: Thematic Mapping and Statistics**	GEO 295.1:Social Thematic Mapping	25	-	25	50	4	60 hours
		GEO 295.2:Basic Statistics	25	-	25			
	GEO 296:Sedimentology and Remote Sensing and Aerial Photographs	GEO 296.1: Sedimentology	25	-	25	50	4	60 hours
		GEO 296.2:Remote Sensing and Aerial photographs	25	-	25			

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

SEMESTER- III
(Duration: July – December)

Type	Paper	Unit	Marks				Credit	Total Class Hours
			End-term Exam.	Internal Exam	Unit Total	Paper Total		
Theory	**GEO301:Environmental Engineering, Energy, Water, and Food nexus**	GEO 301.1: Environmental Engineering	20	5	25	50	4	60 hours
		GEO 301.2: Energy, Water, and Food nexus	20	5	25			
	GEO 302: Regional Planning, Settlement & Transport Geography	GEO 302.1: Regional approach in Geography and Planning	20	5	25	50	4	60 hours
		GEO 302.2: Settlement & Transport Geography	20	5	25			
	SPECIAL PAPERS (ANY ONE) – GEO-303							
	303A: Advanced Geomorphology	GEO 303A.1: Process Geomorphology -1	20	5	25	50	4	60 hours
		GEO 303A.2: Process Geomorphology -2	20	5	25			
	303B: Coastal Management	GEO 303B.1: Coastal Processes	20	5	25	50	4	60 hours
		GEO 303B.2: Coastal Environments: Focus on Indian Regions			25			
	303C: Urban Geography & Regional Planning	GEO 303C.1: Foundation of Urban Geography	20	5	25	50	4	60 hours
		GEO 303C.2: Contemporary Urban Issues	20	5	25			
	303D: Remote Sensing and Geographic Information System	GEO 303D.1: Physical Basis of Remote Sensing	20	5	25	50	4	60 hours
		GEO 303D.2 Photogrammetry, Aerial Photo and Satellite System	20	5	25			
	303E: Landscape Ecology with Metrics and Models	GEO 303E.1 Theories in Landscape Ecology	20	5	25	50	4	60 hours
		GEO 303E.2 Metrics and Models in Landscape Ecology	20	5	25			
	303F: Climate System with Statistical Climatology	GEO 303F.1: Climate System				50	4	60 hours
		GEO 303F.2: Statistical Climatology						
	ELECTIVE PAPER (THEORY)							
	C-GEO 304 : Environmental Issues and Management	C-GEO 304.1 Emerging Issues and Policies on Environment	20	5	25	50	4	60 hours
		C -GEO 304.2: Environmental Hazards and Disaster Management	20	5	25			
Practical	**GEO 395: Field Work in Geography**	GEO 395.1:Field work and Community Outreach	25	-	25	50	4	60 hours
		GEO 395.2:Field Report (As per special paper)	25	-	25			
	GEO 396: Advanced Quantitative Methods and Digital Cartography	GEO 396.1: Advanced Quantitative Methods	25	-	25	50	4	60 hours
		GEO 396.2: GIS, Digital Cartography, and Geodesy	25	-	25			

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

SEMESTER-IV

(Duration: January – June)

Type	Paper	Unit	Marks				Credit	Total Class Hours
			End-term Exam.	Internal Exam	Unit Total	Paper Total		
Theory	**GEO 401: Dissertation Report and Viva-Voce (GEO 401.1 - 401.4)** **GEO 401.1:Problem Selection and Methods of Study** **GEO 401.2: Field Investigation and Database generation** **GEO 401.3: Data analysis and Report Writing** **GEO 401.4: Viva-Voce**	MSc. Dissertation (Internship, exchange, collaborations (national & international), MoU, institutes, universities, Govt., NGOs, Private, Semi-govt. etc.)	100	-	100	100	8	120 hours
	GEO 402: Tourism and Gender Geography	GEO 402.1: Tourism Geography	20	5	25	50	4	60 hours
		GEO 402.2: Gender Geography and Environment	20	5	25			
	SPECIAL PAPERS (ANY ONE) - GEO-403							
	403A: Advanced Geomorphology	GEO 403A.1: Advanced Geomorphic Techniques	20	5	25	50	4	60 hours
		GEO 403A.2: Applied Geomorphology	20	5	25			
	403B: Coastal Management	GEO 403B.1: Coastal Ecology and Hazards	20	5	25	50	4	60 hours
		GEO 403B.2: Coastal Issues and Management			25			
	403C: Urban & Regional Planning	GEO 403C.1: Theoretical Bases of Regional Planning	20	5	25	50	4	60 hours
		GEO 403C.2: Planning for Urban Development	20	5	25			
	403D: Remote Sensing and Geographic Information System	GEO 403D.1: Advanced Remote Sensing	20	5	25	50	4	60 hours
		GEO 403D.2 Advanced GIS and Applications of Remote Sensing	20	5	25			
	403E: Spatial Analysis in Landscape Ecological Dynamics	GEO 403 E.1:Landscape Ecology and Dynamics	20	5	25	50	4	60 hours
		GEO 4043E.2: Spatial Analysis , Landscape Modeling and services	20	5	25			
	403F: Applied Climatology	GEO 403 F.1: Applied Climatology - 1	20	5	25	50	4	60 hours
		GEO 403 F.2: Applied Climatology - 2						
Practical	**GEO 495: Environmental Assessment and Spatial Analysis in Geography**	GEO 495.1: Environmental Monitoring and Assessment	25	-	25	50	4	60 hours
		GEO 495.2:Spatial Analysis in Geography	25	-	25			
	GEO 496: Research Ethics and Spatial Modeling in Geography	GEO 496.1:Proposal Writing & Research Ethics	25	-	25	50	4	60 hours
		GEO 496.2:Spatial Modeling	25	-	25			

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

SYLLABUS

Semester- I (300 Marks)

THEORETICAL COURSES (200 Marks)

PAPER - GEO 101: EARTH'S SURFACE PROCESSES

Full Marks: 50 Credit: 4

GEO 101.1: GEOTECTONICS

Course Outcome: The focus of this course is to give an in-depth concept on the fundamental physical laws towards understanding the initial phases of the early universe with special reference to the Earth and the Moon. It also focuses on the basic understanding of the genesis of the Earth's magnetic field and palaeomagnetism that will enhance the understanding about the Earth's geological history and theories about the continental drift and sea floor spreading. The course is also designed to have some advanced level of understanding of the absolute dating techniques to find the ages of geological formation. It also includes the processes and mechanisms of mountain building. All these concepts and techniques will surely enhance the ability of the students for critical analysis and thereby synthesis of the Earth's system process. The completion of this course will give impetus to the research insights for the students who would like to pursue their future carrier in geosciences.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Origin and evolution of solar system with special reference to the Earth/Moon.

2. Relative and absolute dating: principles and techniques.

3. Origin of earth's magnetic field, paleomagnetism, geomagnetic polarity reversal and paleomagnetic timescale, paleomagnetic polar wandering curves and reconstruction of plate motions.

4. Mechanism of plate dynamics. Application of plate tectonic theory in explaining orogenesis, volcanism, earthquake.

5. Neo-tectonics and its worldwide evidences.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 101.2: GEOMORPHOLOGY

Course Outcome: This course aims to inform the learners about the principles and physical settings on which geomorphic processes work to develop characteristic landforms. Role of humans in shaping and reshaping the landscapes are given proper importance. Scope of application of geomorphic knowledge is explored. Students will learn about the mechanism and working principle of processes that lead to shape present earth-surface. Field demonstration on process-form relationship help in concretizing ideas. This understanding may help in formulating hydrological, geologic and economic planning. Learners may take part in hazard management too.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Key Concepts in geomorphology: historical and functional approaches, geomorphic threshold, ideas of feedback, equilibrium, and boundary conditions.

2. Weathering: Stresses, processes and landforms. Mass wasting and slope forms and processes.

3. Fluvial processes and forms: hydraulics and stream power, threshold energy for entrainment and transport, channel form and patterns, flood plains, alluvial fan, terraces and delta.

4. Anthropo-geomorphology: Geomorphic impacts of land use conversion, mining, River engineering, alteration of coastal process-form, destabilizing slope.

5. Applied geomorphology in planning, hydrology and economic geology. Geomorphology in hazard Management (flood, landslide and subsidence) and EIA.

PAPER - GEO 102: HYDROSPHERIC SCIENCES

Full Marks: 50 Credits: 4

GEO 102.1: OCEAN SCIENCE

Course Outcome: The students will be able to understand the marine environment and oceanographic processes that leads to earth system processes. They can extend their ideas in understanding environmental and climatic processes too. An aptitude on the distribution of marine resources as well as their utilization and possible impact are also developed among the students.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

1. The Origin of Ocean Basins: Sea Floor Spreading; The opening and closing of ocean basins; Bathymetry of the Continental Shelf

2. Physical and Chemical Properties of Sea waters: Effects of Pressure, Temperature, and Dissolved salts on sea water density; Salinity; TS Diagram

3. Ocean Sediments: Types of shelf Sediments; Sediment Transport, Deposition and Accumulation

4. Ocean-Atmosphere Interactions: Land-ocean-atmosphere interactions; Ocean Climate Zones

5. Ocean Ecosystems: Coral Reefs; Rocky intertidal communities; Biology of coastal upwelling zones; Algal Blooms; Waste Disposal; National and International Law applied to the Oceans

GEO 102.2: HYDROLOGY

Course Outcome: This course seeks to make the learners informed about the principles of hydrological systems operating at watershed level which leads to water availability and water budget. Learners will be appraised on how different hydrological parameters interact as an interacting whole. Magnitude frequency of hydrological extreme events and their trends under the context of global climate change are included. Students will learn about the working principle of earth system processes that lead to water availability and necessity for water management in the context of global climatic change. This understanding may help in water budgeting and formulating plan for water use and water management. Learners may take leading role in awareness generation among community for rain water harvesting and judicial water use.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Hydrological systems, estimating water potential, and water budgeting at the watershed level. Hydrologic frequency analysis (Gumbel's equation and log probability law).

2. Precipitation estimates: point rainfall analysis, area-depth curve, Theissen network, and isohyetal method for estimating rainfall volumes. Time series analysis of precipitation; Mann-Kendall trend test, Sen's slope, change point analysis.

3. Infiltration and evapotranspiration: soil-vegetation complex and infiltration estimates. Methods of estimating evapotranspiration. Water use efficiency for the crops and measure of aridity.

4. Runoff estimates using curve number, and stream discharge estimates by the area-velocity method. Groundwater: storage structure, flow, recharge, and discharge.

5. Hydrographs and Rating curve: Time dimensions of hydrographs: the concept of unit hydrograph and rating curves and their significance. flood& drought as hydrological hazards.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

PAPER – GEO 103: CLIMATE SCIENCE AND REGIONAL GEOMORPHOLOGY

Full Marks: 50 Credits: 4

GEO 103.1: CLIMATE SCIENCE

Course Outcome: This course is designed to build a fundamental understanding of climate and the science of climate change with some focus on atmospheric thermodynamic processes. It also addresses the influence of sea surface temperature on the Indian monsoon system.

Learning outcome: Upon completion, students can

a). Synthesise the meteorological phenomena at different space-time scale
b). analyze the rising levels of CO2 and global temperature rise and its effect on precipitation.
c). analyze the Indian summer monsoon rainfall variation due to IOD and ENSO event.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. The nature and scope of meteorology and climatology in Geographic study. Meteorological and climatological systems operate in different space-time scales: thunderstorms, tropical cyclones, jet streams, and planetary wind systems.

2. Understanding atmospheric pressure; gas laws, geopotential, hydrostatic equilibrium, partial pressure, relative humidity, and specific humidity. Pressure-volume relationship; adiabatic process. Atmospheric instability, the process of cloud development; the role of aerosols in cloud and precipitation process.

3. Basics of climate modeling, a one-dimensional climate model, role of greenhouse gas and aerosols in climate. The rising pattern of global CO2 and surface temperature. Climatology of temperature and precipitation, and their anomalies at a global and regional scale. Concepts of short-range and long-range weather forecasting.

4. The mechanism of Indian summer monsoon: implication of elevated heat pumps (EHP) theory in monsoon precipitation, MONEX; Sea surface temperature and its climate significance: Walker circulation and Indian ocean dipole, and their effect on Indian summer monsoon.

5. Climate change throughout geological periods – evidence and possible causes, consequences of global climate change as estimated by IPCC.

GEO 103.2: REGIONAL GEOMORPHOLOGY OF INDIA

Course Outcome: Students will be able to learn about the regional boundaries of geomorphological regions in India and also understand the physiographic diversity of India and West Bengal, their unique characteristics and regional importance.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Geomorphology of Darjeeling Himalaya and Terai Region.

2. Tectonics, drainage and geomorphology of Western Ghats with special reference to Deccan Trap.

3. Geomorphology and soil-landform assemblages of Chhotanagpur Plateau and its adjacent areas of West Bengal.

4. Form, process and evolution of Ganga and Subarnarekha delta.

5. Tectonics and Geomorphology of the Andaman and Nicobar Islands

PAPER – GEO 104: ENVIRONMENTAL GEOGRAPHY AND ECOLOGICAL PLANNING

Full Marks: 50 Credit: 4

GEO 104.1: FOUNDATIONS IN BIOGEOGRAPHY AND ENVIRONMENT

Course Outcome: The living things interact with each other in various ways and with the non-living components that make up the environment in which we live. These non-living components include rocks, soils and water, as well as the atmosphere. All these interactions produce a complicated set of interrelationships and these interrelationships can take many forms. Thus, this paper on basics of environment and ecology prepares students for careers as leaders in understanding and addressing complex environmental issues from a problem-oriented, interdisciplinary perspective. Ecology is a scientific way of thinking about the world. This means that it involves a certain way of investigating, studying and writing about the systems. Student can learn the core concepts and methods from ecological and environmental perspectives and their application in environmental problem solving.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Content and Scope in Biogeography; Environmental factors: Atmosphere, Hydrosphere, Lithosphere and Biosphere and their relationships. Holistic Concept, Environment Complex, tolerances, amplitude, limiting and inhibiting effects

2. Biosphere as an ecosystem; Eco-physiological adaptations in plants and animals for stressed environments, anthropogenic impact on life support systems including flora, fauna, soil, terrestrial and aquatic ecosystems

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

3. Population dynamics; factors leading to rarity, vulnerability and extinction of species, migration of species, patterns of survival, K and R selected species

4. Role of water, nutrient and energy in determining ecosystem process; concept of inter specific and intraspecific interaction, competition, niche and Keystone species, Flagship species

5. Biogeographic zones of India, Status of Biodiversity, Protected area Network, National Parks and Sanctuaries

GEO 104.2: LANDSCAPE ECOLOGY AND PLANNING

Course Outcome: Landscape ecology is the study of the pattern and interaction between ecosystems within a region of interest, and the way the interactions affect ecological processes, especially the unique effects of spatial heterogeneity on these interactions. This paper provides students with an introduction to the discipline of landscape ecology. Thus, this paper focuses on the characteristic scale of spatial pattern; defining the elements of pattern; connectedness, fractal geometry, how these aspects of pattern are interconnected in landscapes, and how they vary. It may help students detecting, analyzing, or simulating landscape change; and modeling populations or communities in landscape mosaics and educate students for professional life.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Landscape: Definition, concept, nature and role, ecological description of landscape.

2. Structure of Landscape: Patches (shape, size, nature and boundary), corridors (type, network, matrix) and mosaics, habitat arrangement measuring metrices (Shannon Diversity Index and Simpson Diversity Index).

3. Landscape Dynamics: Energy flow, species movement, nutrient movement.

4. Anthropogenic Modification: Impacts on Agricultural ecosystem and Forest ecosystem: Landscape assessment methods.

5. Landscape management and planning: Role of keystone species, conservation of fragmented habitats, sustainable landscape, and role of Traditional Ecological Knowledge (TEK) in conserving landscape. Role of GIS in landscape planning

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

PRACTICAL COURSES (100 Marks)

SEMESTER-I

PAPER – GEO 195: HYDROLOGICAL TECHNIQUES AND GEOLOGICAL & TOPOGRAPHICAL MAPS

Full Marks: 50 Credits: 4

GEO 195.1: HYDROLOGICAL TECHNIQUES

Course Outcome: Students will develop skills in application of theoretical knowledge of hydrology. They will learn on field as well as laboratory techniques for estimating different hydrological attributes as for example rainfall, run off, infiltration etc. in order to construct water budget. Students are enabled to analyse magnitude frequency of different hydrological hazards like fold and droughts and their social and economic applications. This knowledge will help them in formulating various hydrological projects and their successful management.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5 marks** will be allotted for Laboratory Note Book and Viva-voce.*

1. Point rainfall analysis, area-depth curves, Thiessen network and Isohyetal methods to determine rainfall volumes. Time series analysis of precipitation; Mann-kendall test, sen's slope and change point analysis.

2. Estimating infiltration using infiltrometre and other field techniques. Drawing infiltration curve.

3. Evaporation estimation: Use of evaporation pan and empirical equations using climatic data. Estimation of aridity index using climate data.

4. Runoff and discharge estimation: Curve Number methods for estimating runoff: area-velocity method for discharge estimate.

5. Construction of hydrograph, unit-hydrograph and rating curves.

GEO 195.2: GEOLOGICAL AND TOPOGRAPHICAL MAPS

Course Outcome: The course aims to demonstrate how the rock beds under different structures are oriented in section as well as on plans of exposure. Learners will get practical knowledge on how landforms and drainage systems are developed on various geological structures. Topographical maps will offer fundamental understanding on spatial arrangement and spatial organization of relief (landforms), drainage, forest cover, settlements, population areas, transportation routes and social amenities. Students will achieve concrete idea of landform and drainage evolution in connection to different geological structures and also the workings of different earth-surface processes under fixed boundary conditions (lithology and structure). Knowledge on the topographical map help them to take part in courtry and urban planning

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Full Marks- 25

*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Identification of geological structures, series and unconformity

2.Drawing section of the given Geological Map (Unconformity, fold, fault, intrusion)

3. Identification of Rocks and Minerals with Megascopic and Microscopic study and Geomorphological Mapping techniques from the SOI Toposheet

4. Numbering schemes of topographical maps. Interpretation of physical and cultural landscapes: a) Relief, b) Drainage, c) Vegetation, d) Settlement and e) Transport

5. Basin Morphometry: Amplitude of relief, Average Slope, Ruggedness Index, Hypsometric analysis, Stream Order, Drainage Density, Braiding index, Sinuosity index, Radius of curvature.

PAPER – GEO 196: CLIMATE CHANGE TECHNIQUES AND ENVIRONMENTAL MAPPING

Full Marks: 50 Credit: 4

GEO 196.1: CLIMATE CHANGE ASSESSMENT TECHNIQUES

Course Outcome: This course will help students to visualize and answer the question, of whether climate change is real or not. This course will make capable students connect regional climate change with global climatic conditions. This course will support students to understand climate variabilities through data analysis, graphing, and plotting using Excel.

Full Marks- 25

*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Global temperature: correlate CO2 data with global temperature to find out the relationship: Data sources, download, process and presentation.

2. Regional temperature: correlate CO2 data with global temperature to find out the relationship across India: Data sources, access, process and presentation.

3. Climatological anomalies: Temperature and precipitation anomalies in annual, seasonal and monthly scale.

4. Interpretation: Understanding the climate change based on the interpretation of derived data

5. Graphing and plotting: learn basic shortcuts, graphing and plotting in Excel with climate data, publication quality presentation.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 196.2: ECOLOGICAL CENSUS TECHNIQUES

Course Outcome: Students will develop cartographic skills for constructing various thematic maps and foster their abilities in showing the spatial distribution of various environmental elements and their proper interpretation. This ability will help them to formulate environmental plans and to manage and conserve vegetation, soil, water etc.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5 marks** will be allotted for Laboratory Note Book and Viva-voce.*

1. Estimating Plant species types, number, frequency, species richness, dominance of species.

2. Ecological Sampling: Quadrate Method; nested quadrates, Distance sampling; line transacts, Gradesacts, DBH, Branching height, Canopy and Ground Coverage.

3. Analyzing micro level forest quality: DAFOR Index, Biodiversity Indices, Habitat Suitability Index, Habitat Capability and effective Index.

4. Estimation of Soil Texture, Colour, soil moisture, Soil PH, NPK, Organic Carbon, Nitrate and Ammonical Nitrogen.

5. Ecological Micro-zonation, Mapping of fragmented forest area.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

SUGGESTED REFERENCES

GEO 101.1: GEOTECTONIC

Holmes, Arthur (1978): Holmes Principles of Physical Geology, Francis & Taylor.

Bloom, Arther L., 2003. Geomorphology – A systematic analysis of Late Cenozoic Landforms, 3rd Edn.

Chorley, R., Schumm, S. and Sugden, D.E. 1994. Geomorphology, Methuen, London: 605p.

Cook and Doorncamp. 1988. Geomorphology in Environment Management, London

Kale, V.S. and Gupta, A. 2001. Introduction to Geomorphology, Orient Longman Ltd., Hyderabad: 274p.

Keary, P. and Vine, M. 1997. Global Tectonics, 2nd edition, Blackwell Scientific Publications, Oxford: 302p.

Lowrie, W. (2007): Fundamentals of Geophysics, Cambridge University Press. Ollier, C.D. 1981: Tectonic Geomorphology, Longman Scientific & Technical, London:

Summerfield, M.A. (Editor) 1991. Global Geomorphology : An Introduction to the Study of Landforms, John Wiley and Sons Ltd., New York: 560p.

Valdiya, K.S. 1998. Dynamic Himalaya, University Press (India) Ltd., Hyderabad: 178p

GEO 101.2: GEOMORPHOLOGY

Anderson, R.S. and Anderson, S.P. 2010. Geomorphology, the Mechanics and Chemistry of Lanscape, Camdridge: Cambridge University Press.

Bierman, P.R. and Montgomery, D.R. 2014. Key Concepts in Geomorpholgy, New York: W.H. Freeman and Company Publishers.

Bloom, Arther L., 2003. Geomorphology – A systematic analysis of Late Cenozoic Landforms, 3rd Edn.

Chorley, R., Schumm, S. and Sugden, D.E. 1994. Geomorphology, Methuen, London: 605p.

Chorley, R.J. and Kennedy, B.A. (1971) Physical Geography: a System Approach. London: Prentice Hall.

Coates , D.R.1976 Geomorphology and Engineering. Stroudsburg, pa.: Dowden, Hutchinson and RossEdition,Wiley, Chichester.

Goudie,A.(Ed)(1990):Geomorphological Techniques,2nd edition,AllenUnwinCrows Nest(Australia).

Holmes, Arthur (1978): Holmes Principles Of Physical Geology, Francis & Taylor.

Huggett,R(2006): Fundamentals of Geomorphology,Routledge,London.

Kale, V.S. and Gupta, A. 2001. Introduction to Geomorphology, Orient Longman Ltd., Hyderabad: 274p.

Kale, V.S. and Gupta, A. 2001. Introduction to Geomorphology, Orient Longman Ltd., Hyderabad: 274p.

Keary, P. and Vine, M. 1997. Global Tectonics, 2nd edition, Blackwell Scientific Publications, Oxford:302p.

Knighton, D.1998 : Fluvial Forms and Processes: A New Perspective, Arnold, London: 385p.

Leopold, L.B., Wolman, M.G. and Miller, J.P. 1964. Fluvial Processes in Geomorphology, Sanfransisco: W.H. Freeman & Co.

Maiti, R. K. 2016. Modern Approaches to Fluvial Geomorphology. New Delhi: Primus.

Morisawa, M. (editor) 1994. Geomorphology and Natural Hazards, Elsevier, Amsterdam: 355p.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Morisawa, M. 1985. River Form and Process, London: Longman.

Morisawa, M. 1985. Rivers, Longman, London: 222p

Morisawa, M. 1985. Streams, their Dynamics and Morphology, New York: McGraw-Hill.

Murthy, K.S. 1998. Watershed Management in India, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p

Newson, M. 1992. Land Water and Development, River Basin Systems and their Sustainable Management, Routledge, London: 350p.

Ollier, C.D. 1981: Tectonic Geomorphology, Longman Scientific & Technical, London:

Ollier, C.D. 1981: Tectonic Geomorphology, Longman Scientific & Technical, London: Paul,

Ollier, C.D.(1969). Weathering, Edinburgh: Oliver & Boyd.

Pethick, J. 1984. An Introduction to Coastal Geomorphology, Edward Arnold, London: 259 p.

Ritter, D.F. 1986 Process Geomorphology. Dubuque, Iowa: Wm. C. Brown Publishers.

Ritter,D.F.,Kochel,R.C.andMiller,J.R.(2006):Process Geomorphology,4th Edition, Waveland Press,N.Y.

Scheidegger, A.E. (1961) Theoretical Geomorphology. Berlin: Springer Verlag.

Schumm S.A. 1977. The Fluvial System, A Willey Interscience Publication, New York: John Wiley & Sons.

Schumm, S.A. 1977. Fluvial System, New York: Wiley.

Schumm, S.A. 1980. Some Applications of the Concept of Geomorphic Threshold, in Coates, D.R. and Vitek, J.D. (eds), Thresholds in geomorphology. Boston: George Allen & Unwin, pp. 473-85.

Selby, M.J. 1985. An Introduction to Geomorphology, Clarendon, Oxford: 607p.

Selby, M.J. 1985. Earth's Changing Surface, Oxford: Clarendon Press.

Small,R.J., (1992) The Study of Landforms. Pp, 154-182.

Sparks, B.W. 1972. Geomorphology, London: Longman.

Starkel, L. and Basu, S. 2000 Rains, Landslides and Floods in the Darjeeling Himalaya, Indian National Science academy, New Delhi: 168p.

Summerfield, M.A. (Editor) 1991. Global Geomorphology : An Introduction to the Study of Landforms, John Wiley and Sons Ltd., New York: 560p.

Thomas,D.S.G.(Editor)(2008):Arid Zone Geomorphology: Process, Form and Change in Drylands, 2nd

Thornbury, W.D. (1969): Principles of Geomorphology, Wiley Eastern Limited, New Delhi: 594 p

GEO 102.1: OCEAN SCIENCE

Invitation to Oceanography (Fourth Edition), 2006: Paul R. Pinet; Jones And Bartlett Publishers

The World's Oceans (International Edition), 2005: Keith A. Sverdrup, Alyn C. Duxbury, Alison B. Duxbury. McRAW-HILL

Introduction to Ocean Sciences (Second Edition), 2007: Douglas A. Segar W.W. NORTON AND COMPANY, NewYork

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 102 .2: HYDROLOGY

Bedinent, P.B.et.al. (2008): Hydrology and Floodplain Management, Prentice Hall,Upper Saddle River, NJ07458.

Biswas,A.K. (1972): History of Hydrology, North Holland Pub.Cc. Amsterdam.

Boca Raton, F.L Viessman and Lewis (1996): Introduction to Hydrology, Harper Collins, Newyork.

Chow V.T., Maidment ,D.R. and Mays, L.W. (1988): Applied Hydrology, Mc Graw Hill, Newyork.

Dingman, SL. (2002): Physical Hydrology, 2nd Edition, Prientice Hall, EnglewoodCliffs

Hyot, W.G. and W. Langbain (1955): Floods, Prentice Hall University Press, Princeton.

Keith, D. and Mays,L.W. (2004): Ground water hydrology, 3rd Edition, Wiley, Chichester.

Kintede-Levario, H. (2007): Design for Water: Rain Water Harvesting, Storm Water Catchment and Alternate Water Reuse, New society publishers, Gabriola Island.

Mays, L.W. (1996): Water Resources Handbook, Mc Graw Hill, Newyork.

Murthy, K.S. (1998): Watershed Management in India, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p.

Pethick, J. (1984): An Introduction to Coastal Geomorphology, Edward Arnold, London: 259 p

Singh, V.P. and D.K. Frevest (2006): Watershed Models, CRC Press,

Todd, D.K. (2004): Groundwater Hydrology, 3re Edition, Wiley, Chichester

Aridity index. https://en.wikipedia.org/wiki/Aridity_index

Hatfield, J. L., &Dold, C. (2019). Water-Use Efficiency: Advances and Challenges in a Changing Climate. Frontiers in Plant Science, 10. https://doi.org/10.3389/fpls.2019.00103

Water use efficiency and indices. http://eagri.org/eagri50/AGRO103/lec09.pdf

Hamed, K. H. (2008). Trend detection in hydrologic data: The Mann-Kendall trend test under the scaling hypothesis. Journal of Hydrology, 349(3–4), 350–363. https://doi.org/10.1016/j.jhydrol.2007.11.009

Abdul Aziz, O. I., & Burn, D. H. (2006). Trends and variability in the hydrological regime of the Mackenzie River Basin. Journal of Hydrology, 319(1–4), 282–294. https://doi.org/10.1016/j.jhydrol.2005.06.039

Pal, I., & Al-Tabbaa, A. (2010). Regional changes in extreme monsoon rainfall deficit and excess in India. Dynamics of Atmospheres and Oceans, 49(2–3), 206–214. https://doi.org/10.1016/j.dynatmoce.2009.07.001

Taylor, WA. Change point analysis. https://variation.com/wp-content/uploads/change-point-analyzer/change-point-analysis-a-powerful-new-tool-for-detecting-changes.pdf

Pohlert, T. 2020. Non-parametric change point analysis of time series data. https://cran.r project.org/web/packages/trend/vignettes/trend.pdf

GEO 103.1 CLIMATE SCIENCE

Barry, R.G. and Chorley, R.T. (1992): Atmosphere, Weather and Climate, 6th edition, Routledge, London: 392p.

Critchfield, H.J. (1983): General Climatology, 4th edition, Prentice Hall India Ltd., New Delhi: 453p.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Das, P.K. (1995): Monsoons, 2nd edition, National Book Trust, New Delhi: 347p. Lal, D.S. (1993) : Climatology, 3rd edition, Chaitanya Pub. House, New Delhi: 412p.

Linacre, E. and Geerts, B. (1997): Climates and Weather Explained, Routledge, London: 464p.

Lutgens, F.K.. and Tarbuck, E.J. (1998): The Atmosphere: An Introduction to Meteorology, 7th edition, Prentice-Hall

Moran, J.M. and Morgan, M.D. (1997) : Meteorology: The Atmosphere and the Science of Weather, 5th edition, Prentice-Hall Inc., Upper Saddle River: 530p.

Lau, K.-M., and Kim, K.-M. (2006), Observational relationships between aerosol and Asian monsoon rainfall, and circulation, Geophys. Res. Lett., 33, L21810, doi:10.1029/2006GL027546.

Wonsick, M. M., Pinker, R. T., and Ma, Y.: Investigation of the "elevated heat pump" hypothesis of the Asian monsoon using satellite observations, Atmos. Chem. Phys., 14, 8749–8761, https://doi.org/10.5194/acp-14-8749-2014, 2014

IPCC AR 6 report, https://www.ipcc.ch/assessment-report/ar6/

Wallace, J. M., & Hobbs, P. V. (2006). Atmospheric Science: An Introductory Survey: Second Edition. In Elsevier Academic Press. https://doi.org/10.1016/C2009-0-00034-8

GEO 103.2: REGIONAL GEOMORPHOLOGY OF INDIA

Ahmad, Enayat. (1972): Coastal geomorphology of India; Orient Longman.

Biswas, A. (1987): Laterites and lateritoids, Explorations in the tropics: V.S. Datyeet. al., Prof.K.R.Dikshit felicitation Committee, Pune, PP.137-140.

Mukhopadhyay, S.C: Geomorphology Of The Subarnarekha Basin: The Chota Nagpur Plateau (easternIndia, the University of Burdwan,

Rawat, T. (2008): Environment of the Himalayas, Eastern Book Corporation

Sehgal, J and Blum, W.E et al. (1998): Red and Lateritic Soils, Oxford and IBH pub.

Sharma, HariShanker. (1982): Perspectives in Geomorphology; Concept.

Sharma, H. S. (1991): Indian Geomorphology, Concept Publishing Company. Starkel, L. and Basu, S. 2000 Rains, Landslides and Floods in the Darjeeling Himalaya, Indian NationalScience academy, New Delhi: 168p

GEO 104.1: FOUNDATIONS IN BIOGEOGRAPHY AND ENVIRONMENT

1.Hominick, W. M. (2002). Biogeography. Entomopathogenic nematology, 1, 115-143.

2.Whittaker, R. J., Araújo, M. B., Jepson, P., Ladle, R. J., Watson, J. E., & Willis, K. J. (2005). Conservation biogeography: assessment and prospect. Diversity and distributions, 11(1), 3-23.

3.Briggs, J. C. (1995). Global biogeography. Elsevier.

4.Cox, C. B., Moore, P. D., & Ladle, R. J. (2016). Biogeography: an ecological and evolutionary approach. John Wiley & Sons.

5.Hengeveld, R. (1992). Dynamic biogeography. Cambridge University Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

6.Dansereau, P. (1957). Biogeography. An ecological perspective. Biogeography. An ecological perspective

GEO 104 .2: LANDSCAPE ECOLOGY AND PLANNING

Turner, Monica G., Gardner, Robert H., O'Neill, Robert V.:Landscape Ecology in Theory and PracticePattern and Process,Springer

Farina, Almo:Principles and Methods in Landscape Ecology Towards a Science of the LandscapeSeries: Landscape Series, Vol. 3,Springer

Forman R.T.T.: Land mosaic. The ecology of landscape and region. Academic press Cambridge UK

Vink A.P.A.: Landscape ecology and land use, Longman, London & New York

Turner M.G. :Landscape Heterogeneity and disturbanceSpringer-Verlag , Germany

Turner M.G. & Gardner R.H .: Quantitative method in landscape ecology Springer-Verlag New York

Frohn Robert C. (1997): Remote Sensing for Landscape Ecology: New Metric Indicators for Monitoring,Modeling, and Assessment of Ecosystems, Taylor & Francis

Rubenstain, J. M. and Becon, J. M. (1990): Cultural Geography, John Wiley and Sons Inc., New York.

Spencer, J. E. and Thomas, W. L. (1969): Cultural Geography, John Wileyand Sons Inc., New York.

Jones, Emrys (1965): Human Geography, Chatto and Windies, London. Jones, E. and Eyles, J. (1977): AnIntroduction to Social Geography, Oxford University Press, Oxford

Hutchinson and Smith, D. (1996) : Ethnicity : Oxford University Press, Delhi

Jordon and Lester, G. (1995) : The Human Mosaic, Harper and Row, New York

Knoy, P. L. (1988) : Social Well-being – A Spatial Perspective, Oxford University Press, London

GadgilMadhav , Guha Ramachandra : The Use and Abuse of Nature: incorporating This Fissured Land:An Ecological History of India and Ecology and Equity, Oxford University Press.

Wu jianguo and Hobbs Richard j. (2007): Key Topics in Landscape Ecology, Cambridge University Press

GEO 195 .1: HYDROLOGICAL TECHNIQUES

Bedinent, P.B.et.al. (2008): Hydrology and Floodplain Management, Prentice Hall,Upper Saddle River, NJ07458.

Biswas,A.K. (1972): History of Hydrology, North Holland Pub.Cc. Amsterdam

Boca Raton, F.L Viessman and Lewis (1996): Introduction to Hydrology, Harper Collins, Newyork.

Chow V.T., Maidment ,D.R. and Mays, L.W. (1988): Applied Hydrology, Mc Graw Hill, Newyork.

Dingman, SL. (2002): Physical Hydrology, 2nd Edition, Prientice Hall, EnglewoodCliffs

Hyot, W.G. and W. Langbain (1955): Floods, Prentice Hall University Press, Princeton.

Keith, D. and Mays,L.W. (2004): Ground water hydrology, 3rd Edition, Wiley, Chichester.

Kintede-Levario, H. (2007): Design for Water: Rain Water Harvesting, Storm Water Catchment, and alternate Water Reuse, New society publishers, Gabriola Island.

Mays, L.W. (1996): Water Resources Handbook, Mc Graw Hill, Newyork.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Murthy, K.S. (1998): Watershed Management in India, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p.

Pethick, J. (1984): An Introduction to Coastal Geomorphology, Edward Arnold, London: 259 p

Singh, V.P. and D.K. Frevest (2006): Watershed Models, CRC Press,

Todd, D.K. (2004): Groundwater Hydrology, 3re Edition, Wiley, Chichester

Aridity index. https://en.wikipedia.org/wiki/Aridity_index

Hamed, K. H. (2008). Trend detection in hydrologic data: The Mann-Kendall trend test under the scaling hypothesis. Journal of Hydrology, 349(3–4), 350–363. https://doi.org/10.1016/j.jhydrol.2007.11.009

Abdul Aziz, O. I., & Burn, D. H. (2006). Trends and variability in the hydrological regime of the Mackenzie River Basin. Journal of Hydrology, 319(1–4), 282–294. https://doi.org/10.1016/j.jhydrol.2005.06.039

Pal, I., & Al-Tabbaa, A. (2010). Regional changes in extreme monsoon rainfall deficit and excess in India. Dynamics of Atmospheres and Oceans, 49(2–3), 206–214. https://doi.org/10.1016/j.dynatmoce.2009.07.001

Taylor, WA. Change point analysis. https://variation.com/wp-content/uploads/change-point-analyzer/change-point-analysis-a-powerful-new-tool-for-detecting-changes.pdf

Pohlert, T. 2020. Non-parametric change point analysis of time series data. https://cran.r-project.org/web/packages/trend/vignettes/trend.pdf

GEO 195.2: GEOLOGICAL AND TOPOGRAPHICAL MAPS

Alex Maltman (Author), Geological maps: An Introduction (2012) ISBN-13 -978-0442303075 Springer.

Anson, R. W. and Ormerling, F. J. 1993: Basin Cartography, Elsevier, Applied Science Publishers. London.

Butler.J..D. and B.C.M. Bell, Interpretation of Geological Maps (Longman Earth Science Series) (1988)

Monkhouse F.J. and Wilkinson, H.R. 1971: Maps and Diagrams: Their Compilation and Construction, B.I. Publications Private Limited, New Delhi.

Paul A Olver, Introduction To Geological Structures And Maps, Eighth Edition (2018), Taylor and Francis Books India Pvt. Ltd.

Pijushkanti Saha (Author), Partha Basu (Author), Advanced Practical Geography, , Books and Allied Ltd.

Sarkar, A. 1997 : Practical Geography: A Systematic Approach, Orient Longman Ltd., Hyderabad

Singh, R.L. & Singh, Rana P.B.: Elements of Practical Geography. Kalyani Publishers.

GEO 196.1: CLIMATE CHANGE ASSESSMENT TECHNIQUES

Analysis, a N., Some, O. F., & Questions, K. E. Y. (2001). Climate Change. In Sciences. New York. http://www.metoffice.gov.uk

Hansen, J., Sato, M., & Ruedy, R. (2012). Perception of climate change. Proceedings of the National Academy of Sciences of the United States of America, 109(37). https://doi.org/10.1073/pnas.1205276109

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Online sources

1. https://climate.nasa.gov/evidence/
2. https://royalsociety.org/topics-policy/projects/climate-change-evidence-causes/basics-of-climate-change/
3. https://www.mghihp.edu/academics-schools-departments-school-nursing/statistics-climate-change
4. https://www.ipcc.ch/data/
5. https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature
6. https://public.wmo.int/en/media/press-release/state-of-climate-2021-extreme-events-and-major-impacts

GEO 196.2: ECOLOGICAL CENSUS TECHNIQUES

William J. Sutherland (2006): Ecological Census Techniques Edited by Cambridge 2nd edition Lagacherie Philippe, McBratney Alex and VoltzMarc(2006) : Digital Soil Mapping :An Introductory Perspective,Elsevier

Scull, P.; J. Franklin, O.A. Chadwick & D. McArthur (June 2003). Predictive soil mapping – a review. Progress in Physical Geography ,Sage Publications. Monkhouse, F.J. 1971: Maps and Diagrams, Methuen, London

Singh, R.L. and Singh, R.P.B. 1992: Elements of practical Geography.

Robinson, A.H., Morrison, J.L., Muehrcke, P.C., Kimerling, A.J. and Guptill, S.C. 1995: Elements of Cartography, John Wiley and Sons, New York.

Basu, R. and Bhaduri, S. ed, 2007: Contemporary Issues and Techniques in Geography, Progressive Publishers, Kolkata.

Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Semester- II (300 Marks)

THEORETICAL COURSES (200 Marks)

PAPER- GEO 201: GEOGRAPHICAL THOUGHT AND POPULATION GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 201.1: GEOGRAPHICAL THOUGHT

Course Outcome: This course aims to make the students understand the changing nature of geography as a distinct discourse and its development as a science of synthesis. Students will learn about the philosophical background that guides the approaches and ways of thinking to design teaching-learning and research under different discourses of Geography. It aims to achieve a clear insight into theoretical foundation of the subject that is articulated among different courses and guides to design objectives and methodological framework of geographical enquiry. This understanding helps the learners to locate themselves in the wide and dynamic philosophical domain of the discipline and help them to concentrate towards developing geography as a science of holistic synthesis.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Geography as a science of synthesis. Changing nature of Geography: paradigm shift

2. Development in 20th Century: Pragmatism, Positivism and Quantitative revolution in geography

3. Development of critical social theories: Humanistic geography, Behaviouralism, Radicalism, Welfare geography, Feminist geography

4. Structuralism and Post-structuralism, Modernism and Postmodernism.

5. Spatial and Temporal dimensions: absolute, relative, material and social space, concept of 3rd space in geography, temporal geography, time-space prism. Applied Geography. Scope and opportunities under modern technology

GEO 201.2: POPULATION GEOGRAPHY

Course Outcome: Through this module students will learn the various aspects of population growth process, its impact on economy, society and politics. Various policy regarding the control and development of human resources, their necessity, and outcome will be understood. This understanding will help them to take part in various govt. schemes and programmes relating to population issues.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Population growth: logistic and exponential growth, carrying capacity; Population composition and structure: Types, spatial and temporal variation and determinants of age, sex, literacy and rural-urban ratio.

2. Theories and approaches of population growth and regulation: Malthus, Marx and Neo-Malthusianism. Theories of migration (Ravenstein, Lee and Zelinsky)

3. Human development and gender issues: MDGs, SDGs, HDI, GDI, GEM-concept, measures and criticism.

4. Population projection: Concept, types and methods.

5. Population equilibrium, Contemporary Population related policies and issues; population ageing, child and maternal health

PAPER- GEO 202: SOCIAL, CULTURAL & RURAL GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 202.1: SOCIAL & CULTURAL GEOGRAPHY

Course Outcome: The paper is based on the nature, scope and content of social and cultural Geography. The paper will examine the role of social divisions such as class, 'race'/ethnicity, gender and sexuality in shaping the social geographies of regions. Emphasis is given on cross- disciplinary, critical engagement with current events. On completion of the course, students are able to understand the nature, scope, and concept, relationship between culture and social environment, and right of information act, the cultural complex and traits of culture and its concepts, evolution to civilization and cultural system according to religion, language and geography, and global cultural changes.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Nature, scope and content of social Geography; Ethnicity, tribe, dialect, language, caste and religion.

2. Social structure and processes, social exclusion, geographies of social well-being with special reference to India.

3. Cultural Geography: Definition, scope and nature. Race, religion, language as cultural attributes with special reference to India, North-South, social -cultural divide.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

4. World cultural Realms, Morphology of cultural landscape (Carl O Sauer) and cultural diversity. Cities as melting pot of culture. Traditional folk culture- crisis and transformation.

5. Cultural processes: Diffusion, acculturation, assimilation and cultural pluralism.

GEO 202.2: RURAL GEOGRAPHY

Course Outcome: The focus of the course is to develop an idea about the approach to understanding the rural development. It includes the status report of the rural development in India on various accounts, i.e. agriculture, health, education, rural employment, infrastructure and rural electrification. The role of micro finance is also included to give students an understanding of the rural economic development. The students get an inclusive understanding of the rural development and its dynamics upon completion of this course.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Rural Geography, Rural development, Indicators of Development & Rural Development and their measurements.

2. Rural Economics: Agriculture Development and Land Reforms in India.

3. Rural Micro-finance, self-help group and women empowerment.

4. Rural Industries and entrepreneurship: Definition and meaning of rural industries. Relevance of rural industries in solving socio-economic problems with special reference to Food Processing and Tourism.

5. Rural Development Programmes: poverty alleviation schemes- National Rural Employment Guarantee Act, JawaharRozgarYojana, Sampoorna Grameen RozgarYojana, Provisions of Urban Amenities in Rural Area (PURA); Infrastructural development programmes- Indira Avas Yojana; Transport Development: Pradhan Mantri Gram SadakYojana

PAPER- GEO 203: GEOPOLITICS AND ENVIRONMENTAL ETHICS

Full Marks: 50 Credit: 4

GEO 203.1: GLOBAL ECONOMIC CRISIS AND GEOPOLITICS

Course Outcome: Students will develop their understanding on politics of space and spatial patterns of political and economic power distribution. This course will enable the of Government in India based on the principle of regional disparities in India. They will also know about the nature of conflict at national and global level centered on water and power resources. They will develop their interest in analyzing

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

factors and local as well as global implications of economic and political agglomerations in the form of economic and political blocs.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Transformed Geography: Concept of Liberalization, Privatization and Globalization (LPG),beginning of the globalization, globalization to glocalilisation.

2. Globalization and Economic Geography: Impact of globalization on agriculture, industry and trade.

3. Globalization and cultural changes: Globalization and cultural transformations.

4. World economic order: Economic booms and crisis, future of globalization.

5. Globalisation and Geopolitics: Understanding relevance of Heartland and Rimland theory and the present-day geopolitics in the globalized world.

GEO 203.2: ENVIRONMENTAL ETHICS

Course Outcome: Environmental Ethics examines the ways we supposed to value the environment and the non-human inhabitants of the earth. It examines the moral relationship between human beings and non-human beings (including the environment itself). This paper will consider the implications of this examination for an ethical life. It demonstrates the ethical conduct in all scientific activities. The paper includes both philosophical bases(moral obligations, the nature of value) and policy measures to be adopted for the betterment of the environment and earth. The students will be able to explain and apply principles of environmental ethics and apply philosophical concepts used in environmental ethical decision-making. They may apply theories and concepts to particular cases, and ability to provide critical assessment of arguments.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Environmental ethics and education; Concept, development of environmental philosophy, Ecocentrism and Anthropocentrism, the land ethic (Aldo Leopold), Gaia concept, Ecofeminism. Formal and non-formal environmental education, Tbilisi conference, environmental awareness.

2. Approaches to conservation of environment: Landscape ecology and ethno-ecology, environmental stewardship.

3. Environmental Impact Assessment (EIA), Environmental Management Planning (EMP), Environmental Performance Assessment (EPA), Environmental Audit

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

4. Global Environmental Issues and Conferences, Achievements and Failures: Thrust areas, Citizen movement, Inter- Governmental Panel for Climate Change (IPCC).

5. Environmental Laws in India: Wild life Act, Forest Acts, Environmental Protection Act, National Environmental Tribunal Act.

ELECTIVE PAPERS (CBCS)

PAPER- C-GEO 204: RESOURCE MANAGEMENT AND EARTH SYSTEM SCIENCE

Full Marks: 50 Credit: 4

C-GEO 204.1: RESOURCE AND ITS MANAGEMENT

Course Outcome: The course is designed for basic understanding for the students from different discipline other than Geography. It includes the fundamental concepts of natural and human resources and their management and planning strategies. On completion of this course, the students get a founding knowledge of the natural resources in environment.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Geography as a science of synthesis; social relevance of geography
2. Resource assessments, management and mapping
3. Human resource development in backward region.
4. Indicators of livelihood security.
5. Micro level resource planning in watershed scale.

C-GEO 204.2: EARTH SYSTEM SCIENCE

Course Outcome: The course is designed with an interdisciplinary approach for the students from outside Geography. It includes the fundamental ideas of Geotectonics, atmospheric composition and processes, the surface geomorphology and sea bathymetry. On completion of this course, these fundamental concepts will help the students from other branches to have a basic idea of geosciences.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Earth surface processes and Geo-tectonics.
2. Composition of atmosphere and atmospheric processes.
3. Bottom relief of major oceans; temperature and salinity distribution.
4. Principles of mapping and applications.
5. Regional geomorphology of West Bengal.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

PRACTICAL COURSES (100 Marks)

SEMESTER-II

PAPER – GEO 295: THEMATIC MAPPING AND STATISTICS

Full Marks: 50 Credit: 4

GEO 295.1: SOCIAL THEMATIC MAPPING

Course Outcome: Students will develop cartographic skills for constructing various thematic maps and foster their abilities in showing the spatial distribution of various physical as well as social elements and their proper interpretation. Skill of understanding spatial integration among physical and social elements will be developed to foster the abilities of holistic abilities.

Full Marks- 25
Pattern of Setting Questions: Three compulsory questions bearing marks 7, 7 and 6 respectively, will be set covering the whole unit. 5 marks will be allotted for Laboratory Note Book and Viva-voce.

1. Mapping of farming practices: Crop-combination, diversification and cropping intensity.

2. Mapping of social vulnerability and social disparities, ethnic mapping.

3. Estimation and Mapping of Social Well-being, HDI, GDI, GEM.

4. Estimation of Human Poverty Index – (HPI-I and II) for developed and developing countries

GEO 295.2: BASIC STATISTICS

Course Outcome: The course, split into two units, corresponds to the basic and advance statistics, is a starting point of escalating the statistical analytical skills. It includes the founding concepts of probability distribution including the advanced linear modelling with matrix solution to the multivariate linear and non-linear model. These concepts are essential for augmenting the analytical skills of any beginner in Geography that includes both physical and social aspects of academic discipline. Upon completion of this course, the students get the benefit of having a strong mathematical and statistical analytical skills.

Full Marks- 25
Pattern of Setting Questions: Three compulsory questions bearing marks 7, 7 and 6 respectively, will be set covering the whole unit. 5 marks will be allotted for Laboratory Note Book and Viva-voce.

1. Measurement in Geography: Nominal, ordinal, interval and ratio measurement.

2. Concept of covariance, correlation and regression: Bi-variate analysis - linear, exponential, Product moment correlation, Spearman's Rank correlation, correlation matrix, partial correlation, residuals - mapping of residuals.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

3. Probability distribution: addition and Law of multiplication, concept of probability distributions (binomial distributions, normal probability distribution), properties of normal curve.

4. Hypothesis testing: Formulation, Rejection rule, one and two tailed tests, significance level, degrees of freedom type I and type II errors, Standard Error. Different types of significance test for various purposes. Chi- square test, student's t- test.

5. Sampling techniques for geographical analysis.

PAPER-GEO-296 SEDIMENTOLOGY AND REMOTE SENSING & AERIAL PHOTOGRAPHS

Full Marks: 50 Credit: 4

GEO 296.1: SEDIMENTOLOGY

Course Outcome: This course seeks to make the learners capable in dealing practical hydrological problems like calculating rain input over an area especially a basin, rate if infiltration and that of evapotranspiration in a way to prepare hydrological budget. They will learn how to construct hydrograph, unit-hydrograph and rating curves. Students will develop aptitude and abilities on different methods of sediment sampling from field. They will also be trained thoroughly on laboratory method and field method of sediment analysis. This will help them to understand various types of environment and process domain under which sediments were deposited. Thus they can develop skills for reconstructing past.

Full Marks- 25
Pattern of Setting Questions: ***Three*** *compulsory questions bearing marks* ***7, 7 and 6*** *respectively, will be set covering the whole unit.* ***5 marks*** *will be allotted for Laboratory Note Book and Viva-voce.*

1. Texture analysis of sediment samples using standard techniques: Cumulative Frequency, Standard Deviation, Sorting, Skewness and Kurtosis

2. Form and shape analysis of pebble grade sediments.

3. Megascopic and microscopic examination of sediments.

4. Identification of sedimentary and bioturbation structures.

5. Sedimentary environmental facies analysis.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 296.2: REMOTE SENSING AND AERIAL PHOTOGRAPHS

Course Outcome: The course content is focused on basic understanding of satellite remote sensing and aerial photography. Basic principles of satellite motion and sensor parameters including the principles of air photo help the students to formalize with the modern space based analytical techniques. Upon completion of this course, the students will get benefit from rigorous practice and comprehensive theories.

Full Marks- 25
Pattern of Setting Questions: Three compulsory questions bearing marks 7, 7 and 6 respectively, will be set covering the whole unit. 5 marks will be allotted for Laboratory Note Book and Viva-voce.

1. Physics of Remote Sensing: Electro Magnetic Radiation (EMR), Radiation laws (wavelength frequency-energy relationship of EMR numerical problems).

2. Satellite System: Keplers's Laws, Major-Semi-major axis, eccentricity, velocity (Numerical problems).

3. Satellite Sensors: Concept of IFOV, resolution and determination of pixel size, referencing scheme of satellite system (path/row calculation).

4. Basics of Aerial Photograph: Basics geometry of aerial photograph, determination of scale and height, Distortions, Image parallax, Relief displacement.

5. Stereoscopy and Aerial Photo Interpretation: Stereoscopy, Pseudoscopy, Mirror Stereoscope, mosaic, edge information, mapping of Physical and Cultural features with the Air photo interpretation keys: shape, size, pattern, tone, texture, shadow, site and associations, Concept of DRONE image processing

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

SUGGESTED REFERENCES

GEO 201.1: GEOGRAPHICAL THOUGHT

Berry, B.L.J.(1973) A Paradigm of Modern Geography. In R.J. Chorley(ed), Directions in Geography. Lodon, Methuen 3-22.

Chorley,R.J.andHagget,P.(editors)(1965):FrontiersinGeographicalTeaching,OUP,Oxford:231p.Delhi

Golledge,R.G. and Stimson, R.S. (1997) Spatial Behaviour: a geographic perspective, New York: Guilford Press

Gould, P.R. (1999) Becoming a Geographer, Syracuse: Syracuse University Press

Gregory D. and Walford, R. (editors) (1988): Horizons in Human Geography, Macmillan, London: 390p.Hussain,M. (1995):EvolutionofGeographicalthought,3rdedition,RawatPub.Co.,NewDelhi:432p.

Harvey, D. (1969): Explanations in Geography, London, Edward Arnold

Harvey D. (1996): Justice, Nature and the Geography of Difference, Oxford: Blackwell

Hartshorne, R. (1939): Nature of Geography, Association of American Geographers, Lancester, PA.

Johnston, R..J (1997): Geography and Geographer: Anglo American Human Geography, Arnold pub.

Johnston,R.J. (ed.)(2006):Dictionaryof Human Geography,Blackwell.

James, P. (1972): All possible worlds: Ahistory of geographical ideas. Indianapolis: Bobbs Merrill.

Maiti, R.K. and MoitraMaiti, M. (2018): Development of Geographical Thought, Contexualisation and Synthesis of Philosophies, Nabodaya Publications, Kolkata: 576P.

Peet, R. (1998): Modern Geographical Thought, Oxford: Blackwell.

Peet, R. (1978): Radical Geography: Alternative viewpoints on contemporary social issue. London: Methuen

Soja, E.W.(1989): Post modern Geographies: The reassertion of space in social theory. London: Verso

Stoddart,D.R. (1986):OnGeographyanditsHistory,Basil Blackwell,Oxford:236p.

GEO 201.2: POPULATION GEOGRAPHY

Binde and Kanitkar (2000): The Principle of Population Studies, Himalaya Publication

Chandna, R.C. (2015): Geography of Population, Rawat, New Delhi.

Hassan, Mohammad. Izhar, (2015): Population Geography, Rawat publication, Jaipur

Premi, M.K.(2006): Demography and its exposition, Jwahar Publication, New Delhi

Majumdar, P.K (2010): Fundamentals of Demography, Rawat publication, Jaipur

Mukherji, S. (2013): Migration in India, Rawat publication, Jaipur

Mourya S.D. (2017): Population Geography, Pravalika Publications, Allahabad

Muhammad I.H. (2007): Population Geography, Rawat publication, Jaipur

Newbold K. Bruce (2017): Population Geography: tools and issues, Rawat publication

Dyson, T. (2010): Population and Development, Rawat publication, Jaipur

Gould, W. T. S. (2009): Population and Development (Series - Routledge Perspectives on Development); Taylor & Francis.

Nag, Prithvish; Kumar, Chandra Shekhar and Sengupta, Smita. (2001): Environment, Population and Development; Concept Publishing Company.

Srivastava, A. K. (2004): Population Development, Environment and Health; Aph Publishing Corporations.

Sroaff, Meera. (2004): Population and Sustainable Development; Adhyayan Publishers and Distributors.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Morris, A (1998):Geography and Development, University College London Press, London

GEO 202.1: SOCIAL & CULTURAL GEOGRAPHY

Bist,B.S.andPanth,V.K(1998): Backward Communities in India, Rawat Pub.

Harvey,G.(2006): Readings in Indigenous Religion ,Rawat Pub.

Hichcock,S.(2006): Geography of Religion, Rawat Pub.

Knox,Paul.L.(1975): Social Wellbeing: Human Spatial Perspectives, Oxford University Press. Mahanti.M (ed)(1994): Class, Caste and Gender- Tribal Issues in India, Sage Pub.

Sahu, C.(2006): Encyclopedia of Indian tribes

Tiwari, S.K.(1998): Antiquity of Indian Tribes.ISBN-81-7625-016-3. Smith, S.J and Pain,R (Eds) (2010): Social Geographies, Sage, Los Angles

Perry, A.J and Perry, E.K (2010) : Contemporary Society: An Introduction to Social Science, Pearson Education,Noida, India

Guha-Banerje, S. (2001): Space, society and geography, Rawat Publication, Jaipur.

Norton, W (2006): Cultural Geography: Environments, Landscape, Identities and Inequities, OxfordUniversity Press, Oxford.

Carter, J. And Jones, T. (1989):Social Geography: An Introduction to Contemporary Issues , EdwardArnold, London

De Blij H.J. (1996): Human Geography: Culture, Society and Space, John Wiley and Sons Inc., New York:531 p.

Norton, W (2006): Cultural Geography: Environments, Landscape, Identities and Inequities, Oxford University Press, Oxford.

Mitchell, D. (2000): Cultural Geography: A Critical Introduction, Wiley

Mike,C. (2000): Cultural Geography, Routledge, London

Hussain, M. (2005): Cultural Geography, Anmol Publication, New Delhi

Alison,B et.al (2003): Cultural Geography in practice, Arnold, New Delhi

Singh, G.N and Nath, Kashi (2004): Cultural Geography-Form and Process, Concept Publication, NewDelhi

Jackson, A.K and et.al (2005): Cultural Geography: A critical dictionary of key concepts, Tauris, London

GEO 202.2: RURAL GEOGRAPHY

Chand, M. and Puri, V.K. (1988): Regional Planning in India, Vikas, New Delhi

Singh, Katar (1986). Rural development : principles, policies and management, Sage Publications IndiaNew Delhi.

Vijay, Chand Mal (1989). Rural development administration in India, Akashdeep Publishing House, NewDelhi.

Upadhyay, H.C (1991). Modernization and rural development, Anmol Publications, New Delhi.

Riley, John M (2002). Stakeholders in rural development : critical collaboration in state-NGO partnerships, Sage Publications India, New Delhi

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Ray, C.N (1994). Politics of rural development : The case of anti-Poverty programme in West Bengal andGujarat, Rawat Publications, Jaipur.
Mahajan, V.S(1996). Agriculture,rural development and panchayati raj, Deep and Deep Publications, NewDelhi.
Kar, Samit (1991). Rural development in West Bengal : a quest, Sarat Book House, Kolkata.
Yugandhar, B.N., Mukherjee, Neela (1991). Studies in village India : Issues in rural development, ConceptPublishing, New Delhi.
Subramanian, S (1988). Rural development : an inside Look at Problems and prospects, Yatan Publications, New Delhi.
Kumar, Sunil (1990). Regional rural banks and rural development, Deep and Deep Publications, New Delhi
Saudhu, Baldere S (1996). Banking and rural development, Deep and Deep Publications, New Delhi.
Reddy, K. Venkata(1988). Rural development in India, Himalaya Publishing House, Bombay.
Lakshman, T.K.., Narayan, B.K.. (1984). Rural development in India : a multi-demensional analysis, Himalaya Publishing House, Bombay
Yadav, Subah Singh., Gurjar, Ram Kumar (1997). Rural development and poverty alleviation, PointerPublishers, Jaipur.
Dutta, Siba kanta (1986). Co-operative societies & rural development, Mittal Publications, New Delhi.
Desai, Vasant (1991). Fundamentals of rural development: a system approach, Himalaya PublishingHouse, Bombay.
Ahmed, Rais (1996). Comparatives and integrated rural development programme, Mittal Publications, New Delhi.
Ministry of rural development, Government of India, web add: http://rural.nic.in/

GEO 203.1: GLOBAL ECONOMIC CRISIS AND GEOPOLITICS

Appaduria, A. (2001): Globalization, Duke University Press
Cofman, E and Youngs, G (1996): Globalization: Theory and Practice, Continum International Publishing Group.
Dasgupta, Biplab (2005): Globalization- India's Adjustment Experience; SAGE, New Delhi.
Haggett, P. (2001): Geography: A Global synthesis, Prentice Hall
Mackinnon, D. and Cumbess, A. (2007): An Introduction to Economic Geography: Globalization, Unevendevelopment and ……, Prentice Hall
Mc Cann(Eds)(2004):From Local to the Global, Rawat PublishersTomlinson, J (1999): Globalization and Culture, Cambridge Polity presss
Vertova, G. (2006): The changing economic geography of Globalization, Routledge
W.Murray (2006): Geographies of Development, Routhledge Publication
Youngs, G. (2001): Globalization, Communication and Technology, Cambridge.
Goldin, I and Reinert, K (2012) : Globalization for Development, Oxford University Press, New York
Potter, R.B and Binns, Tony (Eds) (2001); Globalization and Development, Pearson Education Limited,Harlow
Kumar, Y. (2021). GEOPOLITICS IN THE ERA OF GLOBALISATION. Routledge.2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 203.2: ENVIRONMENTAL ETHICS

Farmer, A. (1997): Managing Environmental Pollution, Routledge, London: 246p.

Ghosh, S.K. (2007): Environmental Act in India, Joshi, A. (2008): Global Environmental Agreements: Insight and Implication, Eastern Book Corporation

Marsh, W.M. and Grossa, J.M. (1996): Environmental Geography: Science, Landuse and Earth Systems, John Wiley & Sons.

Maryk, Theodore (1996): Major Environmental Issues Facing 21st Century, Prentice Hall

Park, C. (1998): The Environment: Principles and Applications, Routledge, London:

Pickering, K. and Owen, L.A.(1997) : An Introduction to Global Environmental Issues, 2nd edition, Routledge, London. Prabhakar, V.R. (1998): Social and Community Forestry, Indian Pub. Distrb., New Delhi: 224p.

Roberts, N. (editor) (1994): The Changing Global Environment, 3rd edition, Blackwell Pub. Co., London: 531 p.

Santra, S.C. (2001): Environmental Science; New Central Book Agency, Kolkata.

C - GEO 204 (Elective/CBCS)

C-GEO 204.1: RESOURCE AND ITS MANAGEMENT

A. P. Subudhi, B. S. Sokhi, Dr. P. S. Roy (2001): Remote Sensing and GIS: Application in Urban and , Government of India, – Urbanization

Chris Rowley (2012): Human Resource Management in the Asia-Pacific Region: Convergence Revisited, Routledge.

Christian M. Stracke (2011): Competence Modelling for Human Resources Development and EuropeanPolicies: Bridging Business, Education and Training; E-competences Tools, GITO mbhVerlag,

Daniel Maxwell (2000): Urban Livelihoods and Food and Nutrition Security in Greater Accra, Ghana, Intl Food Policy Res Inst, - Health & Fitness

Deep Ford, CrescenzoDell'Aquila, PieroConforti (2007): Agricultural Trade Policy and Food Security in the Caribbean: Structural Issues, Multilateral Negotiations and Competitiveness, Food & Agriculture Org., - Business & Economics

Eric Craswell, Mike Bonnell, Deborah Bossio, Siegfried Demuth, Nick van de Giesen (2007): Integrated Assessment of Water Resources and Global Change: A North-South Analysis, Springer Science & BusinessMedia,

H. W. Shyamalie and A. S. Saini (2011): Socio-Economic Status and Livelihood Security of Women in theHills of India and Sri Lanka, Readworthy

Isobel W. Heathcote (2009): Integrated Watershed Management: Principles and Practice, John Wiley & Sons, - Business & Economics

K. V. Sundaram, M. Moni, Mrityunjay M. Jha (2004): Natural Resources Management and Livelihood Security: Survival Strategies and Sustainable Policies, Concept Publishing Company, - Sustainable

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Agriculture Long-term Strategy for Human Resources Development: Food, Agriculture and Natural Resources byn Southern African Centre for Cooperation in Agricultural and Natural Resources Research and Training, 1997

Lorraine Corner: Poverty alleviation and human resources development

Maiti, R.K.(2016): Modern Approaches to Fluvial Geomorphology, Primus Books, New Delhi, 221p.

Mark N.K. Saunders and Paul Tosey (2015): Handbook of Research Methods on Human Resource Development, Edward Elgar Publishing.

Michael Zanko (2002): The Handbook of Human Resource Management Policies and Practices in Asia- Pacific Economies, (Volume 1), Edward Elgar Publishing.

Murthy, K.S. (1998): Watershed Management in India, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p

Prashant K Srivastava, Saumitra Mukherjee, Manika Gupta, Tanvir Islam (2011): Remote Sensing Applications in Environmental Research, Springer.

Rob F. Poell, Tonette S. Rocco, Gene L. Roth (2014): The Routledge Companion to Human Resource Development, Routledge.

S. Sankar, P. C. Anil, M. Amruth (2000): Criteria and Indicators for Sustainable Plantation Forestry in India, CIFOR, – Eucalyptus

Thomas N. Garavan, Alma M. Mccarthy, Michael J. Morley (2016): Global Human Resource Development: Regional and Country Perspectives, Routledge.

Vijay P. Singh, Ram Narayan Yadava (2003): Watershed Management, Allied Publishers.

C-GEO 204.2: EARTH SYSTEM SCIENCE

Boaden (et al.) (1982): Introduction to Coastal Ecology, Blackie.

Chicago Levinton, J.S. (1982): Marine Ecology, Prentice Hall.

Garrison, T.S. (2007): Oceanography: An Introduction to Marine Science, 6thEdition, Brooks Cole,

K S Valdiya, (2010), The Making of India Geodynamic Evolution by, Macmillan

Maiti, R.K.(2016): Modern Approaches to Fluvial Geomorphology, Primus Books, New Delhi, 221p.

P S Chakraborti and Snjai Nag (2016), Rivers of West Bengal : Changing scenario, Kolkata, 225p.

Paul Ashis kr. (2002), Coastal Geomorphology and Environment, ACB Publications, Kolkata, 582p

Pinet, Paul. (2006): Invitation to Oceanography, Jones & Bartlett.

Sverdrup, K.A.; Duxbury, A.C. and Duxbury, A.B. (2005): The world Oceans, McGrawhill.

Thorson, G. (1971): Life in the Sea, World University Library, New York.

Vatal, and Sharma (1972): Oceanography for Geographers, Chaitanyapublising house, Allahabad.

Wirthmann, A. (2000): Geomorphology of the Tropics, Translated by Busche, D.Springer-Verlag, Berlin:225p.

Woodroffe, C. D. (2003): Coasts: Form Processes and Evolution, Cambridge University Press, Cambridge.

Dent., D.B (1993): Cartography: Thematic map design, Sea Brown Publishers

Misra, R.P and Ramesh, A (1989): Fundamental of Cartography, Concept, Delhi

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Monkhouse F.J. and Wilkinson, H.R. (1971): Maps and Diagrams: Their Compilation and Construction, B.I. Publications Private Limited, New Delhi: 527p.

Nag, P and Dutta, G.K (1992): Thematic Cartography and Remote Sensing, Concept

Wilford, J,N (2000): The Map Makers, A.A. Knopf

GEO 295.1: SOCIAL THEMATIC MAPPING

Basu, R. and Bhaduri, S. (2007): Contemporary Issues and Techniques in Geography, Progressive Pub.

Dent., D.B (1993): Cartography: Thematic map design, Sea Brown Publishers

Misra, R.P and Ramesh, A (1989): Fundamental of Cartography, Concept, Delhi

Monkhouse F.J. and Wilkinson, H.R. (1971): Maps and Diagrams: Their Compilation and Construction, B.I. Publications Private Limited, New Delhi: 527p.

Nag, P and Dutta, G.K (1992): Thematic Cartography and Remote Sensing, Concept

Wilford, J,N (2000): The Map Makers, A.A. Knopf

GEO 295.2: BASIC STATISTICS

Alvi. Z. (1995): Statistical Geography: Methods and Applications, Rawat Publication, New Delhi

John, C. D. (2002): Statistics and Data Analysis in Geology; John Wiley & Sons.

Mehmood, A (1977): Statistical methods in Geographical studies, Rajesh Pub. New Delhi

Pal, S.K. (1999): Statistics for Geoscientists, Concept publishing Company, New Delhi: 423p.

Sarkar, A. (2006): Practical Geography; A systematic approach, Orient Longman Ltd, Hydrabad,

Silk, J. (1979): Statistical techniques in Geography, George Allen and Unwin, London: 276p.

Swan, A.R.H.; Sandilands, M. and McCabe, P. (1995): Introduction to Geological Data Analysis, Blackwell. 446p.

Walford, P. (1995): Geographical Data Analysis, John Wiley and Sons Inc., New York: 446p.

GEO 296.1 : SEDIMENTOLOGY

Maclane, M (1995): Sedimentology, Oxford University Press, New York, Oxford.

Folk, L. Robert (1978): Petrology of sedimentary rocks, Hemphill Publishing Company, Austin, Texas.

Collinson, J.D and Thompson, D.B. (1989): Sedimentary structures, CBS Publishers and Distributors, New Delhi.

Miall, A.D. (2006): Geology of the fluvial deposits: Sedimentary facies, basin analysis and petroleum geology, Springer.

Reading, H.G. (1996) Sedimentary environments: Processes, Facies and Stratigraphy, Blackwell Science.

Sengupta, S (1994): Introduction to sedimentology, Oxford and IBH Publishing New Delhi

Lindholm Roy C. (1986): A practical approach to sedimentology, C B S Publishers and Distributors New Delhi

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 296.2: REMOTE SENSING AND AERIAL PHOTOGRAPHS

Allison, L.J., Schnapf, A.(1983): Meteorological satellites: In Colwell, R.N.(ed.) Manual of Remote Sensing. Campbell, J .B. (1996): Introduction to Remote Sensing, 2nd edition, Taylor & Francis, London: 622p.

Chaisman, N. (1992): Exploring Geographical Information Systems, John Wiley and Sons Inc., New York:198p.

Colwell, R.N. (ed.) Manual of Remote Sensing (2nd edn). American Society of Photogrammetry, FallsChurch,

Curran, P.J. (1988): Principles of Remote Sensing, ELBS Edn. Longman Group UK Ltd.

Guha, P.K. (2003): Remote Sensing for the Beginner, Affiliated East-West Press Pvt. Ltd., New Delhi

George, J. (2003): Fundamental Remote Sensing, Universities Press, New Delhi. John R Jensen (2006): Remote Sensing of the Environment: An Earth Resource Perspective, PearsonEducation Delhi

Lillesand, T.M. and Kiefer, R. W. (2003): Remote Sensing and Image Interpretation, 5th edition, JohnWiley and Sons, New York.

Narayan L R A (2000): Remote sensing and its applications, Universities Press Hyderabad

Rajan, M.S. (1995): Space today, 2nd edition, National Book Trust, New Delhi, 344p.

Slater, P.N. (1983): Photographic systems for remote sensing, Singapore Science Center. Slater, P.N. (1983): Photographic systems for remote sensing, Virginia

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Semester- III (300 Marks)

THEORETICAL COURSES (200 Marks)

PAPER - GEO-301: ENVIRONMENTAL ENGINEERING, ENERGY, WATER, AND FOOD NEXUS

Full Marks: 50 Credit:4

GEO 301.1: ENVIRONMENTAL ENGINEERING

Course Outcome: This course will introduce the students to the domain and scope of environmental engineering. They will be trained on the mechanism of waste water treatment and solid waste management. They will learn the sources and impact of air and noise pollution along with management strategies. Learners will be skilled on the arsenic and fluoride pollution and mitigation strategies. This course aims to capacitate learners to participate in making of pollution free environment and environmental restoration drive. Students will learn about the necessity and mechanism of waste water treatment and understand the procedures to manage air and noise pollution and arsenic pollution. This fundamental understanding and knowledge help them to get engaged in various non-government and government initiatives working for the better environment.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Definition and domain of Environmental Engineering, Waste water treatment: Primary, Secondary and Tertiary treatment.

2. Solid (Municipal) waste management: Plastic Pollution; Sludge treatment; Hazardous waste management.

3. Air pollution: sampling and measurement, air pollution control technologies. Indoor pollution. Noise Pollution: Measurement of noise, Biophysical impacts, Mitigation technologies.

4. Arsenic and Fluoride Pollution: Spatial distribution, Impact and Mitigation.

5. Environment Restoration: Principles, Planning and Techniques

GEO 301.2: ENERGY, WATER, AND FOOD NEXUS

Course Outcome: The course outcome will help the students to understand the nexus approach to complex and dynamic interrelationships between water, energy, and food, so that we can use and manage

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

our limited resources sustainably. It forces us to consider the consequences of a decision in one sector not only on that sector but also on others.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Concept: Understanding water-energy-food nexus (WEF) Policies

2. Water infrastructures, conflict and cooperation: Building dams and barrages for energy and irrigation: Opportunities and challenges; WEF nexus behind conflict and cooperation in transboundary river basins

3. Energy production and consumption: Renewable and non-renewable energy resources: Emerging challenges and opportunities

4. Food production: Green revolution and farm mechanisation in the light of WEF nexus

5. Food security: Ensuring food security through managing WEF nexus

PAPER - GEO 302: REGIONAL PLANNING, SETTLEMENT & TRANSPORT GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 302.1: REGIONAL APPROACH IN GEOGRAPHYAND PLANNING

Course Outcome: The learners will be able to know the process of planning in India, its role and various strategy for the development of our country. The students will understand how they can participate in the planning and development of the nation. This knowledge is very effective for the government also for smooth conduction of the development planning.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Concept and types of planning; planning regions in India: Purpose, types and methods of delineating planning region.

2. Basic principles and methodology of regional planning

3. Regional planning strategies: Centralized, decentralized and multilevel planning for rural and urban areas, people's participation in planning- Panchayati Raj Institution.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

4. Regional disparities: Concept, Types; Demographic, social and economic disparities in India.

5. Planning of problem regions: Tribal, coastal, drought prone area, flood prone area.

GEO 302.2: SETTLEMENT & TRANSPORT GEOGRAPHY

Course Outcome: Learners will be trained on the role of transport in overcoming the friction of distance. They will know how the transport cost is fixed, and comparative cost advantage of different modes. They will learn the advantage and role of public transport in addressing transport related global issues. They will concentrate on the role of communication technology in reducing the demand for transport. Students will learn about the role of transport in entire economic and social processes. This course aims to make students understand the locational advantage of different economic and social institutes based on transport principle. They are made aware of the role of public transport in addressing the problems of congestion and air pollution. This understanding may help them in formulating plan for regional development and economic regeneration by proper transport planning.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Concept of shelter; Dwelling places as cultural expression, Census categories of settlements; Types, building materials and architectural design of houses- dependence on climate.

2. Site, situation and spacing of settlements- dependence on terrain characteristics and water availability, Concepts and components of rural and urban morphology, Socio-economic segregation of rural settlements, Cities as melting pot of culture.

3. Concept of distance, space-time relation through transportation. Principles of transport cost fixation, comparative cost advantage

4. Planning for public transport, desired characteristics, modes and optimal pricing, services, ownership and regulation.

5. Transport Policy: Problem oriented and objective-led approach; Communication Technology- roles in reducing transport demand.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

PAPER – GEO 303: SPECIAL PAPERS

Full Marks: 50 Credit: 4

303A: ADVANCED GEOMORPHOLOGY

GEO 303A.1: PROCESS GEOMORPHOLOGY-1

Course Outcome: Students will learn about the mechanism and working principle of geomorphic processes in details that lead to shape present earth-surface. This understanding may help in formulating engineering plan for management of land, water and soil, three basic resources on earth surface. They will also have a clear insight into the process and forms on the surface of Moon and Mars.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Geomorphic Thresholds: Reynold Number, Froude Number, Critical shear Stress and Shield Diagram, Slope stability thresholds.

2. Weathering Process and Soils with special reference to laterisation; Development of badland topography.

3. Slope forms and Processes: Mass Movement, Slope Morphology and Evolution.

4. Fluvial Processes: Drainage network development; Channel Morphology in alluvial and bedrock channels, Open channel flow, Sediment Transport, Fluvial response to changing conditions with special reference to channel patterns. Development of fluvial landforms.

5. Planetary geomorphic processes and landforms: Moon and Mars.

GEO 303A.2: PROCESS GEOMORPHOLOGY-2

Course Outcome: Students will learn about the mechanism and working principle of geomorphic processes in details that are operating since historical time to shape present earth-surface. This course aims to build an understanding role of humans in shaping earth surface and regulating natural processes and their outcome on natural systems. Learners may take part in sustainable resource management.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Long term landform evolution with special reference to planation development

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

2. Quaternary Environmental Change and Landform Development with special reference to glaciations and sea level change.

3. Glacial and Periglacial processes and landforms.

4. Anthropogeomorphology: Man as active geomorphic agent. Land use change and its geomorphic implications.

5. Identification of Geomorphosites with special reference to India.

303B: COASTAL MANAGEMENT

GEO 303B.1: COASTAL PROCESSES

Course Outcome: The learners will understand the systematic interactions among terrestrial atmospheric and marine processes along the coast as a systematic whole. They will learn the dynamic and functional interrelationship between forms and processes in a coastal region and their dynamic equilibrium.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Definition of coastal zone, relevance of coastal study, classification of coast - Beach stage model.

2. Wave hydrodynamics; wave modification near coast with special reference to attenuation, breaker types, energy dissipation during breaking wave.

3. Tide; diurnal and semi-diurnal, rotating and progressive tide, concept of live storage, tidal environment with special reference to estuary.

4. Coastal current; intensity of long shore component and its implications, cell circulation.

5. Macro land forms with special reference to beaches and dunes; micro and biogenic forms.

GEO 303B.2: COASTAL ENVIRONMENTS: FOCUS ON INDIAN REGIONS

Course Outcome: Students will get knowledge about long term and short-term development of landforms by several processes in some of the coastal regions in India and form process relationships in different spatial and temporal scales. They will understand the problems of coastal erosion and other hazards in the context of global climatic change.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

division), will be set for answering any two. ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Tide dominated coastal environment: (Estuaries of India, estuary morphology, estuary hydrolodynamics); wave dominated coastal environments: (The shore face, beaches, barriers and human activity) - Indian experiences.

2. Morpho dynamic behavior of coastal systems (Modification of coastal features in temporal and spatial scales with feedback mechanisms).

3. Carbonate platforms and beach rocks (Andaman and Nicobar Islands).

4. Coastal erosion problems (West Bengal, Orissa coasts), land reclamations and associated problems (Sundarban coastal tract).

5. Techniques for assessing coastal hazards areas (Hazard zonation along the coasts).

303C: URBAN GEOGRAPHY AND REGIONAL PLANNING

GEO 303C.1: FOUNDATION OF URBAN GEOGRAPHY

Course Outcome: This paper will provide knowledge on spatial analysis of functions of urban areas. Social and economic characteristics of cities and suburbs will be discussed under this paper. Urban land use and its impact on environment and ecology will be addressed. This paper will introduce students to the basics of urban geography, such as definition of cities, central place theory, National urban systems, and traditional models of urban spatial structure. More importantly, students will be exposed to contemporary urban topics such as global cities, urban sprawling, urban green space, urban ecology and footprints etc. Emphasis will be placed on the urban experience of developing countries, especially India. The students will be able to assemble knowledge of urbanism and urbanization as historic, geographic, social, and cultural processes, historical development, contemporary condition, and environmental impact of cities and urban related issues growing from exposure to the disciplines of Geography and Planning

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Development of urban geography: Definition of Towns, cities and metropolitan area. Trends of Urbanisation in the World and India.

2. Concept and definitions of urban system: Urban, urbanization, urbanism and urban ecology, National urban system, National urbanisation policy.

3. Today's cities and suburbs: suburban sprawl, smart growth, exurbs, the new cities and gated communities, gentrification, green city, Urban Livability Index.

4. Origin and growth of urban living: bases and processes, Historical perspectives on world urbanization

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

5. Urban planning, policies and regeneration: Architectural vision, European, Anglo American tradition and planning the social city, the new towns movement, toward planning for sustainable urban development.

GEO 303C.2: CONTEMPORARY URBAN ISSUES

Course Outcome: Student will understand through this module various socio-economic and environmental problems with the growing urbanization in our country as well as various parts of the world. This knowledge will help them to surmise the necessity of urban planning and they will be able to evaluate the effectiveness of various govt. programmes for urban planning

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Changing spatial and temporal scenario of metropolitan development in India.

2. The economy of urban areas: structure of urban economy-basic and non-basic activities.

3. Social environment of the city: Social stratification, social class diversity, suburban social class, poverty, strangers, crowding, crime and homelessness.

4. Urban environment problems: Heat island, drainage, sewerage, sanitation, solid waste, transport, pollution and health, the city's ecological footprint.

5. Urban renewal and Urban redevelopment in India: Role of JNNURM, Smart city, AMRUT and Housing for All by 2022.

303D: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

GEO 303D.1: PHYSICAL BASIS OF REMOTE SENSING

Course Outcome: The course is designed to give fundamental and some advanced knowledge of space based remote sensing and aerial photography. From orbital parameters of satellite to complexity of aerial camera and film in association with the flight parameters, all of these will allow students to get an in-depth understanding of remote sensing and aerial photographic system.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

1. Physics of Remote Sensing: Source of Energy, Electro Magnetic Radiation (EMR),Radiation laws (wavelength-frequency-energy relationship of EMR), influence of atmosphere on Remote Sensing operation.

2. Fundamental of Thermal Remote Sensing: Radiant temperature, Kinetic temperature, Black body and real body radiation.

3. Satellite orbits and Trajectories: Principles of satellite movements, orbits and trajectory, orbiting satellites-basic principles, orbital parameters, types of satellites.

4. Satellite Platforms and Sensors: Types of platforms for civilian applications, advantages, disadvantages, and characteristics of various satellite platforms. Physical principles and characteristics of various satellites sensor, sensor selection parameters, and resolution, Remote Sensing Data: Data acquisition and reception, Data products, storage, and dissemination.

5. Active and passive remote sensing systems, multispectral remote sensing; DN to radiance and reflectance conversion, Principles atmospheric correction for estimating surface reflectance from the satellite images. Retrieval of land surface temperature from satellite images. The implication of land surface temperature in geospatial contexts.

GEO 303D.2: PHOTOGRAMMETRY, AERIAL PHOTO AND SATELLITE SYSTEM

Course Outcome: The course is designed to give fundamental and some advanced knowledge of space based remote sensing and aerial photography. From orbital parameters of satellite to complexity of aerial camera and film in association with the flight parameters, all of these will allow students to get an in-depth understanding of remote sensing and aerial photographic system.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Basics of Aerial Photograph: Types of aerial photographs, Geometry of single Aerial Photograph, Photographic overlap, flight planning, Scale, Lens Distortions, Relief distortions and Tilt distortions. Image displacement and parallax.

2. Aerial Photographic Film: Film density and Characteristics Curve, Colour Infrared Films, Film resolution, Filters.

3. Photogrammetry: Development of Photogrammetry, Classification, processes and Limitations of photogrammetry.

4. Stereo photogrammetry: Conditions for Stereo vision, stereoscopic measurements, Sterescopic 3D viewing, Image parallax, Rectification, Orthorectification; Concept of Drone

5. Satellite Systems: Whiskbroom system, Pushbroom system, Microwave system, coarse resolution, fine resolution and very fine resolution system.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

303E: LANDSCAPE ECOLOGY WITH METRICS AND MODELS

GEO 303E.1: THEORIES IN LANDSCAPE ECOLOGY

Course Outcome: Landscape ecology is the study of the pattern and interaction between ecosystems within a region of interest, and the way the interactions affect ecological processes, especially the unique effects of spatial heterogeneity on these interactions. This paper provides students with an introduction to the discipline of landscape ecology. Thus, this paper focuses on the characteristic scale of spatial pattern; defining the elements of pattern; connectedness, fractal geometry, how these aspects of pattern are interconnected in landscapes, and how they vary. It may help students detecting, analyzing, or simulating landscape change; and modeling populations or communities in landscape mosaics and educate students for professional life.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Introduction to landscape ecology: Definition of Landscape; Concept of Landscape Ecology

2. Theory in landscape ecology: Hierarchy theory and the landscape, Equilibrium versus non-equilibrium landscapes, Scale- temporal and spatial

3. Landscape pattern: context and process, gradient concept of landscape structure, Applications of landscape ecology in Farmland, forest land and wildlife

4. Loss, degradation, fragmentation and isolation of habitats - nature, causes and impacts on individual species; Changes in behavior, species movement, maintenance of Keystone and endangered species

5. Landscape conservation: a new paradigm for the conservation of biodiversity

GEO 303E.2: METRICS AND MODELS IN LANDSCAPE ECOLOGY

Course Outcome: This course is designed for students to obtain knowledge of basic concepts, methods, and applications in landscape ecology, to examine and understand the ways in which spatial patterns and spatial processes operate in an ecological context, to learn and become familiar with the techniques used by landscape ecologists in their work, to understand the relevance of landscape ecology to human society, and to apply the concepts, models, and techniques in landscape ecology in natural resources management.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two*

1. Landscape Elements: Patch, Boundary, Edge mosaic, corridor, Ecotone, Ecotope and Fragmentation

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

2. Landscape composition and configuration, Heterogeneity

3. Landscape Metrics at Patch, Class and Landscape level; Area and Edge Metrics, Shape Metrics, Core Area Metrics, Contrast Metrics, Aggregation Metrics, Diversity Metrics.

4. Landscape Ecology and Models; Neutral Models in Landscape Ecology

5. Metrics and models for quantifying landscape structure and estimation of landscape ecological quality

303F: CLIMATE SYSTEM WITH STATISTICAL CLIMATOLOGY

GEO 303F.1: CLIMATE SYSTEM

Course Outcome: This curse is designed to produce a deeper understanding of fundamentals of climate system. The course is distributed in three specific manners; the first unit contains basic principles of climate system and climate modelling, including some focus on the physics of cloud and aerosols in the atmosphere. The second unit deals with statistical methods to analyse the climate parameter toward understanding their dynamics at the global and regional scales. The third and fourth units deal with air sampling and data analysis using satellite data.

Learning outcomes: Upon the completion of this course,

1. Students can answer to the question of changing global surface temperature
2. Have the capacity to analyze the cloud-earth-energy-radiation system
3. Can analyze the changing relation of precipitation and atmospheric aerosols
4.Can analyze the long distance teleconnection of ENSO and IOD with Indian summer monsoon precipitation
5. Students can analyze and predict the climatological variables at different space-time scale

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two*

1. Components of the climate system, Role of the land surface in climate forcing: moisture transport from the surface to atmosphere in causing variation in precipitation.

2. Distribution of insolation and global energy balance model, radiative transfer model for energy transmission in the surface-atmospheric system.

3. Cloud physics: radiation-cloud interaction, cloud microphysics and its alteration due to different atmospheric conditions.

4. Atmospheric aerosols: sources, distribution and chemistry of aerosols; effect on weather and climate; radiative forcing study, estimation of green house effect.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

5. Overview of global climate models and climate modelling; radiation and precipitation schemes; RCP scenarios and their implication as reported in IPCC AR6.

GEO 303F.2: STATISTICAL CLIMATOLOGY

Course Outcome: This curse is designed to produce a deeper understanding of fundamentals of climate system. The course is distributed in three specific manners; the first unit contains basic principles of climate system and climate modelling, including some focus on the physics of cloud and aerosols in the atmosphere. The second unit deals with statistical methods to analyse the climate parameter toward understanding their dynamics at the global and regional scales. The third and fourth units deal with air sampling and data analysis using satellite data.

Learning outcomes: Upon the completion of this course,

1. Students can answer to the question of changing global surface temperature
2. Have the capacity to analyze the cloud-earth-energy-radiation system
3. Can analyze the changing relation of precipitation and atmospheric aerosols
4.Can analyze the long distance teleconnection of ENSO and IOD with Indian summer monsoon precipitation
5. Students can analyze and predict the climatological variables at different space-time scale

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two*

1. Climatologies of precipitation, temperature and aerosols; Estimation of SOI based on SST of Nino regions in equatorial Pacific; IOD based on SST of the eastern and western Indian ocean.

2. ISMR anomalies and their connection with ENSO / IOD and global surface temperature rise; madden-julian-oscillation (MJO).

3.AR/MA and ARIMA for time series forecasting of climate variables; the implication of EOF in climate study

4. Downscaling of GCM using statistical approach.

5. Machine learning application in climate study; seasonal, interannual and decadal scale variation of basic climatic parameters.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

ELECTIVE PAPER (CBCS)

PAPER - C-GEO 304: ENVIRONMENTAL ISSUES AND MANAGEMENT

Marks: 50 Credit: 4

C-GEO 304.1: EMERGING ISSUES AND POLICIES ON ENVIRONMENT

Course Outcome: Students will develop their interest in various aspects of environment and contemporary environmental issues. Students will develop their deep understanding in the nature of increasing intensity and magnitude of various hazards in connection to global pattern of economic disparity, social discrimination and climate change.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Global climate change, water scarcity and politics of water.
2. Environmental degradation and pollution.
3. Environment and development: Debate and Issues.
4. Social and Cultural Hazards.
5. Globalization and Environment.

C-GEO 304.2: ENVIRONMENTAL HAZARDS AND DISASTER MANAGEMENT

Course Outcome: Students will foster their skill in managing various types of natural hazards by analysing their risk and vulnerability. They will be trained in the procedures of hazard management through proactive approach by increasing the resilience of the community in tune with national policy of hazard management and international laws.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Concepts and techniques for analysis of risk, hazard, disaster, vulnerabilities and resilience.

2. Cyclone and storm surges, thunderstorms and lighting, earthquake, tsunami wave and landslide hazards.

3. Natural hazard and disaster management in India, Agricultural drought hazard and the national experience.

4. International Disaster Response Laws Rules (IDRL).

5. National policy and appraisal of hazard.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

PRACTICAL COURSES (100 Marks)

SEMESTER-III

PAPER – GEO 395: FIELD WORK IN GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 395.1: FIELD WORK AND COMMUNITY OUTREACH

Course Outcome: This course aims to present the essence of **geography as a field science**. Students will develop their aptitude in observation, data generation through field survey, data analysis with various software and advanced techniques. They will also know how to represent spatial data through various cartographic techniques and mapping. A hands on practical training is practiced through rigorous involvement in all the stages of pre-field, field and post field works.

GEO 395.2: FIELD REPORT (AS PER SPECIAL PAPER)

Course Outcome: This course aims to present the essence of geography as a field science. Students will write their field report as per the field work conducted under different special papers. All types of database management and data analysis with the application of software and aptitude gained in field work.

Generation of report (within about 100 A4 size pages including 30-40b maps/diagrams/field photographs) on the basis of field works carried out under Unit-47.

Presentation of research work-25 (Grand Viva-10 and/or Power Point presentation-15)

PAPER – GEO 396: ADVANCED QUANTITATIVE METHODS AND DIGITAL CARTOGRAPHY

Full Marks: 50 Credit: 4

GEO 396.1: ADVANCED QUANTITATIVE METHODS

Course Outcome: The course, split into two units, corresponds to the basic and advance statistics, is a starting point of escalating the statistical analytical skills. It includes the founding concepts of probability distribution including the advanced linear modelling with matrix solution to the multivariate linear and non-linear model. These concepts are essential for augmenting the analytical skills of any beginner in Geography that includes both physical and social aspects of academic discipline. Upon completion of this course, the students get the benefit of having a strong mathematical and statistical analytical skill.

Full Marks- 25
Pattern of Setting Questions: Three compulsory questions bearing marks 7, 7 and 6 respectively, will be set covering the whole unit. 5 marks will be allotted for Laboratory Note Book and Viva-voce.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

1. Analysis of Variance: Objectives; One-way and Two-way ANOVA

2. Fitting Second Degree Polynomial curves to bivariate geographical data and testing by ANOVA.

3. Multiple Regression: Linear multiple regression equation, Multiple and partial correlation coefficient.

4. Elementary multiple regression modeling techniques: Stepwise variable entry method, Path Analysis.

5. Statistical model building techniques

GEO 396.2: GIS, DIGITAL CARTOGRAPHY, AND GEODESY

Course Outcome: The course is designed for providing the fundamental ideas of Geodesy and map projection. It includes some advance projective transformation from 3D to 2D surface. The course also includes the fundamentals of GI science and its application. The students get an exposure to the theoretical and practical understanding upon completion of this course.

Full Marks- 25
Pattern of Setting Questions: Three compulsory questions bearing marks 7, 7 and 6 respectively, will be set covering the whole unit. 5 marks will be allotted for Laboratory Note Book and Viva-voce.

1. Principle, construction, properties and uses of following map projections: a) Conformal Projections- Mercator's Projection; Transverse Mercator Projection and Lambert's Conformal Conic (LCC) Projection.

2. Principle, construction, properties and uses of following map projections: Equal Area Projection- Mollweide's Projection; Conical Projection- Simple Conical Projection with Two Standard Parallels.

3. Geodesy and Coordinate Systems: Concept of Geoid, ellipsoid and datum, Cartesian, and geographic coordinate system, UTM Grid System.

4. Basics of GPS Surveying: Conceptual Framework, Space Segment, Ground Segment, Control Segment, Satellite Triangulation, Pseudo Random Code.

5. Fundamental principles DGPS, global navigation systems, Implication of locational and spatial attributes in GIS and remote sensing.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

SUGGESTED REFERENCES

GEO 301.1: ENVIRONMENTAL ENGINEERING

Brady,N.C. and Well, R.R. (2005): The Nature and Properties of Soil, Pearson Education, Singapore.

Masters, G .M. (1991): Introduction to Environmental Engineering and Sciences, Prentice Hall India Ltd. New Delhi:

Nazaroff, W.W. and Alvarej, C.L. (2001): Environment Engineering Science; John Wiley & Sons, Newyork.

Pielou, E.C. (1975): Ecological Diversity, John Wiley & Sons, Newyork

Schwab,G.O. et.al. (1993): Soil and Water Conservation Engineering, 4th Edition, John Wiley & Sons, Newyork

Sing,V.P. Yavada,R.N.(2003): Environmental Pollution, Allied Publishers Pvt. Ltd. New Delhi.

Vesilind, P.A. and Morgan, S.M. (2004): Introduction to Environmental Engineering (2nd Edition), Thomson, Australia.

GEO 301.2: ENERGY, WATER AND FOOD NEXUS

Ray, C. Muddu, S and Sharma, S. (2022). Food, Energy, and Water Nexus: A Consideration for the 21st Century. Springer Nature Switzerland AG 2022, https://doi.org/10.1007/978-3-030-85728-8

Goals, S. D., & Hill, C. (2016). The Water, Food, Energy and Climate Nexus. In The Water, Food, Energy and Climate Nexus. https://doi.org/10.4324/9781315640716

Mc Kinsey. (2011). Water Security - the nexus.

LIOTARD, K., &McGIFFEN, S. P. (2017). Conflict and Cooperation. Poisoned Spring, 10, 74–95. https://doi.org/10.2307/j.ctt183p64g.8

Salam, P. A., Shrestha, S., Pandey, V. P., & Anal, A. K. (2000). Water- Energy- Food Nexus. Principles and Practices. In Book: Geophysical Monograph Series (Vol. 115).

Taguta, C., Senzanje, A., Kiala, Z., Malota, M., &Mabhaudhi, T. (2022). Water-Energy-Food Nexus Tools in Theory and Practice: A Systematic Review. Frontiers in Water, 4(March), 1–21. https://doi.org/10.3389/frwa.2022.837316

Abdi, H., Shahbazitabar, M., &Mohammadi-Ivatloo, B. (2020). Food, energy and water nexus: A brief review of definitions, research, and challenges. Inventions, 5(4), 1–14. https://doi.org/10.3390/inventions5040056

DeAngelo, J., Azevedo, I., Bistline, J., Clarke, L., Luderer, G., Byers, E., & Davis, S. J. (2021). Energy systems in scenarios at net-zero CO2 emissions. Nature Communications, 12(1). https://doi.org/10.1038/s41467-021-26356-y

Davis, S. J., Lewis, N. S., Shaner, M., Aggarwal, S., Arent, D., Azevedo, I. L., Benson, S. M., Bradley, T., Brouwer, J., Chiang, Y. M., Clack, C. T. M., Cohen, A., Doig, S., Edmonds, J., Fennell, P., Field, C. B., Hannegan, B., Hodge, B. M., Hoffert, M. I., … Caldeira, K. (2018). Net-zero emissions energy systems. Science, 360(6396). https://doi.org/10.1126/science.aas9793

Río-Gamero, B. Del, Ramos-Martín, A., Melián-Martel, N., & Pérez-Báez, S. (2020). Water-energy nexus: A pathway of reaching the zero net carbon in wastewater treatment plants. Sustainability (Switzerland), 12(22), 1–19. https://doi.org/10.3390/su12229377

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Keskinen, M., Guillaume, J. H. A., Kattelus, M., Porkka, M., Räsänen, T. A., &Varis, O. (2016). The water-energy-food nexus and the transboundary context: Insights from large Asian rivers. Water (Switzerland), 8(5). https://doi.org/10.3390/w8050193

Saidmamatov, O., Rudenko, I., Pfister, S., &Koziel, J. (2020). Water-Energy-Food nexus framework for promoting regional integration in Central Asia. Water (Switzerland), 12(7), 1–11. https://doi.org/10.3390/w12071896

Link, P. M., Scheffran, J., & Ide, T. (2016). Conflict and cooperation in the water-security nexus: a global comparative analysis of river basins under climate change. Wiley Interdisciplinary Reviews: Water, 3(4), 495–515. https://doi.org/10.1002/wat2.1151

Elsayed, H., Djordjevic, S., Savic, D., Tsoukalas, I., &Makropoulos, C. (2022). Water-food-energy nexus for transboundary cooperation in Eastern Africa. Water Supply, 22(4), 3567–3587. https://doi.org/10.2166/ws.2022.001

Pingali, P. L. (2012). Green revolution: Impacts, limits, andthe path ahead. Proceedings of the National Academy of Sciences of the United States of America, 109(31), 12302–12308. https://doi.org/10.1073/pnas.0912953109

Online materials

https://hydroviz.org/Lessons/Index/National/Nexus

https://www.water-energy-food.org//ru/resources/training-materials-the-water-energy-food-ecosystems-wefe-nexus-from-research-to-practice

https://www.watercalculator.org/footprint/nexus-reports-research/

https://www.teriin.org/article/water-food-energy-nexus-india

GEO 302.1: REGIONAL APPROACH IN GEOGRAPHY AND PLANNING

Agarwal S.K. (2012): Regional Development and Planning in India, selected Essays by V. Nath.

Bhat, L.S. (1973): Regional Planning in India, Statistical Pub. Society.

Chand, M. and Puri, V.K. (2012): Regional Planning in India, Vikas, New Delhi

Chandana, R.C.(2000): Regional Planning and Development, Kalyani Publishers.

Glasson, J. (1974): An Introduction to Regional Planning, Hutchinson, London.

Greed (2000): Introducing Planning, Athlone Press, London.

Hall, P. (1974): Urban and Regional Planning, Penguin, London.

Kulshresta S.K. (2012): Urban and Regional Planning in India, Sage, India

Mishra, R.P. (1969): Regional Planning, Concept, Techniques, Policies, the University of Mysore Press.

Misra,R.P,Sundaram and Rao (1974): Regional Planning In India, Viking, Delhi.

Mitra, A. (1971): Levels of Regional Development India, Census of India.

Tim, Hall (2006): Urban Geography, Routledge.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 302.2: SETTLEMENT AND TRANSPORT GEOGRAPHY

Adler, H.A (1987): Economic Appraisal of Transport Project, John Hapkins Press. Washington.

Dasgupta, A.K. and Pearee, D.W. (1972); Cost Benefit analysis, theory and practice; Mac Millan, London. Flahesly CAO (2006): Transport Planning and Traffic Engineering, Butterworth- Heinemann

Gwillian, K.M. (Ed.) (1993): Transport Policy and Global Warming, European Conference of Ministers of Transport, Paris.

Lays M.G. (1993): Ways of the World, Primarera Press, Sydwen

Pearce D.W. and Markyanda, A. (1989): Environmental policy Benefits, Manetany valuation OECD ,Paris. While, P. (1986): Public Transport Planning, Management and operation, Hatechinson, London.

Brian, K.R (1996): Landscapes of Settlements: Prehistory to the Present, Routledge, London

De Blij H.J. (1995): The Earth: An Introduction to its Physical and Human Geography, John Wiley and Sons Inc.,nNew

De Blij H.J. (1996): Human Geography: Culture, Society and Space, John Wiley and Sons Inc., New York:531 p.

Ghosh, S. (1998): Introduction to Settlement Geography, Orient Longman Ltd., Calcutta: 158p.

Hudson, F.S. (1970): Geography of Settlements, Macdonald and Evans Ltd., Plymouth

Hussain, M. (1994): Human Geography, Rawat Pub. Co., New Delhi: 485p.

Misra. H.N. (ed) (1987): Contributions to Indian Geography, Volume 9: Rural Geography, Heritage Pub.,New Delhi.

Racine, J. (ed) : Calcutta 1981, Concept Pub. Co., New Delhi.

Rodwin (2006): Shelter, Settlement and Development, Rawat Pub.

Singh, R. Y. (1994): Geography of Settlements, Rawat Pub. Co., New Delhi: 335p.

Singh, R.L. et. al. (ed) (1976): Geographic Dimensions of Rural Settlements, National GeographicalSociety of India, Varanasi.

Ramachandram, R. (1999): Urbanization and urban systems in India, Oxford University Press, New DelhiVerma, L (2009): Urban Geography, Rawat publication, Jaipur

Roy Chaudhuri, J. (2001): An Introduction to Development and Regional Planning-with special reference to India, Orient Blackshawn, Hyderaband.

Adler, H.A (1987): Economic Appraisal of Transport Project, John Hapkins Press. Washington.

Dasgupta, A.K. and Pearee, D.W. (1972); Cost Benefit analysis, theory and practice; Mac Millan, London.

Flahesly CAO (2006): Transport Planning and Traffic Engineering, Butterworth- Heinemann

Gwillian, K.M. (Ed.) (1993): Transport Policy and Global Warming, European Conference of Ministers ofTransport, Paris.

Lays M.G. (1993): Wags of the World, Primarera Press, Sydwen

Pearce D.W. and Markyanda, A. (1989): Environmental policy Benefits, Manetany valuation OECD ,Paris.

While, P. (1986): Public Transport Planning, Management and operation, Hatechinson, London.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

303A

GEO 303A.1: PROCESS GEOMORPHOLOGY -1

Anderson Robert S. and Anderson Suzanne P., 2010 Geomorphology (1st Edition, Kindle Edition) by , Cambridge University Press.

Anderson, M.G. (1988) Modelling Geomorphological Systems, John Wiley & Sons, New York

Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.

Chorley, R.J. Schumm,S.A. &Sugden, D.E. (1985): Geomorphology, Methuen & Co. Ltd., London, NewYork.

Christopherson, R.W. (1995): Elemental Geosystems: A Foundation in Physical Geography, Prentice HallEnglewood Cliffs, New Jersey.

Coates, D.R. and Vitek, J.D. (1980) (eds), Thresholds in Geomorphology, George Allen & Unwin,London.

Crozier, M. J. (1986), Landslides: Causes, Consequences and Environment, Croom Helm, London.

Greeley, Ronald (2013) Introduction to Planetary Geomorphology, Cambridge University Press

Gupta, A. (2011) Tropical Geomorphology, Cambridge University Press

Knighton, D. (1990) Fluvial Forms and Processes, Hodder Education, UK.

Leopold, L.B. Wolman, M.G. & Miller, J.P. (1964): Fluvial Processes in Geomorphology, W.H.Freeman

Maiti, R.K. (2016) Modern Approaches to Fluvial Geomorphology, Primus Books.

Mondal S. and Maiti, R.K. (2015) Semi-quantitative Approaches in Landslide Assessment and Prdiction,Springer.

Morisawa, M. (1985) Rivers, Longman, London.

Ollier, C. D. (1969) Weathering. Elsevier, New York.

Pity A.F., 1971, Introduction to Geomorphology, Methuen, London.

Ritter, D.F. (1986) Process Geomorphology, Wm. C. Brown Publisher, Dubuque, Iowa.

Ritter, Kochel and Miller Process Geomorphology, 4th edition, Waveland Press 2006 (ISBN 13: 978-1- 57766-461 1).

Robinson, Harry (1969): Morphology and Landscape, University Tutorial Press Ltd. London.

Selby, M.J. (2005) Hill slope materials and processes, Oxford University Press, Oxford.

Selby, R.C. (1976), An Introduction to Sedimentology, Academic Press, London.

Sparks, B.W (1972) Geomorphology, Longman, London.

Thomas Michael F. 2014 Geomorphology in the Tropics, , Wiley.

Worcester, P. G. (1948): Textbook of Geomorphology, Princeton, D.Van, Nortrand.

Zaruba, Q. et al (1969) Landslides and their control. Elsevier, Amsterdam

GEO 303A.2: PROCESS GEOMORPHOLOGY -2

Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.

Gamen,H.F. (1974) The Origin of Landscapes-A Synthesis in Geomorphology, Oxford University Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Kale, V.S. (2018) (ed) Geomorphosites in India. IGI
Lobeck, A.K. (1939) Geomorphology, McGraw Hill, New York.
Ritter, D.F. (1986) Process Geomorphology, Wm. C. Brown Publisher, Dubuque, Iowa.
Spark, B. W. (1986) Geomorphology, Longman, London.
Sparks, B.W (1972) Geomorphology, Longman, London.
Wadia, D.N. (1993) Geology of India, Tata McGraw Hill Edition, New Delhi.
Valdia, K.S. (2010) The Making of India: Geodynamic Evolution
Selby Michael John (1985) Earth's Changing Surface: An Introduction to Geomorphology, ClarendonPress.

303B

GEO 303B.1: COASTAL PROCESSES

Carter, R.W.G (1988): Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines, Academic Press, London
Dayer K.R. (1979): Estuary Hydrography, and Sedimentation, Cambridge Univ. Press, Cambridge.
Devis R.A. (ed) (1978): Coastal Sedimentary Environmental; Springer-Verlag, New York.
Harikawa , K. (1978): Coastal Engineering, Univ Of Tokyo Press, Tokyo.
Inman, D.L. (1960): Shore Processes, Encyclopedia of Science & Technology, Mc Graw Hill, New York.
Knight, B. and Philip, A. (1979): Estuarine and coastal Land reclamation and water storage, Saxon House.
Laussn, E and Lato, I.(ed): Chemistry and Biochemistry of estuaries, Wiley, New York.
Pethick, J. (2000): An Introduction to coastal Geomorphology, Arnold, London.
Stanley, D.J. and Suist D.J.P.(ed)(1976): Marine Sediment Transport and environmental management;Wiley, NewYork.
Wagret,P. (1968): Polderlands, Methuen, London.

GEO 303B.2: COASTAL ENVIRONMENTS: FOCUS ON INDIAN REGIONS

Carter, R.W.G (1988): Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines, Academic Press, London
Dayer K.R. (1979): Estuary Hydrography, and Sedimentation, Cambridge Univ. Press, Cambridge.
Devis R.A. (ed) (1978): Coastal Sedimentary Environmental; Springer-Verlag, New York.
Harikawa , K. (1978): Coastal Engineering, Univ Of Tokyo Press, Tokyo.
Inman, D.L. (1960): Shore Processes, Encyclopedia of Science & Technology, Mc Graw Hill, New York.
Knight, B. and Philip, A. (1979): Estuarine and coastal Land reclamation and water storage, Saxon House.
Laussn, E and Lato, I.(ed): Chemistry and Biochemistry of estuaries, Wiley, New York.
Pethick, J. (2000): An Introduction to coastal Geomorphology, Arnold, London.
Stanley, D.J. and Suist D.J.P.(ed)(1976): Marine Sediment Transport and environmental management;Wiley, NewYork.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Wagret,P. (1968): Polderlands, Methuen, London.

303C

GEO 303C.1: FOUNDATION OF URBAN GEOGRAPHY

Carter, H. (2002): Urban Geography, 4th edition Arnold-Heinemann, New Delhi: 434p.

De Blij, H.J. and Muller, P.O. (1997): Geography: Realms Regions and Concepts, 8th edition, John Wileyand Sons Ltd., New York: 569p.

Dickinson, J., Gould, B., Clarke, C., Mather, S., Prothero, M., Siddle, D., Smith, C. and Thomas-Hope, E. (1996): A Geography of the Third World, 2nd edition, Routledge, London: 334p.

Dickinson, R.E. (1968): City and Region: A Geographical Interpretation, Routledge and Kegam Paul Ltd. London.

Ghosh, S. (1998): Introduction to Settlement Geography, Orient Longman Ltd., Calcutta: 158p.

Gore, Charles (1984). : Region in question, Routledge Publisher.

Hudson, F.S. (1970): Geography of Settlements, Macdonald and Evans Ltd., Plymouth:

Knox, P. (1982): Urban Social Geography, Longman Scientific and Technical, Harlow.

Pacione, M. (2007): Urban Geography, Routledge,

Ramachandran R. (1989): Urbanisation and Urban Systems in India, Oxford University Press, New Delhi. Singh, R.L. (editor) (1971): India: A Regional Geography, National Geographical Society of India / UBS Pub. Distributors Ltd., New Delhi: 992p.

Singh, R.L. et. al. (ed) (1976): Geographic Dimensions of Rural Settlements, National Geographical Society of India, Varanasi.

Spate, O.H.K. and Learmonth, A. T.A. (1967): India and Pakistan, 3rd edition, MunshiramMonoharlal Pub. Pvt. Ltd., New Delhi: 877p.

Tewari, V. Weinston, J. and Prakash Rao, V.L.S. (1986): Indian Cities: Ecological Perspectives, Concept Pub. Co., New Delhi.

GEO 303C.2: CONTEMPORARY URBAN ISSUES

Ahuja,R (1999): Social Problem in India, Rawat, Jaypur

Carter, H. (1981): Urban Geography, 3rd edition Arnold-Heinemann, New Delhi: 434p.

Herbert, D. (1977): Urban Geography- A social Perspectives, David and charles, London

Herbert, D. and Johnston, R,J. (1979): Geography and Urban Environment, John wiley, New York

Kleniewski, N. (2005): Cities and Society, Blackwell,

Linder, C (2006): Urban Space and Cityscapes, Pergamon Press

Pacione, M. (2007): Urban Geography, Routledge,

Palen, J(1992): The Urban World, Mc Grow Hill, New York

Sovani, N.V. (1964): The Analysis of Over Urbanization: Economic Development and Cultural Change, Macionis, J.J and Parrillo, V.N (2010): Cities and Urban life, Pearson Education, New Jerse

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

303D

GEO 303D.1: PHYSICAL BASIS OF REMOTE SENSING

Campbell, J .B. (1996): Introduction to Remote Sensing, 2nd edition, Taylor & Francis, London; 622p.

Cracknelll, A.P., and L.W.B.Hayes, (1991): Introduction to Remote Sensing, Taylor and Francis,Washington, DC.

Curran, P.J. (1980): Mulltispectral remote sensing of vegetation amount, Progress in Physical Geography

Guha, P.K. (2003): Remote Sensing for the Beginner, Affiliated East-West Press Pvt. Ltd., New Delhi

Joseph, George, (2003): Fundamental of Remote Sensing, Orient Longman Pvt. Ltd.

Lillesand, T.M. and Kieffer, R.W. (2003): Remote Sensing and Image Interpretation, 5th Edition, Wiley,nmNew York

Marcolongo, B. And Mantorani, F. (1997): Remote Sensing Application in Earth Science, Oxford and

Rajan, M.S. (1995): Space Today, 2nd edition, National Book Trust, New Delhi, 344p.

Sabins, F.F. (1997): Remote Sensing: Principles and Applications, 3rd edition, W.H. Freeman & Company,New York:

GEO 303D.2 PHOTOGRAMMETRY, AERIAL PHOTO AND SATELLITE SYSTEM

American Society of Photogrammetry (ASP), (1983): Manual Of Remote Sensing, second edition, ASP,Fallschurch, VA,

Chaisman, N. (1992): Exploring Geographical Information Systems, John Wiley and Sons Inc., New York:198p.

Chrisman, N.R. (1997): Exploring Geographic Information Systems; John Wiley and Sons. (Inc).

John, R. J. (1998): Introductory Digital Image Processing – A Remote Sensing Perspective, Prentice Hall

Series. Lillesand, T.M. and Kieffer, R.W. (1979): Remote Sensing and Image Interpretation, 5th Edition, Wiley,New York

Martin, D. (1991): Geographical Information Systems and their Socioeconomic Applications. London,Routledge.

Robert A. Schowengerdt,(1997): Techniques for Image Processing and Classification in Remote Sensing, Academic Press.

Ulaby, F.T., Moore, R. K. and Fung, A.K. (1982): Microwave Remote Sensing Active and Passive, VolumeII, Radar

303E

GEO 303E.1 THEORIES IN LANDSCAPE ECOLOGY

Pickett, S. T. A., J. Kolasa, and C. G. Jones. 1994. Ecological understanding: the nature of theory and the theory of nature.Academic Press, San Diego, CA. 206pp.

Gilovich, T. 1991. How we know what isn't so: the fallibility of human reason in everyday life. The Free Press (div. of Macmillan, Inc. New York. 216 pp.

Bodkin, D. B. 1990. Discordant Harmonies. Oxford Univ. Press, New York. 241pp.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Gleick, J. 1988. Chaos: making a new science. Penguin Books. 352 pp.Forman, R.T.T., and M. Godron. 1986. Landscape Ecology. John Wiley
& Sons, New York. 619 pp. O'Neill, R.V., D.L. De Angelis, J.B. Waide, and T.F.H. Allen. 1986. A hierarchical concept of ecosystems. Monogr. in Pop. Biol. #23.Princeton Univ. Press. 253 pp.
Cronon, W. 1983. Changes in the land: Indians, colonists, and the ecology of New England. Hill and Wang, New York. 241 pp.
Kuhn, T. S. 1962 (1970 ed) The structure of scientific revolutions.Univ. Chicago Press, Chicago, IL. 210 pp.
Pickett, S.T.A., and P.S. White (eds. . 1985. The ecology of natural disturbance and patch dynamics. Academic Press, Inc. 472 pp.
Walters, C. 1986. Adaptive management of renewable resources.Macmillan Publ. Co., New York. 374 pp.
Harris, L. D. 1984. The fragmented forest: island biogeography theory and the preservation of biotic diversity. Univ. Chicago Press, Chicago, IL. 211 pp.
Quantitative methods in landscape ecology. 1991. M. G. Turner and R. H. Gardner (eds.) Ecological Studies 82. Springer-Verlag, New York. 536 pp.
Forest island dynamics in man-dominated landscapes. 1981. R. L. Burgess and D. M. Sharpe (eds. . Ecological studies 41. SpringerVerlag, New York. 310 pp.
Changing landscapes: an ecological perspective. 1989. I.S. Zonneveld and R. T. T. Forman (eds). Springer-Verlag, New York. 286 pp.
T. F. H. Allen, and T. W. Hoekstra. 1992. Towards a unified ecology. Columbia University Press, New York. 384pp.
Peak, D., and M. Frame. 1994. Chaos under control: the art and science of complexity. W. H. Freeman & Co., N. Y. 408pp.
Brown, J. H. 1995. Macroecology. Univ. Chicago Press, Chicago. 269pp.
Edwards, P. J., R. M. May, and N. R. Webb. eds. 1994. Large-scale ecology and conservation biology. The 35th Symposium of the British
Ecological Society for Conservation Biology. Blackwell Scientific Publications, London.375pp.
Szaro, R. C., and D. W. Johnson. 1966. Biodiversity in managed landscapes. Oxford University Press, Oxford. 778pp
Farina, A. 1998. Principles and methods in landscape ecology. Chapman and Hall, New York. 235.
Turner, M. G., R. H. Gardner, and R. V. O'Neill. 2001. LandscapeEcology in Theory and practice. Springer, New York.401pp.
Klopatek, J. M. And R. H. Gardner. eds. 1999. Landscape Ecological Analysis. Springer, New York. 400pp.
Boitani, L. and T. K. Fuller. 2000. eds. Research Techniques in Animal Ecology: Controversies and consequences. Columbia University Press, New York. 442pp.
Gaddis, J. L. 2002. The Landscape of History. Oxford University Press, New York, N.Y. 192 pp.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 303E.2 METRICS AND MODELS IN LANDSCAPE ECOLOGY

Pickett, S. T. A., J. Kolasa, and C. G. Jones. 1994. Ecological understanding: the nature of theory and the theory of nature.Academic Press, San Diego, CA. 206pp.

Gilovich, T. 1991. How we know what isn't so: the fallibility of human reason in everyday life. The Free Press (div. of Macmillan, Inc. New York. 216 pp.

Bodkin, D. B. 1990. Discordant Harmonies. Oxford Univ. Press, New York. 241pp.

Gleick, J. 1988. Chaos: making a new science. Penguin Books. 352 pp.Forman, R.T.T., and M. Godron. 1986. Landscape Ecology. John Wiley

& Sons, New York. 619 pp. O'Neill, R.V., D.L. De Angelis, J.B. Waide, and T.F.H. Allen. 1986. A hierarchical concept of ecosystems. Monogr. in Pop. Biol. #23.Princeton Univ. Press. 253 pp.

Cronon, W. 1983. Changes in the land: Indians, colonists, and the ecology of New England. Hill and Wang, New York. 241 pp.

Kuhn, T. S. 1962 (1970 ed) The structure of scientific revolutions.Univ. Chicago Press, Chicago, IL. 210 pp.

Pickett, S.T.A., and P.S. White (eds. . 1985. The ecology of natural disturbance and patch dynamics. Academic Press, Inc. 472 pp.

Walters, C. 1986. Adaptive management of renewable resources.Macmillan Publ. Co., New York. 374 pp.

Harris, L. D. 1984. The fragmented forest: island biogeography theory and the preservation of biotic diversity. Univ. Chicago Press, Chicago, IL. 211 pp.

Quantitative methods in landscape ecology. 1991. M. G. Turner and R. H. Gardner (eds.) Ecological Studies 82. Springer-Verlag, New York. 536 pp.

Forest island dynamics in man-dominated landscapes. 1981. R. L. Burgess and D. M. Sharpe (eds. . Ecological studies 41. SpringerVerlag, New York. 310 pp.

Changing landscapes: an ecological perspective. 1989. I.S. Zonneveld and R. T. T. Forman (eds). Springer-Verlag, New York. 286 pp.

T. F. H. Allen, and T. W. Hoekstra. 1992. Towards a unified ecology. Columbia University Press, New York. 384pp.

Peak, D., and M. Frame. 1994. Chaos under control: the art and science of complexity. W. H. Freeman & Co., N. Y. 408pp.

Brown, J. H. 1995. Macroecology. Univ. Chicago Press, Chicago. 269pp.

Edwards, P. J., R. M. May, and N. R. Webb. eds. 1994. Large-scale ecology and conservation biology. The 35th Symposium of the British

Ecological Society for Conservation Biology. Blackwell Scientific Publications, London.375pp.

Szaro, R. C., and D. W. Johnson. 1966. Biodiversity in managed landscapes. Oxford University Press, Oxford. 778pp

Farina, A. 1998. Principles and methods in landscape ecology. Chapman and Hall, New York. 235.

Turner, M. G., R. H. Gardner, and R. V. O'Neill. 2001. LandscapeEcology in Theory and practice. Springer, New York.401pp.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Klopatek, J. M. And R. H. Gardner. eds. 1999. Landscape Ecological Analysis. Springer, New York. 400pp.

Boitani, L. and T. K. Fuller. 2000. eds. Research Techniques in Animal Ecology: Controversies and consequences. Columbia University Press, New York. 442pp.

Gaddis, J. L. 2002. The Landscape of History. Oxford University Press, New York, N.Y. 192 pp.

303F

GEO 303F.1: CLIMATE SYSTEM

Seinfeld JH, Pandis SN. 1997. Atmospheric chemistry and physics. :1–1309.

Zucchetto J. 2005. A climate modelling primer. 3rd ed. Sussex: John Wiley & Sons, Ltd.

Wallace JM, Hobbs P V. 2006. Atmospheric Science: An Introductory Survey. 2nd ed. Amsterdam: Elsevier Academic Press.

Modest MF. 2003. Radiative heat transfer. 2nd ed. Amsterdam: Elsevier Academic Press.

Viterbo P. 2002. The role of the land surface in the climate system. :1–19.

IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R.Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, In press,
doi:10.1017/9781009157896.

GEO 303F.2: STATISTICAL CLIMATOLOGY

NCAR Climate Data Guide https://climatedataguide.ucar.edu/climate-data/nino-sst-indices-nino-12-3-34-4-oni-and-tni

Climate.gov, Meet the ENSO's neighbour, the Indian Ocean Dipole.
https://www.climate.gov/news-features/blogs/enso/meet-enso%E2%80%99s-neighbor-indian-ocean-dipole

Climate.gov, What is MJO and why do we care?
https://www.climate.gov/news-features/blogs/enso/what-mjo-and-why-do-we-care

Lund RB, von Storch H, Zwiers FW. 2003. Statistical Analysis in Climate Research. Cambridge: Cambridge University Press.

Maraun, D., & Widmann, M. (2018). Statistical Downscaling and Bias Correction for Climate Research. Cambridge: Cambridge University Press. doi:10.1017/9781107588783

Lee T, Singh VP. 2018. Statistical Downscaling for Hydrological and Environmental Applications. New York: CRC Press, Taylor & Francis Group.

How to tackle climate change with machine learning? https://medium.com/the-research-nest/how-to-tackle-climate-change-using-machine-learning-8ab12e73d261

Lakshmanan V, Gilleland E, McGovern A, Tingley M, editors. 2015. Machine Learning and Data Mining Approaches to Climate Science [Internet]. Cham: Springer International Publishing. http://link.springer.com/10.1007/978-3-319-17220-0_20

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Rolnick D, Donti PL, Kaack LH, Kochanski K, Lacoste A, Sankaran K, Ross AS, Milojevic-Dupont N, Jaques N, Waldman-Brown A, et al. 2019. Tackling Climate Change with Machine Learning. arXiv [Internet]. http://arxiv.org/abs/1906.05433

Gibson PB, Chapman WE, Altinok A, Delle Monache L, DeFlorio MJ, Waliser DE. 2021. Training machine learning models on climate model output yields skillful interpretable seasonal precipitation forecasts. Commun Earth Environ [Internet]. 2(1). http://dx.doi.org/10.1038/s43247-021-00225-4

C - GEO 304 (Elective/CBCS)

C-GEO 304.1 EMERGING ISSUES AND POLICIES ON ENVIRONMENT

Maryk, Theodore (1996): Major Environmental Issues Facing 21st Century, Prentice Hall

Park, C. (1998): The Environment: Principles and Applications, Routledge, London:

Pickering, K. and Owen, L.A.(1997) : An Introduction to Global Environmental Issues, 2nd edition,

Routledge, London. Farmer, A. (1997): Managing Environmental Pollution, Routledge, London: 246p.

Roberts, N. (editor) (1994): The Changing Global Environment, 3rd edition, Blackwell Pub. Co., London:531 p

Kevin T. Pickering, Lewis A. (1997): An Introduction to Global Environmental Issues Rutledge, London

Edmond A. Mathez (2009): Climate Change: The Science of Global Warming and Our Energy Future,Columbia University Press,New York

Frances Drake, (2000): Global Warming: The Science of Climate Change:, Arnold Pub.

Harvey Danny(1999): Global Warming:, Pearson Education India

Mike Gonzalez, MarianellaYanes(2015): The Last Drop-The Politics of Water, Pluto Press,Wendy Nelson Espeland (2015): The Struggle for Water: Politics, Rationality, and Identity in theAmerican Southeast, University of Chicago Press

Paolo F. Ricci (auth.) (2006): Environmental and Health Risk Assessment and Management: Principlesand Practices, Springer Netherlands

Marquita K. Hill (2010): Understanding Environmental Pollution, Cambridge University Press

Chris Barrow (2005): Environmental Management and Development. Routledge

Andrew E. Collins, Jones Samantha, Bernard Manyena, JanakaJayawickrama, (2014): Hazards, Risks, andDisasters in Society, Elsevier

Fred Krüger, Greg Bankoff, Terry Cannon, BenediktOrlowski, E. Lisa F. Schipper(2015): Cultures andDisasters: Understanding Cultural Framings in Disaster Risk Routledge

Peter Christoff, Robyn Eckersley: Globalization and the Environment, ,Rowman and Littlefield ,Newyork

C -GEO 304.2: ENVIRONMENTAL HAZARDS AND DISASTER MANAGEMENT

Alexander, D. (1993): Natural Disasters, Research Press, New Delhi: 619p.

Baarrsches, W.H. (1996): Eco-facts and Eco-fiction: Understanding the Environmental Debate, Routledge,

London. Chapman, D. (1994): Natural Hazards, Oxford University Press, Melbourne: 174p.

Dasgupta, P. and Mller, K.G. (1997): The Environment and Emerging Development Issues, Volumes I and

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

2, Clarendon
Elsom, D.M. (1992): Atmospheric Pollution: A Global Problem, 2nd edition, Blackwell Pub. Co., London: 422p.
Farmer, A. (1997): Managing Environmental Pollution, Routledge, London: 246p.
Hyndman, Donald and Hyndman, David. (2008): Natural Hazards and Disasters; Cengage Learning.
Keller, Edward A. and Blodgett,Robert H. (2007): Natural Hazards: Earth's Processes As Hazards, Disasters and Catastrophes; Pearson Prentice Hall.
Middleton N. (1995): The Global Casino: An .Introduction to Environmental Issues, John Wiley and Sons. New
Park, C. 1998: The Environment: Principles and Applications, Routledge, London:York: 332p.
Pickering, K. and Owen, L.A. (1997): An Introduction to Global Environmental Issues, 2nd edition, Routledge, London:
Roberts, N. (editor) (1994): The Changing Global Environment, 3rd edition, Blackwell Pub. Co., London: 531 p.
Smith, Keith and Petley, David N. (2009): Environmental Hazards: Assessing Risk And Reducing Disaster; Taylor & Francis.
Valancy, F. and Bronstein, D.A. (1995): Environmental and Social .Impact Assessment, John Wiley and Sons inc., New York: 325p.
Vogler, J. (1995): The Global Commons: A Regime Analysis, John Wiley and Sons Ltd., Chichester: 233p.

GEO 395.1: FIELD WORK AND COMMUNITY OUTREACH

Compton,R.R.(1985): Geology in the Field, John Wiley and Sons.
Gardiner,V. and Dacombe,R.(1983): Geomorphological Field Manual, George Allen and Unwin, London
Goudie, A.(1981): Geomorphological Techniques, George Allen and Unwin, London
Kothari,R.C(2004):Research Methodology, New Age International Publishers, New Delhi.
Mahmood, A (1977): Statistical methods in Geographical studies, Rajesh Pub. New Delhi
Mathur,S.M (2001): Guide to Field Geology, Prentice Hall, India
Mishra,H.N (1998): Research Methodology in Geography, Rawat Publication.
National Family Health Survey (NFHS-3) 2005-2006, Vol-I and II International Institute for populationScience,Mumbai
Pal, S.K. (1999): Statistics for Geoscientists, Concept publishing Company, New Delhi: 423p.
Ramachandran, P.(1971):Training in Research Methodology in Social Sciences in India, ICSSR, NewDelhi
Shama,B.A.V. et al (1983): Research Methods in Social Sciences, Chaitanya Publishing House, Allahabad

GEO 395.2: FIELD WORK (AS PER SPECIAL PAPER)

Goudie, A.(1981): Geomorphological Techniques, George Allen and Unwin, London
Mathur,S.M(2001): Guide to Field Geology, Prentice Hall, India

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

National Family Health Survey (NFHS-3) 2005-2006, Vol- I and II International Institute for populationScience,Mumbai

Pal, S.K. (1999): Statistics for Geoscientists, Concept publishing Company, New Delhi: 423p.

Ramachandran, P.(1971):Training in Research Methodology in Social Sciences in India, ICSSR, NewDelhi

Shama,B.A.V. et al (1983): Research Methods in Social Sciences, Chaitanya Publishing House, Allahabad.

GEO 396.1: ADVANCED QUANTITATIVE METHODS

Aralinghaus,S.L and Griffity, A.(1995): Practical Handbook of Spatial Statistics, CRC Press

Brien, O.L. (1992): Introducing Quantitative Geography: Measurement, Method and Generalized linear Models, Routledge.

Clark, W.A.V and Hosking, P.L. (1986): Statistical Methods for Geographers, Wiley and Sons.

Fotheringham, S. A and Brunsdon, C and Charlton, M. (2000): Quantitative Geography: Perspectives on SpatialData Analysis, SAGE.

Haining, R.P. (2003): Spatial Data Analysis, Cambridge University Press.

Lindsay, J.N. (1997): Techniques in Human Geography, Routledge

GEO 396.2: GIS, DIGITAL CARTOGRAPHY, AND GEODESY

Kraak, M.J. and Ormeling, F. (2004): Cartography- Visualization of Geospatial Data; Pearson Education, Singapore.

Maling, D.H. (1973): Co-ordinate systems on Map Projection; George Philip and Sons Ltd, London

Raisz, E. (1962): Principles of cartography; Mc Graw Hill, NY.

Richards, P. and Adler, R.K. (1974): Map Projections, North Holland Publishing Company, New Delhi.

Robinson, A.H., Sale, R.D., Morrison, J. (1984): Elements of Cartography, Wiley, New York:

Roy, P. (1988): An Analytical Study of Map Projections, Volume 1, Kolkata.

Sarkar, A. (1997): Practical Geography: A Systematic Approach, Orient Longman Ltd., Hyderabad:

Steers, J.A. (1965): An Introduction to Map Projections, 14th ion, University of London Press, London:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Semester- IV (300 Marks)

THEORETICAL COURSES (200 Marks)

PAPER – GEO 401: DISSERTATION REPORT AND VIVA-VOCE

Full Marks: 100 Credit: 8

GEO401.1: Problem Selection and Methods of Study

GEO401.2: Field Investigation and Database Generation

GEO401.3: Data analysis and Report Writing

GEO401.4: Presentation and Viva-Voce

PAPER – GEO 402: TOURISM AND GENDER GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 402.1: TOURISM GEOGRAPHY

Course Outcome: This course aims to present the essence of geography as it relates to tourism, geo-environmental and economic aspects. Students will develop their employability aptitude through guiding tourists in the sensitive environment and can also estimate the income generation from tourism and recreational activities. The students can also assess the impacts of tourism and recreational activities on the environmental components. The diversity of tourism activities in different landscapes will be learned by the course. Data analysis with various software and advanced techniques on tourism statistics can be generated by the course.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1.The supply of Recreation and Tourism: The supply of tourism industry and the destination life cycle; Geography of Tourism production; The role of the public and private sector in Tourism supply; spatial analytical approaches to the supply of tourism facilities

2.Impacts of Tourism and Recreation: Positive and Negative dimensions of the impacts of tourism on host communities; carrying capacity assessment for tourist destinations with methodology; The limits of acceptable change in wilderness areas of Island territory in India; The analysis of tourism's social impacts

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

3. Coastal and Mountain Recreation and Tourism: The historical analysis of recreation and tourism in the coastal zone; Environmental perspectives on coastal recreation and tourism, Perspectives of mountain tourism in India; Cultural tourism practised in the mountain Himalaya

4.Geo-diversity, Geo-restoration, Geo-tourism and Leisure Activities: Archaeological and historical value of Geo-diversity; Threats to Geo-heritage; Geo-restoration of wilderness and National parks; Wetland restoration and landscape design; Geo-tourism significances of landscapes for leisure activities; scenic assessment of tourism destination sites.

5. Tourism and Recreation Planning and Policy: Approaches to Tourism planning for leisure; Rural tourism development policy instruments; Tourism policy: Goa; Himachal Pradesh and Uttarakhand; Odisha; West Bengal

GEO 402.2: GENDER GEOGRAPHY AND ENVIRONMENT

Course Outcome: On the successful of completion of this course, students will be able to comprehend and analyse key texts within the field of gender and environment from the fields of, geography. Student will be able to understand the role of gender identities in use, ownership and management of land and other natural resources. This course will help them to conceptualize interdisciplinary nature of the subject with a gendered perspective and feminist epistemologies. Students will be able to comprehend contemporary social transformations throughout their lives with sensitivity, empathy and through the lens of gender justice.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Conceptualizing Gender Geography: Social construction of the feminine and masculine, Development of and theoretical approaches to the study of Gender in geography; Examining Gender in relation to space: Division of space in to private and public spaces, Gendered environments,

2. Spatial Patterns and modes of Gender discrimination and inequalities: Patriarchy, Matriarchy, Matriliny and Matrilocality, Social space and gender, creation of gendered space and reproduction of gendered space, gender stereotypes and representation; Gender disparities in education and health: The Indian situation

3. Women in Resource Management: Women-Nature-Development debate, Development and depletion of natural resources; Environmental degradation and pollution, Vulnerability of women in resource extraction

4. Women and Quality of life: Women and human development status: Human rights and legal space for women: Quality of life in urban and rural areas , Poverty of rural women , Food-Fuel-Water Crisis; occupational hazards , Glass Ceiling- Indian context, GEM and GDI, Crime against women

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

5. Role of Women in Environment Conservation: Chipko Movement, Women Environmentalists and their Contribution: Rachel Carson, Vandana Shiva, Padmashri Tulsi Gowda and Nobel laureate Wangari Muta Maathai.

PAPER – GEO 403: SPECIAL PAPERS

Full Marks: 50 Credit: 4

403A: ADVANCED GEOMORPHOLOGY

GEO 403A.1: ADVANCED GEOMORPHIC TECHNIQUES

Course Outcome: Students will learn about the empirical methods to estimate various geomorphic attributes by using field instruments or through models run by sophisticated software. This will offer them training on data generation, computation and analysis. This course aims to enable learners deal with real world problems using advanced technology recently available to the department from DST-FIST programme, Department of Science and Technology, Govt. of India.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Modeling concepts and approaches in geomorphology; Data sources and Freeware models; Dating procedures and uses.

2. Estimating flow velocities, discharge and stage.; Estimation of stream hydraulic parameters (Critical flow, Froude number, Reynolds number). Inundation estimates.

3. Manning equation: Required data, data measurements, and limitations; Tractive force and stream power estimation.

4. Sediment transport and sediment discharge estimates: Bed load and suspended load.

5. Watershed delineation, preparation of DEM; micro-landscape analysis (landscape unit map) using GIS (Case study on a badland area).

GEO 403A.2: APPLIED GEOMORPHOLOGY

Course Outcome: Students will learn how to apply theoretical knowledge of geomorphology in wide range of engineering and management problems ranging from drainage basin management to hazard management. They are trained to apply geomorphic understanding on water management, landuse planning, sewage and solid waste management. They are also trained on their contribution in EIA and EMP. This course aims in revival of the applied value of the discipline.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Applied Geomorphology in River Basin Management (Case study on Shilabati / Kangsabati/ Subarnarekha Basin)

2. Applied Geomorphology in Hazard Management: Flood, Coastal and River Bank Erosion, Soil Piping, Soil Erosion (Case study on Shilabati flood / Old Digha Erosion/ Bhagirathi erosion, Western Ghat)

3. Geomorphology in dam site selection and impact assessment: (Case Study on Farakka)

4. Geomorphology in urban management: Landuse planning, Sewage treatment, Storm-water management, Ground water recharge and discharge (Case study on Kolkata)

5. Geomorphology in EIA and EMP (Case study on Nayachar/ Singur /Salboni)

403B: COASTAL MANAGEMENT

GEO 403B.1: COASTAL ECOLOGY AND HAZARDS

Course Outcome: Students will understand the ecological importance of coast as an important habitat between terrestrial and marine system. They will also develop their deep insight into the significance and techniques of coastal study in the context of increasing hazards forced by global climatic change. They will be exposed to the information on the future scope of coastal studies in India.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Study and management of- Sea weeds; seaweed ecosystem, artificial seaweeds.

2. Dune vegetation: Dune initiating and dune building types, adaptation and reproduction, plant- animal interaction in sand dune. Mangroves: physical environment and ecology.

3. Coastal hazards and their management: Sea level change- long and short term changes, regional and global effects on shore; Coastal erosion- causes and effects; Storm hazard- role in sediment transfer, effects on open and estuarine coast, management of storm hazard.

4. Techniques of monitoring coastal processes and land forms.

5. Coastal studies in India: Monitoring and research.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 403B.2: COASTAL ISSUES AND MANAGEMENT

Course Outcome: Students will understand about the complexities of emerging coastal issues and their better management techniques. They will get employment opportunities as research scientist in the various institutes like INCOIS, MOEF, DST, NIO, NCSCM, Dept. of Earth Sciences and TOURISIM Department

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Coral bleaching: Impact of Global warming, coastal eutrophication and habitat conservation (Coastal lagoons, other coastal wetlands)

2. Coastal tourism and environment conflicts (Beaches and barrier coasts, mangrove dominated coasts, coral coasts, environmental regulations).

3. Application of remote sensing and GIS techniques in coastal management (Geomorphological mapping, coastal cell circulation systems, environmental zoning approach, identification and diversity of coastal habitats)

4. Managing coastal change: Assessment of coastal vulnerability, ecosystem valuation of coast, integrated coastal zone management, coastal regulations); Coastal engineering: Developments in hard structure designs, developments in soft structure designs, new dredging techniques and procedures.

5. Coastal urbanization and population pressures, Coastal resource management

403C: URBAN GEOGRAPHY AND REGIONAL PLANNING

GEO 403C.1: THEORETICAL BASES OF REGIONAL PLANNING

Course Outcome: This paper will provide knowledge on spatial analysis of functions of urban areas. Social and economic characteristics of cities and suburbs will be discussed under this paper. Urban land use and its impact on environment and ecology will be addressed. This paper will introduce students to the basics of urban geography, such as definition of cities, central place theory, National urban systems, and traditional models of urban spatial structure. More importantly, students will be exposed to contemporary urban topics such as global cities, urban sprawling, urban green space, urban ecology and footprints etc. Emphasis will be placed on the urban experience of developing countries, especially India. The students will be able to assemble knowledge of urbanism and urbanization as historic, geographic, social, and cultural processes, historical development, contemporary condition, and environmental impact of cities and urban related issues growing from exposure to the disciplines of Geography and Planning.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

division), will be set for answering any two. ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. History of regional planning in India, theories of regional planning. Concept of balanced and unbalanced growth

2. Regional development perspectives: Colonial period (Dependency theories- Friedman, Andre Gander Frank, David Slater)

3. Growth Pole theories and the developing world by Perroux, Myrdal, Hirschman, and Boudiville.

4. Agropolitan Development, Basic need approach (E.A.J Johnson, Dennis Rondinelli-USAID).

5. Regional Environmental issues in Purba and Paschim Medinipur Districts- Flood, Drought, coastal erosion, Salinization, Deprivation and related social conflicts, conflict in forest society interface.

GEO 403C.2: PLANNING FOR URBAN DEVELOPMENT

Course Outcome: Students will understand the urban planning process in various issues like sanitation, transport, housing, water supply etc and various policies of the govt. The knowledge about the remote sensing and GIS is also important for urban planning. The students will be able to participate in various works relating to urban planning.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Concept of developed and underdeveloped economy, Intra- and Inter-regional planning. Policies of Urban planning and development.

2. Urban infrastructure planning: Sanitation and Water supply systems, Waste Water disposal systems, Solid waste collection and disposal.

3. Urban traffic and transportation planning.

4. Planning for Urban housing: concepts of land use and land valuation, Needs and types of housing; Housing Policy and programmes in India; Real estate development.

5. Application of Remote Sensing and GIS in urban planning and management.

403D: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

GEO 403D.1: ADVANCED REMOTE SENSING

Course Outcome: This core content of this course is focused on some advanced ideas of microwave and hyperspectral remote sensing including image-based statistics for digital image processing. The course is also focused on some of the advanced ideas of GIS including remote sensing and GIS integration. It

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

includes the application of GIS and remote sensing in various purposes. Upon completion of this course, students would be benefited from these advanced level of applications, and allow them to pursue their future career in GI Science.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Microwave Remote Sensing: Concept, advantages and disadvantages, spatial resolution, Real and Synthetic Aperture Radar, Passive Microwave Remote Sensing, Lidar.

2. Microwave Remote Sensing, Sensor: Landsat VS Sentinel data analysis, Radar interferometry, Differential interferometry, Polarimetry, and SRTM

3. Hyperspectral: concept, sensors, reflectance spectra, spectral library.

4. Digital image pre-processing: Geometric corrections, atmospheric corrections.

5. Digital image post-processing: image statistics, image enhancement and rectifications, signature separability index, image classifications, and transformation.

GEO 403D.2: ADVANCED GIS AND APPLICATIONS OF REMOTE SENSING

Course Outcome: This core content of this course is focused on some advanced ideas of microwave and hyperspectral remote sensing including image-based statistics for digital image processing. The course is also focused on some of the advanced ideas of GIS including remote sensing and GIS integration. It includes the application of GIS and remote sensing in various purposes. Upon completion of this course, students would be benefited from these advanced levels of applications allow them to pursue their future career in GI Science.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Spatial data models: raster and vector data models, data sources, attribute data and metadata concepts, components of GIS, mobile and web GIS technologies. SQL for data mining, mathematical and logical operations using raster and vector data in GIS/image processing software platforms.

2. Digital Elevation Model: DSM, DTM; Calculation of Slope and Aspect for watershed analysis.

3. Remote sensing of vegetation; satellite-based applications for mapping vegetation, including agricultural land, vegetation health, and leaf water content assessment.

4. Remote sensing of soil and water; soil moisture estimation, estimation of suspended sediment load in the river and coastal waters.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

5. Remote sensing of the atmosphere; retrieval of precipitation from satellite data, retrieval of cloud and aerosol optical depth from optical images.

GEO 403E: SPATIAL ANALYSIS IN LANDSCAPE ECOLOGICAL DYNAMICS

GEO 403E.1: LANDSCAPE ECOLOGY AND DYNAMICS

Course Outcome: This course will help the students to recognize the spatial patterns and heterogeneous environments are critical factors in understanding how systems work across a range of scales. It will provide concepts and theories which will help them in understanding the dynamics of complex systems. Finally this course will serve as foundations for decision-making and problem solving in applied fields such as conservation biology, land-use management, and urban planning and development.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Concepts of Landscape dynamics: Landscape dynamics on multiple scales, landscape sensitivity, landscape ecology and global change

2. Landscape pattern formation: Physical and Biotic processes; Drivers of Landscape Patterns, characteristics of landscape with emphasis on Forest and Urban landscape.

3. Landscape dynamics and drivers: climatological, topographical, socio-economical, biophysical, landscape composition and configurations.

4. Patterns of landscape change in forest landscape; Landscape in species perspective- Landscape contour model; Pattern-based landscape models;

5. Patterns of landscape change in Urban areas: Urban sprawl, congestion, urban ecology; concept, pattern and directions, GIS techniques for measuring composition and configuration; Fractal Geometry of Landscapes in the urban areas.

GEO403E.2: SPATIAL ANALYSIS, LANDSCAPE MODELING AND SERVICES

Course Outcome: This course will help the students to synthesize the dominant themes of landscape ecology and Familiarize students with current research trends in the field and Explore applications from the landscape approach. The course is expected to be useful for the students understanding natural resources, ecology, conservation biology, landscape architecture, geography, land use planning, and other fields.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

1. Field works in Landscape Ecology; Bio-monitoring and Bio-indicator measuring using techniques Remote Sensing sensor and ecological data

2. Application of GIS techniques for landscape modeling: Arc GIS tools for connectivity and corridor modelling, habitat modelling and linkage design

3. Computation of landscape metrics using FRAGSTATS.

4. Introduction to Spatial Modelling Environment (SME), Unit model development in STELLA,; Landscape disturbance-succession models, simulation models ; Urban change detection and prediction using CA-Marcov model.

5.Basic services of urban and forest ecosystem: Forest covers depletion, Causes and impacts on ecosystem services; Native/natural forest cover loss and overall forest loss

GEO 403F: APPLIED CLIMATOLOGY

GEO 403F.1: APPLIED CLIMATOLOGY-1

Course Outcome: This curse is designed to produce a deeper understanding of fundamentals of climate system. The course is distributed in three specific manners; the first unit contains basic principles of climate system and climate modelling, including some focus on the physics of cloud and aerosols in the atmosphere. The second unit deals with statistical methods to analyse the climate parameter toward understanding their dynamics at the global and regional scales. The third and fourth units deal with air sampling and data analysis using satellite data.

Learning outcomes: Upon the completion of this course,

1. Students can answer to the question of changing global surface temperature
2. Have the capacity to analyze the cloud-earth-energy-radiation system
3. Can analyze the changing relation of precipitation and atmospheric aerosols
4. Can analyze the long distance teleconnection of ENSO and IOD with Indian summer monsoon precipitation
5. Students can analyze and predict the climatological variables at different space-time scale

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Air sampling and analysis process for studying inorganic chemistry of the atmosphere, Inorganic chemistry of rainwater with its source attribution: spectroscopic principle.

2. Analysis of the vertical profile of the atmosphere through cloudSat and Calipso sensor data

3. Estimation of PBLH through radiosonde data; other data sources of PBLH; the implication of PBLH in weather and climate studies.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

4.Distort Atmospheric Radiative Transfer (DART) and Optical Properties of Aerosols and Cloud (OPAC) models for studying atmosphere and radiation interaction

5. Changing water cycle: global and regional constraints of water cycle, observed changes of water cycle based on multiple dataset.

GEO 403F.1: APPLIED CLIMATOLOGY-2

Course Outcome: This curse is designed to produce a deeper understanding of fundamentals of climate system. The course is distributed in three specific manners; the first unit contains basic principles of climate system and climate modelling, including some focus on the physics of cloud and aerosols in the atmosphere. The second unit deals with statistical methods to analyse the climate parameter toward understanding their dynamics at the global and regional scales. The third and fourth units deal with air sampling and data analysis using satellite data.

Learning outcomes: Upon the completion of this course,

1. Students can answer to the question of changing global surface temperature
2. Have the capacity to analyze the cloud-earth-energy-radiation system
3. Can analyze the changing relation of precipitation and atmospheric aerosols
4.Can analyze the long distance teleconnection of ENSO and IOD with Indian summer monsoon precipitation
5. Students can analyze and predict the climatological variables at different space-time scale

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Global and regional scale climatological data sources: ECMWF, CRU, NCAR, APHRODITE, IMD-gridded products.

2. Studying clouds using satellite imagery; cloud fraction, cloud height, cloud top pressure and temperature and cloud effective radii

3.Studying global and regional scale aerosol loading using satellite-derived products with the help of CDO, R, Python languages; aerosol-cloud-precipitation interaction: regression analysis

4. Extreme weather events: causes and measurements.

5. Fundamentals of HYSPLIT trajectory modelling, Data sources of air mass trajectory, Trajectory analysis: potential source contribution function (PSCF) and clustering.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

PRACTICAL COURSES (100 Marks)

SEMESTER-IV

PAPER – GEO 495: ENVIRONMENTAL ASSESSMENT AND SPATIAL ANALYSIS IN GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 495.1: ENVIRONMENTAL MONITORING AND ASSESSMENT

Course Outcome: Students will develop practical skills for constructing various experiments and environmental maps and foster their abilities in showing the spatial distribution of various environmental elements and their proper interpretation. This ability will help them to formulate environmental plans and to manage and conserve vegetation, air, soil, water etc.

Full Marks- 25

*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1.Determination of Particle Size using respirable dust sampler, Determination of PM 2.5 and PM 10 using Fine Particle Sampler; Estimation of Dust retaining capacity of plants.

2. Estimation of Formaldehyde (HCHO) and Sulphur dioxide by Calorimetric method.

3. Measurement of Noise.

4. Estimation of Chlorophyll, total organic, inorganic carbon.

5. Site Visit to degraded landscape/habitat/Industrial site for related pollution monitoring and EIA.

GEO 495.2: SPATIAL ANALYSIS IN GEOGRAPHY

Course Outcome: The focus of this course is to give a comprehensive understanding of the spatial organization through mathematical and statistical analysis. Upon completion of this course, the students get an inclusive knowledge and skills to perform spatial analysis at different spatial scale.

Full Marks- 25

*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Transport network analysis: Centrality Indices, Shortest path analysis (Transport and allocation problems), Detour and spread.

2. Distance Matrix (Aggregate Travel Distance).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

3. Point spatial distribution analysis: Uniformity, randomness and compactness.

4. Analysis of Directional Data; Rose diagram, Dominant Direction, Mean direction.

5. Analysis of Shape: Measures based on axial ratios, perimeters to areas, areas to axial length.

PAPER – GEO 496: RESEARCH ETHICS AND SPATIAL MODELING IN GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 496.1: PROPOSAL WRITING & RESEARCH ETHICS

Course Outcome: The learners will get the initial training on various steps involved in geographical research. They will develop the idea on fundamentals of research methodology including data collection, methodology and report writing. This course aims to develop fundamental research aptitude among all the students

Full Marks- 25

Pattern of Setting Questions: ***Three*** *compulsory questions bearing marks* ***7, 7 and 6*** *respectively, will be set covering the whole unit.* ***5*** *marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Research ethics and paradigm shift of research methodology in Geography.

2. Need for research, basic research types.

3. Identification of research problems, development of theoretical background- literature review, research gap and research question and specification of the objectives of study; hypothesis building, Framework of research writing.

4. Methods of data collection- primary and secondary; Preparation of questionnaire and survey schedule and their differences, research ethics.

5. Methods of writing notes, style of referencing, bibliography and appendices, abstract and synopsis writing.

GEO 496.2: SPATIAL MODELING

Course Outcome: This course will provide the students with a range of techniques for analysing and modelling spatial data to build upon the more general research training delivered via companion modules on data collection and data analysis, both of which have a spatial focus. It will also highlight a number of key social issues that have a spatial dimension, as well as explain the specific challenges faced when attempting to analyse spatial data. The course also introduces a range of analytical techniques and

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

approaches suitable for the analysis of spatial data and enhances practical skills in using R software packages to implement a wide range of spatial analytical tools.

Full Marks- 25

*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Basic Concepts and components in GIS, Spatial data model, Geo-statistical, Spatial features, Overlay analysis in Arc GIS, and other open-source packages

2. Database creation, climate forcings, soil and LULC

3. Morphometric analysis in Arc GIS

4. SWAT hydrological model with Arc SWAT

5. Model calibration principal and validation with SWAT-CUP

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

SUGGESTED REFERENCES

GEO 402.1: TOURISM GEOGRAPHY

The Geography of Tourism and Recreation (Second Edition), 2002: C. Michael Hall and Stephen J. Page. ROUTLEDGE, London and New York.

Geo-diversity, valuing and conserving abiotic nature, 2004: Murray Gray. John Wiley & Sons, Ltd. London.

Tourism Management, Managing for Change, 2003: Stephen J. Page, Elsevier (Butterworth-Heinemann)

Issues in Cultural Tourism Studies (Second Edition),2009: Melanie K. Smith,ROUTLEDGE, London and New York.

GEO 402.2: GENDER GEOGRAPHY AND ENVIRONMENT

1. Nightingale, A. (2006). The nature of gender: work, gender, and environment. Environment and planning D: Society and space, 24(2), 165-185.

2. Little, J., Peake, L., & Richardson, P. (1988). Introduction: geography and gender in the urban environment. In Women in Cities (pp. 1-20). Palgrave, London.

3. Nightingale, A. J. (2017). Environment and gender. The International Encyclopedia of Geography; Wiley: New York, NY, USA.

4. Little, J. (2002). Rural geography: rural gender identity and the performance of masculinity and femininity in the countryside. Progress in Human Geography, 26(5), 665-670.

5. Little, J., & Panelli, R. (2003). Gender research in rural geography. Gender, Place and Culture: A Journal of Feminist Geography, 10(3), 281-289.

GEO 403A

GEO 403A.1: ADVANCED GEOMORPHIC TECHNIQUES

Anderson Robert S. and Anderson Suzanne P., 2010 Geomorphology (1st Edition, Kindle Edition) by , Cambridge University Press.

Anderson, M.G. (1988) Modelling Geomorphological Systems, John Wiley & Sons, New York

Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.

Coates, D.R. and Vitek, J.D. (1980) (eds), Thresholds in Geomorphology, George Allen & Unwin,London.

Goudie, A.G. et al. (1990) (eds) Geomorphological Techniques, Unwin, Hyman, London.

Knighton, D. (1990) Fluvial Forms and Processes, Hodder Education, UK.

Maiti, R.K. (2016) Modern Approaches to Fluvial Geomorphology, Primus Books.

Maity S.K. and Maiti, R.K. (2018) Sedimentation in the Rupnarayan River, Vol 1, HydrodynamicProcesses under Tidal System, Springer.

Maity S.K. and Maiti, R.K. (2018) Sedimentation in the Rupnarayan River, Vol 2, Estuarine Environmentof Deposition, Springer.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Morisawa, M. (1985) Rivers, Longman, London.
Selby, R.C. (1976), An Introduction to Sedimentology, Academic Press, London

GEO 403A.2: APPLIED GEOMORPHOLOGY

Anderson Robert S. and Anderson Suzanne P., 2010 Geomorphology (1st Edition, Kindle Edition) by , Cambridge University Press.
Anderson, M.G. (1988) Modelling Geomorphological Systems, John Wiley & Sons, New York
Brierley, G.J. &Fryirs, K.A. (2005): Geomorphology and River Management, Blackwell Publishing,Oxford, UK.
Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.
Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.
Coates, D.R. and Vitek, J.D. (1980) (eds), Thresholds in Geomorphology, George Allen & Unwin,London.
Cook, R.U. &Doornkamp, J.C. (1974): Geomorphology in Environmental Management, an Introduction.Clarendon Press. Oxford. .
Goudie, A.G. et al. (1990) (eds) Geomorphological Techniques, Unwin, Hyman, London.
Hart, M.G. (1986): Geomorphology Pure and Applied, George Allen and Unwin, London.
Knighton, D. (1990) Fluvial Forms and Processes, Hodder Education, UK.
Lee, N. and George, C. (eds.)(2000), Environmental assessment in developing and transitional countries. John Wiley & Sons Ltd.
Maiti, R.K. (2016) Modern Approaches to Fluvial Geomorphology, Primus Books.
Maity S.K. and Maiti, R.K. (2018) Sedimentation in the Rupnarayan River, Vol 1, Hydrodynamic Processes under Tidal System, Springer.
Maity S.K. and Maiti, R.K. (2018) Sedimentation in the Rupnarayan River, Vol 2, Estuarine Environment of Deposition, Springer.
Morisawa, M. (1985) Rivers, Longman, London.
Paul A. (2002) Coastal Geomorphology and Environment---------- acb Publication, Kolkata.
Selby, R.C. (1976), An Introduction to Sedimentology, Academic Press, London.
Shit, P.K. and Maiti, R.K. (2012), Rill Gully Erosion in Badland Topography – Field Measurement and Monitoring (A case study on western part of West Bengal, India), LAMBERT Academic Publication,Germany
Shit, P.K. and Maiti, R.K. (2013), Management techniques of Rill-Gully Erossion in Badland Topography(Experimental Research at Laboratory, Plot and Catchments Scale), LAMBERT Academic Publication,German

GEO 403B

GEO 403B.1: COASTAL ECOLOGY AND HAZARDS

Bird, E.C.F. (2000): An Introduction to Coastal Geomorphology, John Wiley and Sons Ltd. New York: 340P.
Carter, R.W.G (1988): Coastal Environments: An Introduction to the Physical, Ecological and Cultural

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Systems of Coastlines, Academic Press, London

Inman, D.L. (1960): Shore Processes, Encyclopedia of Science & Technology, Mc Graw Hill, New York.

Komar, P.D. (1996): Beach Processes and Sedimentation, Prentice Hall. Laussn, E and Lato, I.(ed): Chemistry and Biochemistry of estuaries, Wiley, New York.

Paul, A.K. (2002): Coastal Geomorphology and Environment, ACB Publication.

GEO 403B.2: COASTAL ISSUES AND MANAGEMENT

Allen, J.R.L (1970): Physical Processes of Sedimentation, Jorge Allen & Unwin, London

Bird, E.C.F. (1985): Coastline Changes, Wiley.

Carter, R.W.G (1988): Coastal Environments: An Introduction to the Physical, Ecological and CulturalSystems of Coastlines, Academic Press, London

Dayer K.R. (1979): Estuary Hydrography, and sedimentation, Cambridge Univ. Press, Cambridge. Devis R.A. (ed) (1978): Coastal Sedimentary Environment, Springer Verlag, New York.

Fitzerled and Davis Jr. (2002): Beaches and Coasts. Harikawa , K. (1978): Coastal Engineering, Univ of Tokyo Press, Tokyo.

Hsasleff, S.K. (2000): Coastal Systems, Routledge.

Inman, D.l. (1960): Shore Processes, Encyclopedia of Science & Technology, Mc Graw Hill, New York.

Ivan, V. (2006): Global Coastal Change, Blackwell.

Kay,R. and Alden, J.(1999): Coastal Planning and Management, E and FN Spon, London

Komar, P.D. (1996): Beach Processes and Sedimentation. Prentice Hall.

Laussn, E and Lato, I.(ed): Chemistry and Biochemistry of estuaries, Uniley, New York.

Paul, A.K. (2002): Coastal Geomorphology and Environment, ACB Publication.

Paul, A.K. (2005): Tsunami- An Assessment of Disaster in Indian Ocean Nations, ACB Publication.

Pethick, J.(2000): An Introduction to coastal Geomorphology, Arnold, London.

Schwartz, M.L (2005): Encyclopedia of Coastal Science, Springer.

Stanley, D.J. and Suist D.J.P.(ed)(1976): Marine Sediment Transport and environmental management, Wiley, New York.

Woodroffe, C. D. (2002): The Coast- Form, Process and Development, Cambridge University Press

GEO 403C

GEO 403C.1: THEORETICAL BASES OF REGIONAL PLANNING

Bhat, L.S. (1973): Regional Planning in India, Statistical Pub. Society. Chand, M. and Puri, V.K. (1988): Regional Planning in India, Vikas, New Delhi

Chandana, R.C. (2000): Regional Planning and Development, Kalyani Publishers

Glasson, J. (1974): An Introduction to Regional Planning, Hutchinson, London

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Greed, C (2000): Introducing Planning, Athlone Press, London
Hall, P. (174): Urban and Regional Planning, Penguin, London
Mishra, R.P. (1969): Regional Planning, Concept, Techniques, Policies, The University of Mysore Press.
Mitra, A. (1971): Levels of Regional Development India, Census of India
Roy,G.L and Mondal, S. (1993): Gram Panchayat Organization: Effective Management for RuralDevelopment
Sanyal, B. M (2001): Decentralized Planning- Themes and Issues, Concept. Tim, Hall (2006): Urban Geography, Routledge

GEO 403C.2: PLANNING FOR URBAN DEVELOPMENT

Bhat, L.S. (1973): Regional Planning in India, Statistical Pub. Society. Chand, M. and Puri, V.K. (1988): Regional Planning in India, Vikas, New Delhi
Glasson, J. (1974): An Introduction to Regional Planning, Hutchinson, London
Hall, P. (174): Urban and Regional Planning, Penguin, London
Mishra, R.P. (1969): Regional Planning, Concept, Techniques, Policies, The University of Mysore Press.
Mitra, A. (1971): Levels of Regional Development India, Census of India. Tim, Hall (2006): Urban Geography, Routledge
Faira Arthur B. Gallion (2003).The Urban pattern: City planning and Design, CBS Publication
Rao,P. (2009). Urban Planning: Theory and Practice, CBS Publication
Hiraskar,G.K. (2012). Fundamentals of Town Planning. DhanpatRai Publication
Das Amiya Kumar (2007). Urban Planning in India. Rawat
Catanese (2014). Urban Planning. McGrow Hill
KulshresthaS.K. (2012). Urban and regional Planning in India: A handbook for Professional Practice. SagePublication
Jane Jacob (1992). The Death and Life of Great American Cities. Vintage Publication

GEO 403D

GEO 403D.1: ADVANCED REMOTE SENSING

Campbell, J .B. (1996): Introduction to Remote Sensing, 2nd edition, Taylor & Francis, London: 622p.
Cracknelll, A.P. and Hayes, L.W.B. (1991): Introduction to Remote Sensing, Taylor and Francis,
Washington. Curran, P.J. (1980): Multispectral Remote Sensing of Vegetation Amount, Progress in Physical Geography
Curran, P.J. (1988): Principles of Remote Sensing, ELBS Edn. Longman Group Ltd. UK
Guha, P.K. (2003): Remote Sensing for the Beginner, Affiliated East-West Press Pvt. Ltd., New Delhi
Joseph,, George (2003): Fundamental of Remote Sensing, University Press (India) Pvt. Ltd,
Lillesand, T.M. and Kieffer, R.W. (2003): Remote Sensing and Image Interpretation, 5th Edition., Wiley,NY.
Marcolongo, B. and Mantorani, F. (1997): Photogeology: Remote Sensing Application in Earth Science, Oxford
Rajan, M.S. (1995): Space today, 2nd edition, National Book Trust, New Delhi, 344p.
Sabins, F.F. (1997): Remote Sensing: Principles and Applications, 3rd edition, W.H. Freeman & Company,New York:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Robert A. Schowengerdt,(1997): Techniques for Image Processing and Classification in Remote Sensing, Academic Press.

Ulaby, F.T., Moore, R,K. and Fung, A.K. (1982): Microwave Remote Sensing Active and Passive, Volume II, Radar

Online source: https://archive.nptel.ac.in/courses/105/101/105101213/

GEO 403D.2 ADVANCED GIS AND APPLICATIONS OF REMOTE SENSING

Castleman, K.R. (1979): Digital Image Processing. Prentice Hall Inc, New Jersey.

Chaisman, N. 1992: Exploring Geographical Information Systems, John Wiley and Sons Inc., New York:198p.

Foresman,T.W.(ed) (1998): History of GIS, Prentice-Hall, Upper saddle river, NJ,

Martin, D. (1991): Geographical Information Systems and their Socioeconomic Applications. London,Routledge.

Masser, Ian and Blakemore, Michael (1991): Handling Geographical Information: Methodology andPotential Application, 3rd ed., Longman Scientific and Technical.

GEO 403E

404E.1: LANDSCAPE ECOLOGY AND DYNAMICS

Pickett, S. T. A., J. Kolasa, and C. G. Jones. 1994. Ecological understanding: the nature of theory and the theory of nature.Academic Press, San Diego, CA. 206pp.

Gilovich, T. 1991. How we know what isn't so: the fallibility of human reason in everyday life. The Free Press (div. of Macmillan, Inc. New York. 216 pp.

Bodkin, D. B. 1990. Discordant Harmonies. Oxford Univ. Press, New York. 241pp.

Gleick, J. 1988. Chaos: making a new science. Penguin Books. 352 pp.Forman, R.T.T., and M. Godron. 1986. Landscape Ecology. John Wiley

& Sons, New York. 619 pp. O'Neill, R.V., D.L. De Angelis, J.B. Waide, and T.F.H. Allen. 1986. A hierarchical concept of ecosystems. Monogr. in Pop. Biol. #23.Princeton Univ. Press. 253 pp.

Cronon, W. 1983. Changes in the land: Indians, colonists, and the ecology of New England. Hill and Wang, New York. 241 pp.

Kuhn, T. S. 1962 (1970 ed) The structure of scientific revolutions.Univ. Chicago Press, Chicago, IL. 210 pp.

Pickett, S.T.A., and P.S. White (eds. . 1985. The ecology of natural disturbance and patch dynamics. Academic Press, Inc. 472 pp.

Walters, C. 1986. Adaptive management of renewable resources.Macmillan Publ. Co., New York. 374 pp.

Harris, L. D. 1984. The fragmented forest: island biogeography theory and the preservation of biotic diversity. Univ. Chicago Press, Chicago, IL. 211 pp.

Quantitative methods in landscape ecology. 1991. M. G. Turner and R. H. Gardner (eds.) Ecological Studies 82. Springer-Verlag, New York. 536 pp.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Forest island dynamics in man-dominated landscapes. 1981. R. L. Burgess and D. M. Sharpe (eds. . Ecological studies 41. SpringerVerlag, New York. 310 pp.

Changing landscapes: an ecological perspective. 1989. I.S. Zonneveld and R. T. T. Forman (eds). Springer-Verlag, New York. 286 pp.

T. F. H. Allen, and T. W. Hoekstra. 1992. Towards a unified ecology. Columbia University Press, New York. 384pp.

Peak, D., and M. Frame. 1994. Chaos under control: the art and science of complexity. W. H. Freeman & Co., N. Y. 408pp.

Brown, J. H. 1995. Macroecology. Univ. Chicago Press, Chicago. 269pp.

Edwards, P. J., R. M. May, and N. R. Webb. eds. 1994. Large-scale ecology and conservation biology. The 35th Symposium of the British

Ecological Society for Conservation Biology. Blackwell Scientific Publications, London.375pp.

Szaro, R. C., and D. W. Johnson. 1966. Biodiversity in managed landscapes. Oxford University Press, Oxford. 778pp

Farina, A. 1998. Principles and methods in landscape ecology. Chapman and Hall, New York. 235.

Turner, M. G., R. H. Gardner, and R. V. O'Neill. 2001. LandscapeEcology in Theory and practice. Springer, New York.401pp.

Klopatek, J. M. And R. H. Gardner. eds. 1999. Landscape Ecological Analysis. Springer, New York. 400pp.

Boitani, L. and T. K. Fuller. 2000. eds. Research Techniques in Animal Ecology: Controversies and consequences. Columbia University Press, New York. 442pp.

Gaddis, J. L. 2002. The Landscape of History. Oxford University Press, New York, N.Y. 192 pp.

404E.2: SPATIAL ANALYSIS, LANDSCAPE MODELING AND SERVICES

Pickett, S. T. A., J. Kolasa, and C. G. Jones. 1994. Ecological understanding: the nature of theory and the theory of nature.Academic Press, San Diego, CA. 206pp.

Gilovich, T. 1991. How we know what isn't so: the fallibility of human reason in everyday life. The Free Press (div. of Macmillan, Inc. New York. 216 pp.

Bodkin, D. B. 1990. Discordant Harmonies. Oxford Univ. Press, New York. 241pp.

Gleick, J. 1988. Chaos: making a new science. Penguin Books. 352 pp.Forman, R.T.T., and M. Godron. 1986. Landscape Ecology. John Wiley

& Sons, New York. 619 pp. O'Neill, R.V., D.L. De Angelis, J.B. Waide, and T.F.H. Allen. 1986. A

hierarchical concept of ecosystems. Monogr. in Pop. Biol. #23.Princeton Univ. Press. 253 pp.

Cronon, W. 1983. Changes in the land: Indians, colonists, and the ecology of New England. Hill and Wang, New York. 241 pp.

Kuhn, T. S. 1962 (1970 ed) The structure of scientific revolutions.Univ. Chicago Press, Chicago, IL. 210 pp.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Pickett, S.T.A., and P.S. White (eds. . 1985. The ecology of natural disturbance and patch dynamics. Academic Press, Inc. 472 pp.

Walters, C. 1986. Adaptive management of renewable resources.Macmillan Publ. Co., New York. 374 pp.

Harris, L. D. 1984. The fragmented forest: island biogeography theory and the preservation of biotic diversity. Univ. Chicago Press, Chicago, IL. 211 pp.

Quantitative methods in landscape ecology. 1991. M. G. Turner and R. H. Gardner (eds.) Ecological Studies 82. Springer-Verlag, New York. 536 pp.

Forest island dynamics in man-dominated landscapes. 1981. R. L. Burgess and D. M. Sharpe (eds. . Ecological studies 41. SpringerVerlag, New York. 310 pp.

Changing landscapes: an ecological perspective. 1989. I.S. Zonneveld and R. T. T. Forman (eds). Springer-Verlag, New York. 286 pp.

T. F. H. Allen, and T. W. Hoekstra. 1992. Towards a unified ecology. Columbia University Press, New York. 384pp.

Peak, D., and M. Frame. 1994. Chaos under control: the art and science of complexity. W. H. Freeman & Co., N. Y. 408pp.

Brown, J. H. 1995. Macroecology. Univ. Chicago Press, Chicago. 269pp.

Edwards, P. J., R. M. May, and N. R. Webb. eds. 1994. Large-scale ecology and conservation biology. The 35th Symposium of the British

Ecological Society for Conservation Biology. Blackwell Scientific Publications, London.375pp.

Szaro, R. C., and D. W. Johnson. 1966. Biodiversity in managed landscapes. Oxford University Press, Oxford. 778pp

Farina, A. 1998. Principles and methods in landscape ecology. Chapman and Hall, New York. 235.

Turner, M. G., R. H. Gardner, and R. V. O'Neill. 2001. LandscapeEcology in Theory and practice. Springer, New York.401pp.

Klopatek, J. M. And R. H. Gardner. eds. 1999. Landscape Ecological Analysis. Springer, New York. 400pp.

Boitani, L. and T. K. Fuller. 2000. eds. Research Techniques in Animal Ecology: Controversies and consequences. Columbia University Press, New York. 442pp.

Gaddis, J. L. 2002. The Landscape of History. Oxford University Press, New York, N.Y. 192 pp.

GEO 403F

GEO403F.1: APPLIED CLIMATOLOGY-1

The retrieval of vertical profile from satellite radiances, https://library.ssec.wisc.edu/research_Resources/publications/pdfs/ITSC20/smith06_ITSC20_2015.pdf
https://acp.copernicus.org/articles/21/11979/2021/acp-21-11979-2021.pdf

Young, S. A., & Vaughan, M. A. (2009). The Retrieval of Profiles of Particulate Extinction from Cloud-Aerosol Lidar Infrared Pathfinder Satellite Observations (CALIPSO) Data: Algorithm Description, Journal of Atmospheric

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

and Oceanic Technology, 26(6), 1105-1119. Retrieved Jul 5, 2022, from https://journals.ametsoc.org/view/journals/atot/26/6/2008jtecha1221_1.xml
Young, S. A., Vaughan, M. A., Kuehn, R. E., & Winker, D. M. (2013). The Retrieval of Profiles of Particulate Extinction from Cloud–Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO) Data: Uncertainty and Error Sensitivity Analyses, Journal of Atmospheric and Oceanic Technology, 30(3), 395-428. Retrieved Jul 5, 2022, from https://journals.ametsoc.org/view/journals/atot/30/3/jtech-d-12-00046_1.xml
Lenoble J, Remer L, Tanré D. 2010. Aerosol remote sensing. Lenoble J, Remer L, Tanré D, editors. Chichester, UK: Springer in assoc Praxis Publishing.

IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R.Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, In press, doi:10.1017/9781009157896.

GEO403F.2: APPLIED CLIMATOLOGY-2

Stephens GL, Kummerow CD. 2007. The remote sensing of clouds and precipitation from space: A review. J Atmos Sci. 64(11):3742–3765.
W.P. Menzel RAF. 2015. Cloud Top Properties and Cloud Phase Algorithm Theoretical Basis Document Collection 006 Update. (March):73.
Verma S, Rao PVN, Shaeb HBK, Seshasai MVR, PadmaKumari B. 2018. Cloud fraction retrieval using data from Indian geostationary satellites and validation. Int J Remote Sens [Internet]. 39(22):7965–7977. https://doi.org/10.1080/01431161.2018.1479792

King MD, Tsay S-C, Platnick SE, Wang M, Liou K-N. 1997. Cloud Retrieval Algorithms for MODIS: Optical Thickness, Effective Particle Radius, and Thermodynamic Phase, MODIS Algorithm Theoretical Basis Document No. ATBD-MOD-05, MOD06 – Cloud product [Internet]. version 5(December):1–79. https://cimss.ssec.wisc.edu/dbs/China2011/Day2/Lectures/MOD06OD_Algorithm_Theoretical_Basis_Document.pdf

Berrisford P, Dee D, Fielding K, Fuentes M, Kallberg P, Kobayashi S, Uppala S. 2009. The ERA-Interim Archive. ERA Rep Ser [Internet]. 1(1):1–16. http://www.ecmwf.int/publications/library/do/references/list/782009

Dee DP, Uppala SM, Simmons AJ, Berrisford P, Poli P, Kobayashi S, Andrae U, Balmaseda MA, Balsamo G, Bauer P, et al. 2011. The ERA-Interim reanalysis: Configuration and performance of the data assimilation system. Q J R Meteorol Soc. 137(656):553–597.

Harris I, Osborn TJ, Jones P, Lister D. 2020. Version 4 of the CRU TS monthly high-resolution gridded multivariate climate dataset. Sci Data. 7(1):1–18.

GEO 495.1: ENVIRONMENTAL MONITORING AND ASSESSMENT

1. Environmental Monitoring and Characterization (2004): Authors: Janick Artiola, Ian Pepper, Mark Brusseau, Elsevier

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

2. Environmental Monitoring Handbook(2002) : 1st Edition by Frank R Burden, Ian McKelvie Ulrich Forstner , Alex Guenther ,Mc Graw Hill Professional

3. Environmental Monitoring (2004):Edited By G. Bruce Wiersma, CRC Press

4. Turner, B. L. II., editor. (ed). (1990.) The Earth as Transformed by Human Action. Cambridge University Press with Clark University. Cambridge, Massachusetts.

5. Oliver, C. D., and B. C. Larson. 1990. Forest Stand Dynamics. New York: McGraw Hill.

6. NRC. 1993. a. Research to Protect, Restore, and Manage the Environment. National Academy Press, Washington, D.C.

GEO 495.2: SPATIAL ANALYSIS IN GEOGRAPHY

Clark, C.D. and Wilson, C.(1994): Spatial Analysis of Lineaments: Computer and Geosciences, V.20.No.7/8,p. 1237-1258.

Cliff, A.D. and J.K.Ord (1981): Spatial Processes: Models and Applications. London, Pion Ltd.

Getis, A. and B. Boots (1978): Models of Spatial Processes: An Approach to the study of Point, Line andArea Patterns. Cambridge, Cambridge University Press.

John, J.C.(2002):Statistics and data nalysis in Geology, Singapore, JohnWiley& Sons(Asia).

Watson, D.F. (1992): Contouring: A Guide to the Analysis and Display of Spatial Data, Oxford, PergamonPress.

Watson, G.S. (1970): Orientation Statistics in the Earth Sciences, Bull.Geol. Inst.Uppsala, V.2. No. 9,p.73-89.

Watson, G.S. (1983): Statistics on Spheres, New York, John Wiley & Sons

GEO 496.1: PROPOSAL WRITING & RESEARCH ETHICS

Alvi. Z. (1995): Statistical Geography: Methods and Applications, Rawat Publication, New Delhi

Compton,R.R.(1985): Geology in the Field, John Wiley and Sons.

Gardiner,V. and Dacombe,R.(1983):Geomorphological Field Mannual,George Allen and Unwin, London

Ghosh,B.N.(1982): Scientific Methods and Social Research ,Starling Publishers Private Ltd. New Delhi.

Goudie, A. (1981): Geomorphological Techniques, George Allen and Unwin, London

John, C. D. (2002): Statistics and Data Analysis in Geology; John Wiley & Sons.

Kothari,R.C(2004):Research Methodology,New Age International Publishers, New Delhi.

Mahmood, A (1977): Statistical methods in Geographical studies, Rajesh Pub. New Delhi

Mishra,H.N(1998): Research Methodology in Geography,Rawat Publication.

Pal, S.K. (1999): Statistics for Geoscientists, Concept publishing Company, New Delhi: 423p.

Ramachandran,P.(1971):Training in Research Methodology in Social Sciences in India, ICSSR, New Delhi

Shama,B.A.V. et al (1983): Research Methods in Social Sciences, Chaitanya Publishing House, Allahabad.

Sjoberg g. and Nett (2002): Methodology of Social Research, Rawat Publication

Wang, X and Vonhofe, R.a (2007): Research Method in Urban and Regional Planning, Springer

Young,P.V.(1960): Scientific Social Surveys and Research 3rd Ed ,Prentice Hall, New York.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

GEO 496.2: SPATIAL MODELING

Foresman,T.W.(ed) (1998): History of GIS, Prentice-Hall, Upper saddle river, NJ,

Marcolongo, B. And Mantorani, F. (1997): Photogeology: Remote Sensing Application in Earth Science, Oxford and IBH Pub. Pvt. Ltd., New Delhi: 195p.

Martin, D. (1991): Geographical Information Systems and their Socioeconomic Applications. London, Routledge.

Masser, Ian and Blakemore, Michael (1991): Handling Geographical Information: Methodology and Potential Application, 3rd ed., Longman Scientific and Technical.

Robert A. Schowengerdt,(1997): Techniques for Image Processing and Classification in Remote Sensing, Academic Press.

Kibii, J. K., Kipkorir, E. C., &Kosgei, J. R. (2021). Application of soil and water assessment tool (SWAT) to evaluate the impact of land use and climate variability on the kaptagat catchment river discharge. Sustainability (Switzerland), 13(4), 1–19. https://doi.org/10.3390/su13041802

Neitsch, S. ., Arnold, J. ., Kiniry, J. ., & Williams, J. . (2011). Soil & Water Assessment Tool Theoretical Documentation Version 2009. Texas Water Resources Institute, 1–647. https://doi.org/10.1016/j.scitotenv.2015.11.063

Basins, T., & Basin, G. (n.d.). Water availability, demand and adaptation option assessment of the Ganges Basin under climate change Technical Report-Hydrological Modelling.

Online: https://swat.tamu.edu/media/114860/usermanual_swatcup.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:45:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_Draft_CBCS_2223/Geography_2022_23.pdf

Syllabus
for
MA / MSc Course in Geography & Environment Management

REVISED IN 2018: EFFECTIVE FROM THE ACADEMIC SESSION 2018-2019

Department of Geography and Environment Management

Vidyasagar University

Midnapore

Paschim Medinipur, West Bengal

PIN – 721 102

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

DIVISION OF MARKS
Total marks: 1100 (Core) + 100 (Elective/CBCS)

For Internal Students				Elective/CBCS
Semesters	**Theoretical**	**Practical**	**Total**	**Total**
Semester- I	200	100	300	-
Semester- II	150	100	250	50
Semester- III	150	100	250	50
Semester- IV	200	100	300	-
Total	**700**	**400**	**1100**	**100**

STRUCTURE OF SYLLABUS

SEMESTER-I
(Duration: July – December)

Type	Paper	Unit	Marks				Credit	Total Class Hours
			End-term Exam.	Internal Exam.	Unit Total	Paper Total		
THEORETICAL	**GEO 101: Earth's Surface Process**	GEO 101.1: Geotectonics	20	5	25	50	4	60 hours
		GEO 101.2: Geomorphology	20	5	25			
	GEO 102: Hydrospheric Science	GEO 102.1: Oceanography	20	5	25	50	4	60 hours
		GEO 102.2: Hydrology	20	5	25			
	GEO 103: Climate, Soil and Agriculture	GEO 103.1: Climatology	20	5	25	50	4	60 hours
		GEO 103.2: Soil and Agriculture	20	5	25			
	GEO 104: Environmental Geography	GEO 104.1: Basics of Environment and Ecology	20	5	25	50	4	60 hours
		GEO 104.2: Landscape ecology and planning	20	5	25			
PRACTICAL	**GEO 195: Hydrological Techniques and Sedimentological Analysis**	GEO 195.1: Hydrological Techniques	25	-	25	50	4	60 hours
		GEO 195.2: Sedimentological Analysis	25	-	25			
	GEO 196: Thematic Mapping	GEO 196.1: Physical and Social Thematic Mapping	25	-	25	50	4	60 hours
		GEO 196.2: Environmental Mapping	25	-	25			

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

SEMESTER-II
(Duration: January – June)

Type	Course	Unit	Marks				Credit	Total Class Hours
			End-term Exam.	Internal Exam.	Unit Total	Paper Total		
THEORETICAL	**GEO 201: Environmental Approaches & Application**	GEO 201.1: Environmental Ethics and Regulation	20	5	25	50	4	60 hours
		GEO 201.2: Environmental Engineering	20	5	25			
	GEO 202: Population and Development	GEO 202.1: Population Geography	20	5	25	50	4	60 hours
		GEO 202.2: Population and Development	20	5	25			
	GEO 203: Regional Geomorphology and Resource Management	GEO 203.1: Regional Geomorphology of India and WB	20	5	25	50	4	60 hours
		GEO 203.2: Land water forest conflict and conservation	20	5	25			
	ELECTIVE PAPER (THEORY)							
	C-GEO 204: Resource Management and Earth System science	**C-GEO 204.1 *: Resource and its Management***	**20**	**5**	**25**	**50**	**4**	**60 hours**
		C-GEO 204.2 *: Earth system science*	**20**	**5**	**25**			
PRACTICAL	**GEO 295: Statistical Techniques**	GEO 295.1: Basic Statistics in Geography	25	-	25	50	4	60 hours
		GEO 295.2: Advance Quantitative Method	25	-	25			
	GEO 296: Remote Sensing and Computer Application	GEO 296.1: Principles of Remote Sensing and Aerial Photograph	25	-	25	50	4	60 hours
		GEO 296.2: Computer Basics and Application	25	-	25			

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

SEMESTER- III
(Duration: July – December)

Type	Course	Unit	Marks				Credit	Total Class Hours
			End-term Exam.	Internal Exam.	Unit Total	Paper Total		
THEORETICAL	**GEO 301: Approaches to Regional Development**	GEO 301.1: Regional Approach in Geography	20	5	25	50	4	60 hours
		GEO 301.2: Rural Development	20	5	25			
	GEO 302: Settlement and Transport Geography	GEO 302.1: Settlement Geography	20	5	25	50	4	60 hours
		GEO 302.2: Transport Geography	20	5	25			
	SPECIAL PAPERS (ANY ONE) GEO 303	**303A: Advanced Geomorphology**						
		GEO 303A.1: Process Geomorphology -1	20	5	25	50	4	60 hours
		GEO 303A.2: Process Geomorphology -2	20	5	25			
		303B: Coastal Management						
		GEO 303B.1: Coastal Processes	20	5	25	50	4	60 hours
		GEO 303B.2: Coastal Environments: Focus on Indian Regions	20	5	25			
		303C: Urban Geography & Regional Planning						
		GEO 303C.1: Foundation of Urban Geography	20	5	25	50	4	60 hours
		GEO 303C.2: Contemporary Urban Issues	20	5	25			
		303D: Remote Sensing and Geographic Information System						
		GEO 303D.1: Physical Basis of Remote Sensing	20	5	25	50	4	60 hours
		GEO 303D.2 Photogrammetry, Aerial Photo and Satellite System	20	5	25			
	ELECTIVE(CBCS) PAPER (THEORY)							
	C-GEO 304 : Environmental Issues and Management	***C-GEO 304.1 Emerging Issues and policies on Environment***	**20**	**5**	**25**	**50**	**4**	**60 hours**
		C-GEO 304.2: Environmental Hazards and Disaster Management	**20**	**5**	**25**			
PRACTICAL	**GEO 395: GIS Application in Research**	GEO 395.1: Application of Remote Sensing and GIS	25	-	25	50	4	60 hours
		GEO 395.2: Research Methodology	25	-	25			
	GEO 396 Special paper based fieldwork (ANY ONE , as per the choice of special Theory paper type (A/B/C/D)	GEO 396A.1: Field work (Advanced Geomorphology)	25	-	25	50	4	60 hours
		GEO 396A.2: Field Report (Advanced Geomorphology)	25	-	25			
		GEO 396B.1: Field work (Coastal Management)	25	-	25	50	4	60 hours
		GEO 396B.2: Field Report (Coastal Management)	25	-	25			
		GEO 396C.1: Field work (Urban)	25	-	25	50	4	60 hours
		GEO 396C.2: Field Report (Urban)	25	-	25			
		GEO 396D.1: Field work (Remote Sensing)	25	-	25	50	4	60 hours
		GEO 396D.2: Field Report (Remote Sensing)	25	-	25			

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

SEMESTER-IV

(Duration: January – June)

Type	Course	Unit	Marks				Credit	Total Class Hours
			End-term Exam.	Internal Exam.	Unit Total	Paper Total		
THEORETICAL	**GEO 401: Geographical Philosophy**	GEO 401.1: Schools in Geographical Thought	20	5	25	50	4	60 hours
		GEO 401.2: Contemporary Discourses in Geography	20	5	25			
	GEO 402: Political Geography and Globalization	GEO 402.1: Political Geography	20	5	25	50	4	60 hours
		GEO 402.2: Geography of Globalization	20	5	25			
	GEO 403: Society and Regional Planning	GEO 403.1: Social and Cultural Geography	20	5	25	50	4	60 hours
		GEO 403.2: Regional Planning	20	5	25			
	SPECIAL PAPERS (ANY ONE) GEO 404	**404A: Advanced Geomorphology**						
		GEO 404A.1: Advanced Geomorphic Techniques	20	5	25	50	4	60 hours
		GEO 404A.2: Applied Geomorphology	20	5	25			
		404B: Coastal Management						
		GEO 404B.1: Coastal Ecology and Hazards	20	5	25	50	4	60 hours
		GEO 404B.2: Coastal Issues and Management	20	5	25			
		404C: Urban & Regional Planning						
		GEO 404C.1: Theoretical Bases of Regional Planning	20	5	25	50	4	60 hours
		GEO 404C.2: Planning for Urban Development	20	5	25			
		404D: Remote Sensing and Geographic Information System						
		GEO 404D.1: Advanced Remote Sensing	20	5	25	50	4	60 hours
		GEO 404D.2: Advanced GIS and Applications of Remote Sensing	20	5	25			
PRACTICAL	**GEO 495: Spatial Analysis and Prototype Research**	GEO 495.1: Spatial Analysis in Geography	25	-	25	50	4	60 hours
		GEO 495.2: Research Exercise in Geography	25	-	25			
	GEO 496: Geodesy and GIS	GEO 496.1: Map Transformation and Geodesy	25	-	25	50	4	60 hours
		GEO 496.2: Geographical Information System (GIS)	25	-	25			

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Outcome of the academic programme on M.A. / M.Sc. in Geography

1. Fostering the ability of the students to encounter practical problems with theoretical knowledge in Geography and Environment.
2. Promotion of research aptitude and field work aptitude as well as laboratory based practical works for the students of Geography.
3. Capacity enhancement of the students in spatial mapping on digital platform for the Geographical research and studies.
4. Orientation of the students of Geography to develop competitive examinations aptitude among them including NET / SET/ and other professional jobs.
5. Preparing students for Higher Academic programmes for institutes of National and International repute.
6. On completion of the M.A./M.Sc in Geography, students are able to get absorbed in various Govt Departments (like planning and developmental commissions, forestry, environmental, and disaster management departments) travel agencies, manufacturing firms, etc. They can be cartographer (NATMO), surveyor (Survey of India), GIS and Remote Sensing experts, environmental planner, Environment Reporter, urban and regional planner, transportation manager, Teacher/Professor etc.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

SYLLABUS

Semester- I (300 Marks)

THEORETICAL COURSES (200 Marks)

PAPER - GEO 101: EARTH'S SURFACE PROCESS

Full Marks: 50 Credit: 4

GEO 101.1: GEOTECTONICS

Course Outcome:

The focus of this course is to give an in-depth concept on the fundamental physical laws towards understanding the initial phases of the early universe with special reference to the Earth and the Moon. It also focuses on the basic understanding of the genesis of the Earth's magnetic field and palaeomagnetism that will enhance the understanding about the Earth's geological history and theories about the continental drift and sea floor spreading. The course is also designed to have some advanced level of understanding of the absolute dating techniques to find the ages of geological formation. It also includes the processes and mechanisms of mountain building. All these concepts and techniques will surely enhance the ability of the students for critical analysis and thereby synthesis of the Earth's system process. The completion of this course will give impetus to the research insights for the students who would like to pursue their future carrier in geosciences.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Origin and evolution of solar system with special reference to the Earth/Moon.
2. Relative and absolute dating: principles and techniques.
3. Origin of earth's magnetic field, paleomagnetism, geomagnetic polarity reversal and paleomagnetic timescale, paleomagnetic polar wandering curves and reconstruction of plate tectonic motions.
4. Mechanism of plate dynamics. Application of plate tectonic theory in explaining orogenesis, volcanism, earthquake.
5. Neo-tectonics and its worldwide evidences.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO 101.2: GEOMORPHOLOGY

Course Outcome:

Students will learn about the mechanism and working principle of processes that lead to shape present earth-surface. Field demonstration on process-form relationship help in concretizing ideas. This understanding may help in formulating hydrological, geologic and economic planning. Learners may take part in hazard management too.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Concepts in geomorphology: historical and functional approaches, uniformitarianism and catastrophism, base level, grade and profile of equilibrium.
2. Weathering: factors, processes and landforms. Mass wasting: resultant landforms and safety factor.
3. Slope Evolution: process-form relationship on slope elements, theories of Wood, Davis, Penck, King, Young and Savigear. Dynamic metastability in slope evolution.
4. Fluvial processes and forms: threshold energy for entrainment and transport, channel form and patterns, flood plains, alluvial fan, terraces and delta.
5. Applied geomorphology in planning, hydrology and economic geology. Geomorphology in hazard Management (flood, landslide and subsidence).

PAPER - GEO 102: HYDROSPHERIC SCIENCES

Full Marks: 50 Credit: 4

GEO 102.1: OCEANOGRAPHY

Course Outcome:

The students will be able to understand the marine environment and oceanographic processes that leads to earth system processes. They can extend their ideas in understanding environmental and climatic processes too. An aptitude on the distribution of marine resources as well as their utilization and possible impact are also developed among the students.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Marine Environment and Processes: Major subdivisions of the marine environment, winds and ocean circulation, waves in the ocean, origin of the tides and tidal characteristics.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

2. Physical and chemical structure of oceans: Water masses and their properties. Sediment in the sea.
3. Coastal Habitats: Estuaries, lagoons, salt marshes, mangrove swamps, coral reefs- origin, circulation, sedimentation and ecology.
4. The Dynamic Shoreline: Coastal water movement, circulation in surf zone, beaches, beach profiles, sediment budgets, coastal dunes, barrier islands, tidal inlets, cliffed coasts, deltas, effects of storms. Human impacts on the coastline.
5. The Ocean's Resources: Law of the sea, law of the sea treaty, exclusive economic zones/coastal regulation zones, mineral resource- oil and natural gas, gas hydrates, sand and gravel, manganese nodules, cobalt-rich oceanic crusts, phosphate deposits, biotic resources.

GEO 102.2: HYDROLOGY

Course Outcome:

Students will learn about the working principle of earth system processes that lead to water availability and necessity for water management in the context of global climatic change. This understanding may help in water budgeting and formulating plan for water use and water management. Learners may take leading role in awareness generation among community for rain water harvesting and judicial water use.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Hydrological systems, estimating water potential, water budgeting at watershed level. Hydrologic frequency analysis (Gumbel's equation and log probability law).
2. Precipitation estimates: point rainfall analysis, area-depth curve, theissen network and isohyetal method for estimating rainfall volumes.
3. Infiltration and evapotranspiration: soil-vegetation complex and infiltration estimates. Methods of estimating evapotranspiration.
4. Runoff estimates using curve number, stream discharge estimates by area-velocity method. Ground water: storage structure, flow, recharge and discharge.
5. Hydrographs and Rating curve: Time dimensions of hydrographs: concept of unit hydrograph and rating curves and their significance. flood & drought as hydrological hazards.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

PAPER – GEO 103: CLIMATE, SOIL & AGRICULTURE

Full Marks: 50 Credit: 4

GEO 103.1: CLIMATOLOGY

Course Outcome:

The course deals with the basic understanding of the climate system. The fundamental physics of surface pressure distribution, the general circulation model and sea surface temperature (SST) variation will allow students to get insights to the space-time scale variation of weather and climate. Students will understand the weather and climatic processes working on earth and this understanding will help them to assess and predict the weather phenomena and its related hazards. Through this understanding, they can take part in hazard and disaster management programmes.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Nature and Scope of Climatology and its relationship with Meteorology, climatological systems operating in different space and timescale: thunderstorm, tropical cyclone and associated hazards, jet Stream, planetary wind systems.
2. The General Circulation: GCM, Tropical circulation- mechanism of Indian monsoon, Walker circulation and ENSO phenomena, Temperate Circulation.
3. The Climatic Zones of the world with special reference to tropical climates: wet, wet and dry, savanna, desert and highland.
4. Sea surface temperature and it's climatic significance; Maritime influence on coastal weather: seasonal changes and storm events.
5. Climatic changes through geological periods- evidences and possible causes; Global Warming- Natural and anthropogenic causes and probable consequences.

GEO 103.2: SOIL AND AGRICULTURAL GEOGRAPHY

Course Outcome:

Learners will understand about functional integration of various process that results in formation and distribution of different types of soil and their implication of agricultural systems. They will be able to achieve integrated knowledge on soil and landscape. They will develop special aptitude on soil survey techniques to analyse patio-temporal distribution of agricultural systems.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

1. Variation in physico-chemical properties of soil with climate and dominance of local factors: organic matter content, pH clay content, clay mineralogy, soil colour, calcium carbonate and soluble salt content.
2. Soil Geomorphology: soil landscape analysis in relation to geomorphic surfaces and surface morphometry, catena concept- catena and soil hydrology, slope description and catena, soil catena under different environment, soil morphology and chrono-sequence.
3. Approaches in agricultural geography: agricultural systems (ecological or near-ecological systems). Approaches to study agricultural geography, Jonnason's theory on agricultural landuse.
4. Determinants of agricultural pattern: physical and institutional, precision farming, use of modern technology.
5. Issues and policies in modern Agriculture: Impact of green revolution, GM Crops and agricultural hazards, food security, agricultural policies and their implication.

PAPER – GEO 104: ENVIRONMENTAL GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 104.1: BASICS OF ENVIRONMENT AND ECOLOGY

Course Outcome:

The living things interact with each other in various ways and with the non-living components that make up the environment in which we live. These non-living components include rocks, soils and water, as well as the atmosphere. All these interactions produce a complicated set of interrelationships and these interrelationships can take many forms. Thus, this paper on basics of environment and ecology prepares students for careers as leaders in understanding and addressing complex environmental issues from a problem-oriented, interdisciplinary perspective. Ecology is a scientific way of thinking about the world. This means that it involves a certain way of investigating, studying and writing about the systems. Student can learn the core concepts and methods from ecological and environmental perspectives and their application in environmental problem solving.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Concept of Environment, major elements of environment, functioning of environmental systems, role of biotic and abiotic elements.
2. Ecosystem: structure, function and processes, patterns of energy flow.
3. Biogeochemical cycles (Nitrogen, Carbon, Phosphorus), ecosystem metabolism, ecosystem process (photosynthesis and respiration), trophic levels (food web and chain) decomposition, ecosystem stability.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

4. Terrestrial ecosystems: Forest, Grassland, Desert and Agriculture.
5. Biodiversity: Genetic, species, community and ecosystem diversity; biodiversity uses, threats to biodiversity, biodiversity conservation.

GEO 104.2: LANDSCAPE ECOLOGY AND PLANNING

Course Outcome:

Landscape ecology is the study of the pattern and interaction between ecosystems within a region of interest, and the way the interactions affect ecological processes, especially the unique effects of spatial heterogeneity on these interactions. This paper provides students with an introduction to the discipline of landscape ecology. Thus, this paper focuses on the characteristic scale of spatial pattern; defining the elements of pattern; connectedness, fractal geometry, how these aspects of pattern are interconnected in landscapes, and how they vary. It may help students detecting, analyzing, or simulating landscape change; and modeling populations or communities in landscape mosaics and educate students for professional life.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Landscape: Definition, concept, nature and role, ecological description of landscape.
2. Structure of Landscape: Patches (shape, size, nature and boundary), corridors (type, network, matrix) and mosaics, habitat arrangement measuring metrices (Shanon Diversity Index and Simpson Diversity Index).
3. Landscape Dynamics: Energy flow, species movement, nutrient movement.
4. Anthropogenic Modification: Agricultural intensification, deforestation and development.
5. Landscape management and planning: Role of keystone species, conservation of fragmented habitats, sustainable landscape, and role of Traditional Ecological Knowledge (TEK) in conserving landscape. Role of GIS in landscape planning.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

PRACTICAL COURSES

(100 Marks)

PAPER –

GEO 195: HYDROLOGICAL TECHNIQUES AND SEDIMENTOLOGICAL ANALYSIS

Full Marks: 50 Credit: 4

GEO 195.1: HYDROLOGICAL TECHNIQUES

Course Outcome:

Students will develop skills in application of theoretical knowledge of hydrology. They will learn on field as well as laboratory techniques for estimating different hydrological attributes as for example rainfall, run off, infiltration etc. in order to construct water budget. Students are enabled to analyse magnitude frequency of different hydrological hazards like fold and droughts and their social and economic applications. This knowledge will help them in formulating various hydrological projects and their successful management.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Point rainfall analysis, area-depth curves, Thiessen network and Isohyetal methods to determine rainfall volumes.
2. Estimating infiltration using infiltrometre and other field techniques. Drawing infiltration curve.
3. Evaporation estimation: Use of evaporation pan and empirical equations using climatic data.
4. Runoff and discharge estimation: Curve Number methods for estimating runoff: area-velocity method for discharge estimate.
5. Construction of hydrograph, unit-hydrograph and rating curves.

GEO 195.2: SEDIMENTOLOGICAL ANALYSIS

Course Outcome:

Students will develop aptitude and abilities on different methods of sediment sampling from field. They will also be trained thoroughly on laboratory method and field method of sediment analysis. This will help them to understand various types of environment and process domain under which sediments were deposited. Thus they can develop skills for reconstructing past.

*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

1. Phi-scale of grain size distribution, texture analysis of sediment samples using standard techniques, statistical representation.
2. Form and shape analysis of pebble grade sediments.
3. Megascopic and microscopic examination of sediments.
4. Identification of sedimentary and bioturbation structures.
5. Sedimentary environmental facies analysis.

PAPER – GEO 196: THEMATIC MAPPING Full Marks: 50 Credit: 4

GEO 196.1: ENVIRONMENTAL MAPPING

Course Outcome:

Students will develop cartographic skills for constructing various thematic maps and foster their abilities in showing the spatial distribution of various environmental elements and their proper interpretation. This ability will help them to formulate environmental plans and to manage and conserve vegetation, soil, water etc.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Estimation and mapping of soil properties: texture, structure, moisture, colour, pH, organic matter, NPK, soil profile mapping.
2. Estimation of Water Properties: BOD, COD, Dissolved Oxygen, pH, suspended solid, turbidity and electric conductivity.
3. Ecological Micro- zonation Mapping.
4. Vegetation density mapping
5. Association between soil parameters, vegetation types and density.

GEO196.2: PHYSICAL AND SOCIAL THEMATIC MAPPING

Course Outcome:

Students will develop cartographic skills for constructing various thematic maps and foster their abilities in showing the spatial distribution of various physical as well as social elements and their proper interpretation. Skill of understanding spatial integration among physical and social elements will be developed to foster the abilities of holistic abilities.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Morphometry and Drainage Network Analysis of watershed.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

2. Mapping of farming practices: Crop-combination, diversification and cropping intensity.
3. Mapping of social vulnerability and social disparities, ethnic mapping.
4. Estimation and Mapping of Social Well-being, HDI, GDI, GEM.
5. Estimation of Human Poverty Index –(HPI-I and II) for developed and developing countries.

SUGGESTED REFERENCES

GEO101.1: Geotectonic

Holmes, Arthur (1978): *Holmes Principles Of Physical Geology*, Francis & Taylor.

Bloom, Arther L., 2003. Geomorphology – A systematic analysis of Late Cenozoic Landforms, 3rd Edn.

Chorley, R., Schumm, S. and Sugden, D.E. 1994. *Geomorphology*, Methuen, London: 605p.

Cook and Doorncamp. 1988. *Geomorphology in Environment Management*, London

Kale, V.S. and Gupta, A. 2001. *Introduction to Geomorphology*, Orient Longman Ltd., Hyderabad: 274p.

Keary, P. and Vine, M. 1997. *Global Tectonics*, 2nd edition, Blackwell Scientific Publications, Oxford: 302p.

Lowrie, W. (2007): *Fundamentals of Geophysics*, Cambridge University Press.

Ollier, C.D. 1981: *Tectonic Geomorphology*, Longman Scientific & Technical, London:

Summerfield, M.A. (Editor) 1991. *Global Geomorphology : An Introduction to the Study of Landforms*, John Wiley and Sons Ltd., New York: 560p.

Valdiya, K.S. 1998. *Dynamic Himalaya*, University Press (India) Ltd., Hyderabad: 178p

GEO101.2: Geomorphology

Bloom, Arther L., (2003): *Geomorphology – A systematic analysis of Late Cenozoic Landforms*, 3rd Edn.

Brutsaert, W. (2005): *Hydrology: An Introduction*, Cambridge University Press, Cambridge.

Chorley, R., Schumm, S. and Sugden, D.E. (1994): *Geomorphology*, Methuen, London: 605p.

Coch,N.K, (1994): *Geohazards: Natural and…* ,Prentice-Hall,Englewood Cliffs

Cook and Doorncamp. (1988): *Geomorphology in Environment Management*, London

Faniran, A. and Jeje, L.K. (1983): *Humid Tropical Geomorphology*, Longman, London:

Goudie,A.(Ed)(1990):Geomorphological Techniques,2nd edition,Allen UnwinCrows Nest(Australia).

Huggett,R(2006): Fundamentals of Geomorphology,Routledge,London.

Kale, V.S. and Gupta, A. 2001. *Introduction to Geomorphology*, Orient Longman Ltd., Hyderabad: 274p.

Knighton, D.1998 : *Fluvial Forms and Processes: A New Perspective*, Arnold, London: 385p.

Lal, D. S., 2003. Oceanography, 3rd Edn. 288p.

Morisawa, M. (editor) 1994. *Geomorphology and Natural Hazards*, Elsevier, Amsterdam: 355p.

Morisawa, M. 1985. *Rivers*, Longman, London: 222p

Murthy, K.S. 1998. *Watershed Management in India*, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p

Newson, M. 1992. *Land Water and Development, River Basin Systems and their Sustainable Management*, Routledge, London: 350p.

Ollier, C.D. 1981: *Tectonic Geomorphology*, Longman Scientific & Technical, London:

Paul, R.P. (2006): Invitation to Oceanography, 4th Edition, Jones and Bartlett pub.

Pethick, J. 1984. *An Introduction to Coastal Geomorphology*, Edward Arnold, London: 259 p.

Pirazzolia, P.A. (1996): Sea Level Changes: The Last 20000 years, Wiley, New York

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Pugh, D. (2004): Changing Sea Level: Effect of Tides, Weather and Climates, Cambridge University Press, Cambridge

Ritter,D.F.,Kochel,R.C.and Miller,J.R.(2006):Process Geomorphology,4th Edition, Waveland Press,N.Y.

Selby, M.J. 1985. *An Introduction to Geomorphology*, Clarendon, Oxford: 607p.

Sharma, H.S. 1987. *Tropical Geomorphology : A Morphogenetic Study of Rajashan*, South Asia Books, Jaipur: 124p.

Singh, S. (2008): Oceanography, Prayag Pustakalaya, Allahabad

Smith,K.(2004):Environmental Hazards, Assessing Risk and reducing Disaster, 4th Edition, Routledge, London.

Starkel, L. and Basu, S. 2000 *Rains, Landslides and Floods in the Darjeeling Himalaya*, Indian National Science academy, New Delhi: 168p.

Sverdrup, K.A and et. All (2005): The World's Oceans, McgawHill, New York.

Thomas,D.S.G.(Editor)(2008):Arid Zone Geomorphology: Process, Form and Change in Drylands, 2nd Edition,Wiley, Chichester.

Thornbury, W.D. (1969): *Principles of Geomorphology*, Wiley Eastern Limited, New Delhi: 594 p

Tinkler, 1985. *A Short History of Geomorphology*, Croom Helm Ltd., Beckenham: 315p

Trujillo, A.P and Thurmnan, H.V. (2007): Essential of Oceanography, 9th Edition, , Prentice Hall.

G E O 1 0 2 . 1 : O c e a n o g r a p h y

Boaden (et al.) (1982): *Introduction to Coastal Ecology*, Blackie.

Garrison, T.S. (2007*): Oceanography: An Introduction to Marine Science*, 6th Edition, BrooksCole, Chicago

Levinton, J.S. (1982): *Marine Ecology*, PrenticeHall.

Pinet, P.R. (2006): *Invitation to Oceanography*, Jones & Bartlett.

Sverdrup, K.A.; Duxbury, A.C. and Duxbury, A.B. (2005): *The world Oceans*, McGrawhill.

Thorson, G. (1971*): Life in the Sea*, World University Library, New York.

Vatal, and Sharma (1972): *Oceanography for Geographers*, Chaitanya publising house, Allahabad.

Wirthmann, A. (2000): *Geomorphology of the Tropics*, Translated by Busche, D. Springer-Verlag, Berlin: 225p.

Woodroffe, C. D. (2003): *Coasts: Form Processes and Evolution*, Cambridge University Press, Cambridge.

G E O 1 0 2 . 2 : H y d r o l o g y

Bedinent, P.B.et.al. (2008*): Hydrology and Floodplain Management*, Prentice Hall,Upper Saddle River, NJ07458.

Biswas,A.K. (1972*): History of Hydrology*, North Holland Pub.Cc. Amsterdam.

Boca Raton, F.L Viessman and Lewis (1996): *Introduction to Hydrology*, Harper Collins, Newyork.

Chow V.T., Maidment ,D.R. and Mays, L.W. (1988*): Applied Hydrology*, Mc Graw Hill, Newyork.

Dingman, SL. (2002): *Physical Hydrology*, 2nd Edition, Prientice Hall, EnglewoodCliffs

Hyot, W.G. and W. Langbain (1955): *Floods*, Prentice Hall University Press, Princeton.

Keith, D. and Mays,L.W. (2004): *Ground water hydrology*, 3rd Edition, Wiley, Chichester.

Kintede-Levario, H. (2007): *Design for Water: Rain Water Harvesting, Storm Water Catchment and Alternate Water Reuse*, New society publishers, Gabriola Island.

Mays, L.W. (1996): *Water Resources Handbook*, Mc Graw Hill, Newyork.

Murthy, K.S. (1998): *Watershed Management in India*, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p.

Pethick, J. (1984): *An Introduction to Coastal Geomorphology*, Edward Arnold, London: 259 p

Singh, V.P. and D.K. Frevest (2006): *Watershed Models*, CRC Press,

Todd, D.K. (2004): *Groundwater Hydrology*, 3re Edition, Wiley, Chichester

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO103.1: Climatolog

Barry, R.G. and Chorley, R.T. (1992): *Atmosphere, Weather and Climate*, 6th edition, Routledge, London: 392p.

Critchfield, H.J. (1983): *General Climatology*, 4th edition, Prentice Hall India Ltd., New Delhi: 453p.

Das, P.K. (1995) : *Monsoons*, 2nd edition, National Book Trust, New Delhi: 347p.

Lal, D.S. (1993) : *Climatology*, 3rd edition, Chaitanya Pub. House, New Delhi: 412p.

Linacre, E. and Geerts, B. (1997): *Climates and Weather Explained*, Routledge, London: 464p.

Lutgens, F.K.. and Tarbuck, E.J. (1998): *The Atmosphere: An Introduction to Meteorology*, 7th edition, Prentice-Hall

Moran, J.M. and Morgan, M.D. (1997) : *Meteorology: The Atmosphere and the Science of Weather*, 5th edition, Prentice-Hall Inc., Upper Saddle River: 530p.

GEO103.2: Soil and Agricultural Geography

Bhattacharjee, J.C. (1997): *Introduction to Pedology*, Oxford & IBH.

Biswas, T.D. and Mukherjee, S.K. (1987): *Textbook of Soil Science*, Tata-McGraw-Hill, 314p.

Boul, S.W. (2003): *Soil Genesis & Classification*, Wiley-Blackwell.

Brady, N.C & Well, R.R., (2005): *Nature and Properties of Soils*, (3rd. Indian Reprint); Pearson PHI.

Daji, Kadam, Patil: (Revised edn.) (1996*): A Text Book of Soil Science;* Media Promoters & Pub. Pvt. Ltd.

Das, P.C. (2002): *Soils of India*, Kalyani Pub.

Davies, D.B.; Eagle, D.J. and Finney, J.B. (1993): *Soil Management*, Farming Press.

De, N.K. & Ghosh, P. (1993): *A Study In Soil Geography*, Shribhumi.

Fitzpatrick,E.A. (1983): *Soils-Their Formation, Classification and Distribution*, Longman Group Ltd.

Foth, H.D. (1990): *Fundamentals of Soil Science*, 8th edition, John Wiley and Sons, New York: 360p.

Gerrard, J. (2000): *Fundamentals of Soils*, Routledge.

Joffe, J.S. (1953): *The ABC of Soils*, (2nd.Edn) Oxford Book Co.

Miller, R.W. & Donahue, R.L. (1997): *Soils in Our Environment*, (7th. Edn); PHI.

Mitchell, C. W. (1991): *Terrain Evaluation: An Introductory Handbook to the History, Principles and Methods of practical terrain assessment*; Longman Scientific & Technical.

Morgan, R.P.C. (1995): *Soil Erosion and Conservation*, 2nd edition, Longman, London: 198p.

Piegorsch, W.W & Bailer, A.Z. (2005): *Analyzing Environmental Data*; John Wiley and Sons.

Sarkar, Dipak. (2003*): Fundamentals and Applications of Pedology*, Kalyani Pub.

Sehgal, J. (1996): *Pedology- Concepts & Applications*, Kalyani Pub.

Singer, M.J. and MuMs, D.N. (1996): *Soils: An Introduction*, Prentice Hall, London: 480p.

Wild, A. (1993): *Soils and the Environment: An Introduction*, Cambridge University Press, Cambridge: 287p.

Hussain, Majid (2003): *Agricultural Geography*, Anmol Publications Pvt Ltd, India.

Grig, B, David (1995): *An Introduction to Agricultural Geography*, Routledge,

Gautam, Alka (2012): *Agricultural Geography*, Sharda Pustak Bhawan, Allahabad.

Singh, J. S and Dhillon, S. S. (2004): *Agricultural Geography*, Tata McGraw-Hill Education.

Shiva, Vandana (1991): *The Violence of Green Revolution: Third World Agriculture, Ecology and Politics***,** Zed Books.

Joshi, V. Mahesh (1999): *Green revolution and its impacts.* New Apcon, New Delhi.

Kamath M.G. (2000): *A dictionary of Indian agriculture,* Allied Publishers New Delhi.

Jha D N (2001): *Agriculture and Regeonal Planning*, Mittal Publications New Delhi.

Deininger Dina and Umali Maguire Charles (2006): *Agriculture in liberalizing economics: changing roles for governments*, World Bank Washington.

Rao C H Hanumantha (2005): *Agriculture, food security, poverty, and environment: essays on post-reform India*, Oxford University Press New Delhi.

Report: Asian Development Bank (2010): *Agriculture, food security, and rural development*, Oxford University Press New Delhi.

Bhatia B.M. (2008): *Indian agriculture: a policy perspective,* Sage Publications India New Delhi.

Agrawal A.N (2005): *Indian agriculture: problems, progress and prospects,* Vani Educational Books New Delhi

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO104.1 : Basics of Environment and Ecology

Alexander, D. (1993): *Natural Disasters*, Research Press, New Delhi: 619p.

Allaby, M. (1996): *Basics of Environmental Science*, Routledge, London: 297p.

Chapman J.L. and Reiss, M.J. (1993): *Ecology: Principles and Applications*, Cambridge University Press.

Chapman, D. (1994): *Natural Hazards*, Oxford University Press, Melbourne: 174p.

Choudhuri, A.B. (2007): *Endangered Wetland*.

Elsom, D.M. (1992): *Atmospheric Pollution: A Global Problem*, 2nd edn, Blackwell Pub. Co., London: 422p.

Farmer, A. (1997): *Managing Environmental Pollution*, Routledge, London: 246p.

Marsh, W.M. and Grossa, J.M. (1996): *Environmental Geography: Science, Landuse and Earth Systems*, John Wiley & Sons.

Park, C. (1998): *The Environment: Principles and Applications*, Routledge, London:

Pickering, K. and Owen, L.A.(1997) : *An Introduction to Global Environmental Issues*, 2nd edition, Routledge, London.

Prabhakar, V.R. (1998): *Social and Community Forestry*, Indian Pub. Distrb., New Delhi: 224p.

Roberts, N. (editor) (1994): *The Changing Global Environment*, 3rd edition, Blackwell Pub. Co., London: 531 p.

Nick Middleton: The Global *casino:an introduction to environmental issues, Arnold* ,A member of the Hodder Headline Group LONDON Distribuced in rhe Uniced Scaces ofAmerim by Oxford University Press Inc., New York.

Robert M. May and Angela R. McLean(2007): Theoretical Ecology:Principles and Applications,Oxford UniversityPress

Barry cox; Peter Dale Moore(2010): Biogeography an ecological and evolutionary approach ,Hoboken, NJ : wiley

GEO104.2: Landscape Ecology and Planning

Turner, Monica G., Gardner, Robert H., O'Neill, Robert V.:Landscape Ecology in Theory and Practice Pattern and Process,Springer

Farina, Almo:Principles and Methods in Landscape Ecology Towards a Science of the Landscape Series: Landscape Series, Vol. 3,Springer

Forman R.T.T.: Land mosaic. The ecology of landscape and region. Academic press Cambridge UK

Vink A.P.A.: Landscape ecology and land use, Longman, London & New York

Turner M.G. :Landscape Heterogeneity and disturbance

Springer-Verlag , Germany

Turner M.G. & Gardner R.H .: Quantitative method in landscape ecology Springer-Verlag New York

Frohn Robert C. (1997): Remote Sensing for Landscape Ecology: New Metric Indicators for Monitoring, Modeling, and Assessment of Ecosystems, Taylor & Francis

Rubenstain, J. M. and Becon, J. M. (1990): Cultural Geography, John Wiley and Sons Inc., New York.

Spencer, J. E. and Thomas, W. L. (1969): Cultural Geography, John Wiley

and Sons Inc., New York.

Jones, Emrys (1965): Human Geography, Chatto and Windies, London. Jones, E. and Eyles, J. (1977): An Introduction to Social Geography, Oxford University Press, Oxford

Hutchinson and Smith, D. (1996) : Ethnicity : Oxford University Press, Delhi

Jordon and Lester, G. (1995) : The Human Mosaic, Harper and Row, New York

Knoy, P. L. (1988) : Social Well-being – A Spatial Perspective, Oxford University Press, London

Gadgil Madhav , Guha Ramachandra : The Use and Abuse of Nature: incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press.

Wu jianguo and Hobbs Richard j. (2007): Key Topics in Landscape Ecology, Cambridge University Press

GEO195.1: Hydrological Techniques

Bedinent, P.B.et.al. (2008*): Hydrology and Floodplain Management*, Prentice Hall,Upper Saddle River, NJ07458.

Biswas,A.K. (1972*): History of Hydrology*, North Holland Pub.Cc. Amsterdam.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Boca Raton, F.L Viessman and Lewis (1996): *Introduction to Hydrology*, Harper Collins, Newyork.

Chow V.T., Maidment ,D.R. and Mays, L.W. (1988*): Applied Hydrology*, Mc Graw Hill, Newyork.

Dingman, SL. (2002): *Physical Hydrology*, 2nd Edition, Prientice Hall, EnglewoodCliffs

Hyot, W.G. and W. Langbain (1955): *Floods*, Prentice Hall University Press, Princeton.

Keith, D. and Mays,L.W. (2004): *Ground water hydrology*, 3rd Edition, Wiley, Chichester.

Kintede-Levario, H. (2007): *Design for Water: Rain Water Harvesting, Storm Water Catchment and Alternate Water Reuse*, New society publishers, Gabriola Island.

Mays, L.W. (1996): *Water Resources Handbook*, Mc Graw Hill, Newyork.

Murthy, K.S. (1998): *Watershed Management in India*, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p.

Pethick, J. (1984): *An Introduction to Coastal Geomorphology*, Edward Arnold, London: 259 p

Singh, V.P. and D.K. Frevest (2006): *Watershed Models*, CRC Press,

Todd, D.K. (2004): *Groundwater Hydrology*, 3re Edition, Wiley, Chichester

GEO195.2: Sedimentological Analysis

Maclane, M (1995): Sedimentology, Oxford University Press, New York, Oxford.

Folk, L. Robert (1978): Petrology of sedimentary rocks, Hemphill Publishing Company, Austin, Texas.

Collinson, J.D and Thompson, D.B. (1989): Sedimentary structures, CBS Publishers and Distributors, New Delhi.

Miall, A.D. (2006): Geology of the fluvial deposits: Sedimentary facies, basin analysis and petroleum geology, Springer.

Reading, H.G. (1996) Sedimentary environments: Processes, Facies and Stratigraphy, Blackwell Science.

Sengupta, S (1994): Introduction to sedimentology, Oxford and IBH Publishing New Delhi

Lindholm Roy C. (1986): A practical approach to sedimentology, C B S Publishers and Distributors New Delhi

GEO196.1: Physical and Social Thematic Mapping

Basu, R. and Bhaduri, S. (2007): Contemporary Issues and Techniques in Geography, Progressive Pub.

Dent., D.B (1993): *Cartography: Thematic map design*, Sea Brown Publishers

Misra, R.P and Ramesh, A (1989): *Fundamental of Cartography*, Concept, Delhi

Monkhouse F.J. and Wilkinson, H.R. (1971): *Maps and Diagrams: Their Compilation and Construction*, B.I. Publications Private Limited, New Delhi: 527p.

Nag, P and Dutta, G.K (1992): *Thematic Cartography and Remote Sensing*, Concept

Wilford, J,N (2000): *The Map Makers*, A.A. Knopf

GEO196.2: Environmental Mapping

William J. Sutherland (2006): Ecological Census Techniques Edited by Cambridge 2nd edition

Lagacherie Philippe, McBratney Alex and Voltz Marc(2006) : Digital Soil Mapping :An Introductory Perspective,Elsevier

Scull, P.; J. Franklin, O.A. Chadwick & D. McArthur (June 2003). Predictive soil mapping - a review. Progress in Physical Geography ,Sage Publications.

Monkhouse, F.J. 1971: Maps and Diagrams, Methuen, London

Singh, R.L. and Singh, R.P.B. 1992: Elements of practical Geography.

Robinson, A.H., Morrison, J.L., Muehrcke, P.C., Kimerling, A.J. and Guptill, S.C. 1995: Elements of Cartography, John Wiley and Sons, New York.

Basu, R. and Bhaduri, S. ed, 2007: Contemporary Issues and Techniques in Geography, Progressive Publishers, Kolkata.

Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Semester- II (300 Marks)

THEORETICAL COURSES (200 Marks)

PAPER- GEO 201: ENVIRONMENTAL APPROACHES &APPLICATION

Full Marks: 50 Credit: 4

GEO 201.1: ENVIRONMENTAL ETHICS AND REGULATIONS

Course Outcome:

Environmental Ethics examines the ways we supposed to value the environment and the non-human inhabitants of the earth. It examines the moral relationship between human beings and non-human beings (including the environment itself). This paper will consider the implications of this examination for an ethical life. It demonstrates the ethical conduct in all scientific activities. The paper includes both philosophical bases(moral obligations, the nature of value) and policy measures to be adopted for the betterment of the environment and earth. The students will be able to explain and apply principles of environmental ethics and apply philosophical concepts used in environmental ethical decision-making. They may apply theories and concepts to particular cases, and ability to provide critical assessment of arguments.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Environmental ethics and education; Concept, development of environmental philosophy, Ecocentrism and Anthropocentrism, the land ethic (Aldo Leopold), Gaia concept, Eco-feminism. Formal and non-formal environmental education, Tbilisi conference, environmental awareness.
2. Approaches to conservation of environment: Landscape ecology and ethno-ecology, environmental stewardship.
3. Environmental Impact Assessment (EIA), Environmental Management Planning (EMP), Environmental Performance Assessment (EPA).
4. Global Environmental Issues: Stockholm Conference, the Earth Summits, Inter-Governmental Panel for Climate Change (IPCC).
5. Environmental Laws in India: Wild life Act, Forest Acts, Environmental Protection Act, National Environmental Tribunal Act.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO 201.2: ENVIRONMENTAL ENGINEERING

Course Outcome:

Students will learn about the necessity and mechanism of waste water treatment and understand the procedures to manage air and noise pollution. This course aims to enable the learners to participate in making of pollution free environment. This fundamental understanding and knowledge help them to get engaged in various non-government and government initiatives in this regard.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Definition and domain of Environmental Engineering, Waste water treatment: Primary, Secondary and Tertiary treatment; Disposal.
2. Sludge treatment; Solid (Municipal) waste management, Hazardous waste management.
3. Air pollution; Indoor pollution, Air sampling and measurement, Air pollution control technologies.
4. Noise Pollution; Measurement of noise, Biophysical impacts, Mitigation technologies.
5. Arsenic and Fluoride Pollution; Spatial distribution, Impacts, Mitigation.

PAPER– GEO 202: POPULATION & DEVELOPMENT

Full Marks: 50 Credit: 4

GEO 202.1: POPULATION GEOGRAPHY

Course Outcome:

Through this module students will learn the various aspects of population growth process, its impact on economy, society and politics. Various policy regarding the control and development of human resources, their necessity, and outcome will be understood. This understanding will help them to take part in various govt schemes and programmes relating to population issues.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Scope, development and recent trends of population geography and its interdisciplinary nature.
2. Population composition and structure: Types, spatial and temporal variation and determinants of age, sex, literacy and rural-urban ratio.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

3. Demographic Transition: Facts, theories, different waves. Its social, political and economic impacts.
4. Population projection: Concept, types and methods.
5. Population- resource relationship: Critical analysis of over, under and optimum population, population resource regions, carrying capacity and change in carrying capacity over time. Population policy issues, population equilibrium.

GEO 202.2: POPULATION & DEVELOPMENT

Course Outcome:

The course is designed to give an account of the population and development debate including some of the measures of human development measurements. Students will also aware about the migration pattern of people from one place to other. They will be able to calculate the Human Development Index and other indices to assess the quality of human population. Any planning activities relating to economy and population need such knowledge to proper implementation and outcome.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. The fate of Millennium development goals, Human development and gender issues: HDI, GDI, GEM-concept, measures and criticism, disparities
2. Population growth: Link to economic development, resource scarcity, food security and sustainable development. Concept of logistic and exponential growth
3. Population and development integration with special reference to India
4. Theories and approaches of population growth and regulation: Malthus, Marx and Neo-Malthusiasm
5. Migration: Concept of social mobility, concept, types, patterns, theories (Ravenstein, Lee, Louis and Zelinsky), consequences.

PAPER– GEO 203: REGIONAL GEOMORPHOLOGY & RESOURCE MANAGEMENT
Full Marks: 50 Credit: 4

GEO 203.1: REGIONAL GEOMORPHOLOGY OF INDIA AND WEST BENGAL

Course Outcome:

Students will be able to learn about the regional boundaries of geomorphological regions in India and also understand the physiographic diversity of India and West Bengal, their unique characteristics and regional importance.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Geomorphology of Darjeeling Himalaya and Terai Region with special reference to landslides and alluvial fans.
2. Tectonics, drainage and geomorphology of Western Ghats with special reference to Deccan Trap.
3. Geomorphology and soil-landform assemblages of Chhotanagpur Plateau and its adjacent areas of West Bengal, Geomorphology of Rajasthan desert with special reference to Marusthali.
4. Form, process and evolution of Ganga, Subarnarekha and Godavari delta.
5. Tectonics and Geomorphology of the Islands of Bay of Andaman and Nicobar, Rameswaram and Laksha-Minikoi and Amindivi.

GEO 203.2: LAND, WATER AND FOREST: CONFLICT AND CONSERVATION

Course Outcome:

Students will acquire knowledge about primary resources, their conflicts in uses, availability and need for conservations. They will understand the environmental and economic services of land, water and forests. It will enhance their ability of being a resource planner.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Land class systems, land use capability classes.
2. Land degradation, land conservation and land improvement.
3. Water assessment: water quality, water availability and scarcity of water, saline ground water in coastal areas, functions of wetlands.
4. Characterization diversity of rainforests and mangrove forests
5. Degradation and management of forest, social forestry and agro-forestry.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

ELECTIVE PAPERS (CBCS)

PAPER- C-GEO 204: Resource Management and Earth System science

Full Marks: 50 Credit: 4

C-GEO 204.1: RESOURCE AND ITS MANAGEMENT

Course Outcome:

The course is designed for basic understanding for the students from different discipline other than Geography. It includes the fundamental concepts of natural and human resources and their management and planning strategies. On completion of this course, the students get a founding knowledge of the natural resources in environment.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Geography as a science of synthesis; social relevance of geography
2. Resource assessments, management and mapping
3. Human resource development in backward region.
4. Indicators of livelihood security.
5. Microlevel resource planning in watershed scale.

C-GEO 204.2: EARTH SYSTEM SCIENCE

Course Outcome:

The course is designed with an interdisciplinary approach for the students from outside Geography. It includes the fundamental ideas of Geotectonics, atmospheric composition and processes, the surface geomorphology and sea bathymetry. On completion of this course, these fundamental concepts will help the students from other branches to have a basic idea of geosciences.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Earth surface processes and Geo-tectonics.
2. Composition of atmosphere and atmospheric processes.
3. Bottom relief of major oceans; temperature and salinity distribution.
4. Principles of mapping and applications.
5. Regional geomorphology of West Bengal.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

PRACTICAL COURSES (100 Marks)

COURSE NO. – GEO 295: STATISTICAL TECHNIQUES

Full Marks: 50 Credit: 4

Course Outcome:

The course, split into two units, corresponds to the basic and advance statistics, is a starting point of escalating the statistical analytical skills. It includes the founding concepts of probability distribution including the advanced linear modelling with matrix solution to the multivariate linear and non-linear model. These concepts are essential for augmenting the analytical skills of any beginner in Geography that includes both physical and social aspects of academic discipline. Upon completion of this course, the students get the benefit of having a strong mathematical and statistical analytical skills.

GEO 295.1: BASIC STATISTICS IN GEOGRAPHY

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Measurement in Geography: Nominal, ordinal, interval and ratio measurement.
2. Concept of covariance, correlation and regression: Bi-variate analysis - linear, exponential, Product moment correlation, Spearman's Rank correlation, correlation matrix, partial correlation, residuals - mapping of residuals.
3. Probability distribution: addition and Law of multiplication, concept of probability distributions (binomial distributions, normal probability distribution), properties of normal curve.
4. Hypothesis testing: Formulation, Rejection rule, one and two tailed tests, significance level, degrees of freedom type I and type II errors, Standard Error. Different types of significance test for various purposes. Chi- square test, student's t- test.
5. Sampling techniques for geographical analysis.

GEO 295.2: ADVANCED QUANTITATIVE METHODS

Course Outcome:

The course, split into two units, corresponds to the basic and advance statistics, is a starting point of escalating the statistical analytical skills. It includes the founding concepts of probability distribution including the advanced linear modelling with matrix solution to the multivariate linear and non-linear model. These concepts are essential for augmenting the analytical skills of any beginner in Geography that includes both physical and social aspects of academic discipline. Upon completion of this course, the students get the benefit of having a strong mathematical and statistical analytical skills.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Analysis of Variance: Objectives; One-way and Two-way ANOVA.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

2. Fitting Second Degree Polynomial curves to bivariate geographical data and testing by ANOVA.
3. Multiple Regression: Linear multiple regression equation, Multiple and partial correlation coefficient.
4. Elementary multiple regression modeling techniques: Stepwise variable entry method, Path Analysis.
5. Model building techniques

PAPER- GEO 296: REMOTE SENSING AND COMPUTER APPLICATION

Full Marks: 50 Credit: 4

GEO 296.1: PRINCIPLES OF REMOTE SENSING AND AERIAL PHOTOGRAPHY

Course Outcome:

The course content is focused on basic understanding of satellite remote sensing and aerial photography. Basic principles of satellite motion and sensor parameters including the principles of air photo help the students to formalize with the modern space based analytical techniques. Upon completion of this course, the students will get benefit from rigorous practice and comprehensive theories.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Physics of Remote Sensing: Electro Magnetic Radiation (EMR), Radiation laws (wavelength-frequency-energy relationship of EMR numerical problems).
2. Satellite System: Keplers's Laws, Major-Semi-major axis, eccentricity, velocity (Numerical problems).
3. Satellite Sensors: Concept of IFOV, resolution and determination of pixel size, referencing scheme of satellite system (path/row calculation).
4. Basics of Aerial Photograph: Basics geometry of aerial photograph, determination of scale and height, Distortions, Image parallax, Relief displacement.
5. Stereoscopy and Aerial Photo Interpretation: Stereoscopy, Pseudoscopy, Mirror Stereoscope, mosaic, edge information, mapping of Physical and Cultural features with the Air photo interpretation keys: shape, size, pattern, tone, texture, shadow, site and associations.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO 296.2: COMPUTER BASICS AND APPLICATIONS

Course Outcome:

The course is designed to get a comprehensive knowledge of fundamentals of computer application. It also includes the exercise from Microsoft excel and SPSS regarding the basic statistical computation. The course, therefore, lay the foundation for software-based computing skills. Upon completion, the students get adequate level of skills to do statistical analysis.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Computer components: Hardware and software: CPU, Input and Output devices; Common computer languages, System Software, Application Software and Operating Systems.
2. Representation of data; Numbering Systems; Binary Arithmetic; Basic Logic Gates; Boolean Logic and Reduction Techniques.
3. Computation, Storing and Formatting Spreadsheets: Computation of Rank, Mean, Median, Mode, Standard Deviation, Moving Averages, Sample Variation; Derivation of Correlation, Covariance and regression; Selection of technique and interpretation using MS-Excel and SPSS Environment.
4. Regression, correlation, curve fitting, multivariate analysis.
5. Internet Surfing- generations of data and extraction of information for power-point presentation, Manipulation and editing of graphic files.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

SUGGESTED REFERENCES

GEO201.1: Environmental Ethics and Regulation

Farmer, A. (1997): *Managing Environmental Pollution*, Routledge, London: 246p.

Ghosh, S.K. (2007): *Environmental Act in India*,

Joshi, A. (2008): *Global Environmental Agreements: Insight and Implication*, Eastern Book Corporation

Marsh, W.M. and Grossa, J.M. (1996): *Environmental Geography: Science, Landuse and Earth Systems*, John Wiley & Sons.

Maryk, Theodore (1996): *Major Environmental Issues Facing 21st Century*, Prentice Hall

Park, C. (1998): *The Environment: Principles and Applications*, Routledge, London:

Pickering, K. and Owen, L.A.(1997) : *An Introduction to Global Environmental Issues*, 2nd edition, Routledge, London.

Prabhakar, V.R. (1998): *Social and Community Forestry*, Indian Pub. Distrb., New Delhi: 224p.

Roberts, N. (editor) (1994): *The Changing Global Environment*, 3rd edition, Blackwell Pub. Co., London: 531 p.

Santra, S.C. (2001): *Environmental Science*; New Central Book Agency, Kolkata.

GEO201.2: Environmental Engineering

Brady,N.C. and Well, R.R. (2005): *The Nature and Properties of Soil*, Pearson Education, Singapore.

Masters, G .M. (1991): *Introduction to Environmental Engineering and Sciences*, Prentice Hall India Ltd. New Delhi:

Nazaroff, W.W. and Alvarej, C.L. (2001*): Environment Engineering Science*; John Wiley & Sons, Newyork.

Pielou, E.C. (1975): *Ecological Diversity*, John Wiley & Sons, Newyork

Schwab,G.O. et.al. (1993): *Soil and Water Conservation Engineering*, 4th Edition, John Wiley & Sons, Newyork

Sing,V.P. Yavada,R.N.(2003): *Environmental Pollution*, Allied Publishers Pvt. Ltd. New Delhi.

Vesilind, P.A. and Morgan, S.M. (2004): *Introduction to Environmental Engineering* (2nd Edition), Thomson, Australia.

GEO202.1: Population Geography

Binde and Kanitkar (2000): *The Principle of Population Studies*, Himalaya Publication

Chandna, R.C. (1998): *Geography of Population*, Rawat, New Delhi.

Clarke, J.I. (1973): *Population Geography*, Pergamon press, Oxford

Hassan, Mohammad. Izhar, (2005): *Population Geography*, Rawat publication, Jaipur

Hussain, M. (1994): *Human Geography*, Rawat Pub. Co., New Delhi: 485p.

Mitra, A. (1978): *India's Population (Vol. 1 and 2),* Abhinav, New Delhi

Premi, M.K.(2006): *Demography and its exposition*, Jwahar Publication, New Delhi

Majumdar, P.K (2010): Fundamentals of Demography, Rawat publication, Jaipur

Mukherji, S. (2013): Migration in India, Rawat publication, Jaipur

Dyson, T. (2010): Population and Development, Rawat publication, Jaipur

GEO202.2: Population and Development

Deshpande, Ashwini. (2007): *Globalization and Development: A Handbook Of New Perspectives*; Oxford University Press, N Delhi.

Dreze, Jeaw and Sen, A. (2002): *India: Development and Participation*, Oxford University Press

Gould, W. T. S. (2009): *Population and Development* (Series - Routledge Perspectives on Development); Taylor & Francis.

Nag, Prithvish; Kumar, Chandra Shekhar and Sengupta, Smita. (2001): *Environment, Population and Development*; Concept Publishing Company.

Ranjan, Alok. (1999): *Population And Development: The Indian Perspective*; Universal Publishers.

Shandilya, T. K. (1995): *Population Problem and Development*; Deep & Deep Publications.

Srivastava, A. K. (2004*): Population Development, Environment and Health*; Aph Publishing Corporations.

Sroaff, Meera. (2004): *Population and Sustainable Development*; Adhyayan Publishers and Distributors.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Youngs, G (2001); Globalization, Communication and Technology, Cambridge
Parr-S,F and Kumar, A.K (2005): Readings in Human Development, Oxford University Press, New Delhi
Morris, a (1998):Geography and Development, University College London Press, London

GEO203.1: Regional Geomorphology of India and West Bengal

Ahmad, Enayat. (1972): *Coastal geomorphology of India*; Orient Longman.

Biswas, A. (1987): *Laterites and lateritoids, Explorations in the tropics*: V.S. Datye et. al., Prof. K.R.Dikshit felicitation Committee, Pune, PP.137-140.

Mukhopadhyay, S.C: *Geomorphology Of The Subarnarekha Basin: The Chota Nagpur Plateau (eastern India*, the University of Burdwan,

Rawat, T. (2008*): Environment of the Himalayas*, Eastern Book Corporation

Sehgal, J and Blum, W.E et al. (1998): *Red and Lateritic Soils*, Oxford and IBH pub.

Sharma, Hari Shanker. (1982): *Perspectives in Geomorphology*; Concept.

Sharma, H. S. (1991): *Indian Geomorphology,* Concept Publishing Company.

Starkel, L. and Basu, S. 2000 *Rains, Landslides and Floods in the Darjeeling Himalaya*, Indian National Science academy, New Delhi: 168p.

GEO203.2: Land, Water and Forest: Conflict and Conservation

De, N.K and Jana, N.C (1997): The Land: A Multifaceted Appraisal and Management, Sribhumi Publishing Co.

FAO (1974): A Framework for Land classification; Soil Bulletin No. 32, FAO, Rome.

FAO (1976): Approach to Land classification; Soil Bulletin No. 22, FAO, Rome.

Human Resource Development (2008): Issues on Ecosystem and Environment, UNDP.

Saberwal Vasant K. Rangarajan Mahesh (2003): Battles over nature : science and the politics of conservation, Permanent Black Delhi.

Singh J S Singh S P Gupta S R (2008): Ecology environment and resource conservation, Anamaya publishers New Delhi.

Rangaranan Mahesh: Fencing the forest : conservation and ecological change in india's central provinces 1860-1914, Oxford University Press Oxford.

Desai Mamata (2008): Environmental conservation : management and development : the sustainable approach, acb publications Kolkata.

Yasmi Yurdi (201o): Conflict over forests and land in Asia Impacts, causes, and management, The Centre for People and Forest, RECOFTC: Website: www.recoftc.org.

C-GEO 204.1: Resource and its Management

A. P. Subudhi, B. S. Sokhi, Dr. P. S. Roy (2001): *Remote Sensing and GIS: Application in Urban and* , Government of India, – Urbanization

Chris Rowley (2012): Human *Resource Management in the Asia-Pacific Region: Convergence Revisited*, Routledge.

Christian M. Stracke (2011): Competence Modelling for Human Resources Development and European Policies: Bridging Business, Education and Training; E-competences Tools, GITO mbh Verlag,

Daniel Maxwell (2000): *Urban Livelihoods and Food and Nutrition Security in Greater Accra, Ghana*, Intl Food Policy Res Inst, - Health & Fitness

Deep Ford, Crescenzo Dell'Aquila, Piero Conforti (2007): *Agricultural Trade Policy and Food Security in the Caribbean: Structural Issues, Multilateral Negotiations and Competitiveness*, Food & Agriculture Org., - Business & Economics

Eric Craswell, Mike Bonnell, Deborah Bossio, Siegfried Demuth, Nick van de Giesen (2007): *Integrated Assessment of Water Resources and Global Change*: *A North-South Analysis,* Springer Science & Business Media,

H. W. Shyamalie and A. S. Saini (2011): *Socio-Economic Status and Livelihood Security of Women in the Hills of India and Sri Lanka,* Readworthy.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Isobel W. Heathcote (2009): *Integrated Watershed Management: Principles and Practice*, John Wiley & Sons, - Business & Economics
K. V. Sundaram, M. Moni, Mrityunjay M. Jha (2004): *Natural Resources Management and Livelihood Security: Survival Strategies and Sustainable Policies*, Concept Publishing Company, - Sustainable agriculture
Long-term Strategy for Human Resources Development: Food, Agriculture and Natural Resources by Southern African Centre for Cooperation in Agricultural and Natural Resources Research and Training, 1997
Lorraine Corner: *Poverty alleviation and human resources development*
Maiti, R.K.(2016): *Modern Approaches to Fluvial Geomorphology*, Primus Books, New Delhi, 221p.
Mark N.K. Saunders and Paul Tosey (2015): *Handbook of Research Methods on Human Resource Development*, Edward Elgar Publishing.
Michael Zanko (2002): *The Handbook of Human Resource Management Policies and Practices in Asia-Pacific Economies*, (Volume 1), Edward Elgar Publishing.
Murthy, K.S. (1998): *Watershed Management in India*, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p
Prashant K Srivastava, Saumitra Mukherjee, Manika Gupta, Tanvir Islam (2011): *Remote Sensing Applications in Environmental Research*, Springer.
Rob F. Poell, Tonette S. Rocco, Gene L. Roth (2014): *The Routledge Companion to Human Resource Development*, Routledge.
S. Sankar, P. C. Anil, M. Amruth (2000): *Criteria and Indicators for Sustainable Plantation Forestry in India*, CIFOR, – Eucalyptus
Thomas N. Garavan, Alma M. Mccarthy, Michael J. Morley (2016): *Global Human Resource Development: Regional and Country Perspectives*, Routledge.
Vijay P. Singh, Ram Narayan Yadava (2003): *Watershed Management*, Allied Publishers.

C-GEO 204.2: Earth system science

Boaden (et al.) (1982): *Introduction to Coastal Ecology*, Blackie.
Chicago Levinton, J.S. (1982): *Marine Ecology*, PrenticeHall.
Garrison, T.S. (2007): *Oceanography: An Introduction to Marine Science*, 6thEdition, BrooksCole,
K S Valdiya, (2010), *The Making of India Geodynamic Evolution* by, Macmillan
Maiti, R.K.(2016): *Modern Approaches to Fluvial Geomorphology*, Primus Books, New Delhi, 221p.
P S Chakraborti and Snjai Nag (2016*), Rivers of West Bengal : Changing scenario*, Kolkata, 225p.
Paul Ashis kr. (2002), *Coastal Geomorphology and Environment*, ACB Publications, Kolkata, 582p
Pinet, Paul. (2006*): Invitation to Oceanography*, Jones & Bartlett.
Sverdrup, K.A.; Duxbury, A.C. and Duxbury, A.B. (2005): *The world Oceans*, McGrawhill.
Thorson, G. (1971): *Life in the Sea, World University Library*, New York.
Vatal, and Sharma (1972): *Oceanography for Geographers*, Chaitanya publising house, Allahabad.
Wirthmann, A. (2000): *Geomorphology of the Tropics*, Translated by Busche, D.Springer-Verlag, Berlin: 225p.
Woodroffe, C. D. (2003): *Coasts: Form Processes and Evolution*, Cambridge University Press, Cambridge.
Dent., D.B (1993): *Cartography: Thematic map design*, Sea Brown Publishers
Misra, R.P and Ramesh, A (1989): *Fundamental of Cartography*, Concept, Delhi
Monkhouse F.J. and Wilkinson, H.R. (1971): *Maps and Diagrams: Their Compilation and Construction*, B.I. Publications Private Limited, New Delhi: 527p.
Nag, P and Dutta, G.K (1992): *Thematic Cartography and Remote Sensing*, Concept
Wilford, J,N (2000): *The Map Makers*, A.A. Knopf

GEO 295.1: Basic Statistics in Geography

Alvi. Z. (1995*): Statistical Geography: Methods and Applications*, Rawat Publication, New Delhi
John, C. D. (2002): *Statistics and Data Analysis in Geology*; John Wiley & Sons.
Mehmood, A (1977): Statistical methods in Geographical studies, Rajesh Pub. New Delhi
Pal, S.K. (1999): *Statistics for Geoscientists*, Concept publishing Company, New Delhi: 423p.
Sarkar, A. (2006): *Practical Geography; A systematic approach*, Orient Longman Ltd, Hydrabad,
Silk, J. (1979): *Statistical techniques in Geography*, George Allen and Unwin, London: 276p.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Swan, A.R.H.; Sandilands, M. and McCabe, P. (1995): *Introduction to Geological Data Analysis*, Blackwell. 446p.
Walford, P. (1995): *Geographical Data Analysis*, John Wiley and Sons Inc., New York: 446p.

GEO 295.2: Advanced Quantitative Methods

Aralinghaus,S.L and Griffity, A.(1995): *Practical Handbook of Spatial Statistics*, CRC Press
Brien, O.L. (1992*): Introducing Quantitative Geography: Measurement, Method and Generalized linear Models*, Routledge.
Clark, W.A.V and Hosking, P.L. (1986*): Statistical Methods for Geographers*, Wiley and Sons.
Fotheringham, S. A and Brunsdon, C and Charlton, M. (2000): *Quantitative Geography: Perspectives on Spatial Data Analysis*, SAGE.
Haining, R.P. (2003): *Spatial Data Analysis*, Cambridge University Press.
Lindsay, J.N. (1997): *Techniques in Human Geography*, Routledge

GEO 296.1: Principles of Aerial Photography and Remote Sensing

Allison, L.J., Schnapf, A.(1983): Meteorological satellites: In Colwell, R.N.(ed.) *Manual of Remote Sensing*.
Campbell, J .B. (1996): *Introduction to Remote Sensing*, 2nd edition, Taylor & Francis, London: 622p.
Chaisman, N. (1992): *Exploring Geographical Information Systems*, John Wiley and Sons Inc., New York: 198p.
Colwell, R.N. (ed.) *Manual of Remote Sensing* (2nd edn). American Society of Photogrammetry, Falls Church,
Curran, P.J. (1988): *Principles of Remote Sensing*, ELBS Edn. Longman Group UK Ltd.
Guha, P.K. (2003): *Remote Sensing for the Beginner*, Affiliated East-West Press Pvt. Ltd., New Delhi
George, J. (2003): *Fundamental Remote Sensing*, Universities Press, New Delhi.
John R Jensen (2006): *Remote Sensing of the Environment: An Earth Resource Perspective*, Pearson Education Delhi
Lillesand, T.M. and Kiefer, R. W. (2003): *Remote Sensing and Image Interpretation*, 5th edition, John Wiley and Sons, New York.
Narayan L R A (2000): *Remote sensing and its applications*, Universities Press Hyderabad
Rajan, M.S. (1995): *Space today*, 2nd edition, National Book Trust, New Delhi, 344p.
Slater, P.N. (1983*): Photographic systems for remote sensing*, Singapore Science Center.
Slater, P.N. (1983): *Photographic systems for remote sensing*, Virginia,

GEO 296.2: Computer Basics and Application

Bartee, Thomas C. (1977): Digital Computer Fundamental; McGraw Hill.
Blissmer (1996): *Working with MS Word*; Houghton Mifflin Co.
Chauhan, S.; Chauhan, A. and Gupta, K. (2006): *Fundamental of Computer*; Firewall Media.
Flake, L.J.; McClintock, C.E. and Turner, S. (1989): Fundamental of Computer Education; Wordsworth Pub. Co.
Johnson, Steve (2007): Microsoft Power Point 2007; Pearson Paravia Bruno.
Leon, A .and Leon,M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
Leon, A. and Leon, M.(1999): A beginners Guide to Computers, lean Vikas
Malvino, A.P. and Leach, D.P. (1981): Digital Principles and Appications; Tata McGraw Hill.
Mano, Moris M. and Kime, Charles R. (2004): *Logic and Computer Design Fundamental*; Prentice Hall.
Rajaraman, V. (2003): Fundamentals of Computer, Prentice Hall Publisher
Rajaraman, V. (2008): Computer Primer; Prentice Hall of India Pvt. Ltd.
Sarkar, A. and Gupta, S.K (2002) Elements of computer Science, S Chand and Company, New Delhi
Shepard, Aaron (2007): *Perfect Pages*; Shepard Publications.
Tyson, Herbert L. (2007): Microsoft Word 2007 bible; John Wiley.
Walkenbach, John (2007): Excel 2007 Bible; John Wiley.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Semester- III (300 Marks)

THEORETICAL COURSES (200 Marks)

PAPER - GEO-301: APPROACHES TO REGIONAL DEVELOPMENT

Full Marks: 50 Credit: 4

GEO 301.1: REGIONAL APPROACH IN GEOGRAPHY

Course Outcome:

This course is focused on the fundamental concepts of regional geography including the classical approach to define an area as region. It includes the methods of regional delineation and classification of region based on their properties. On completion of this course, the pupils get a comprehensive understanding of the regional analysis. They will also learn about the concept of planning region and their delineation methods and this understanding may help them to assist in various planning process.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Regional concept in geography: concept, typology, hierarchy, methods of regional delineation and regional system.
2. Contribution of Ratzel, Hartshorne, Hettner and Vidal de la Blache to the development of regional concept. The character of regional geography, Space: the fundamental stuff of geography.
3. Formal regions: Natural, Agro-climatic, socio-cultural regions with special reference to India.
4. Functional region: City region, industrial region with special reference to India.
5. Planning regions in India: Conceptual framework, Purpose, types and methods of delineating planning region.

GEO 301.2: RURAL DEVELOPMENT

Course Outcome:

The focus of the course is to develop an idea about the approach to understanding the rural development. It includes the status report of the rural development in India on various accounts, i.e. agriculture, health, education, rural employment, infrastructure and rural electrification. The role of micro finance is also included to give students an understanding of the rural economic development. The students get an inclusive understanding of the rural development and its dynamics upon completion of this course.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4***

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

marks *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Concept and approach to rural development, Indicators of Development & Rural Development and their measurements.
2. Rural Economics: Agriculture Development and Land Reforms in India.
3. Rural Micro-finance, self-help group and women empowerment.
4. Rural Industries and entrepreneurship: Definition and meaning of rural industries. Relevance of rural industries in solving socio-economic problems with special reference to Food Processing and Tourism.
5. Rural Development Programmes: poverty alleviation schemes- National Rural Employment Guarantee Act, Jawahar Rozgar Yojana, Sampoorna Grameen Rozgar Yojana, Provisions of Urban Amenities in Rural Area (PURA); Infrastructural development programmes- Indira Avas Yojana; Transport Development: Pradhan Mantri Gram Sadak Yojana.

PAPER - GEO- 302: SETTLEMENT AND TRANSPORT GEOGRAPHY

Full Marks: 50 Credit: 4

GEO 302.1: SETTLEMENT GEOGRAPHY

Course Outcome:

The primary aim of studying settlement geography is to acquaint with the spatial and structural characteristics of human settlements under varied environmental conditions. The paper deals with multi disciplinary perspectives on the formation, evolution of human settlement. The paper will help the students to make an understanding on the reasons people settle in certain locations and the geographical features lead to the development of civilizations. The Nature and Scope of Settlement Geography, Characteristics of Rural and Urban Settlements according to Indian Census and nature, scope, evolution and several study methods. The settlement types, pattern and nature and process of urban settlement ,different cultural landscapes.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Concept of shelter; Dwelling places as cultural expression.
2. Census categories of settlements; Types, building materials and architectural design of houses- dependence on climate.
3. Site, situation and spacing of settlements- dependence on terrain characteristics and water availability.
4. Concepts and components of rural and urban morphology.
5. Socio-economic segregation of rural settlements. Cities as melting pot of culture.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO 302.2: TRANSPORT GEOGRAPHY

Course Outcome:

Students will learn about the role of transport in entire economic and social processes. This course aims to make students understand the locational advantage of different economic and social institutes based on transport principle. They are made aware of the role of public transport in addressing the problems of congestion and air pollution. This understanding may help them in formulating plan for regional development and economic regeneration by proper transport planning.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Concept of distance, Transportation and space, space-time relation through transportation, Transport network analysis, Centrality, Accessibility, Connectivity and Rationality. Transport Models (Gravity Models, Allocation Model, Linear Programming Model, Traffic Congestion Model).
2. Transport cost, Principles of transport cost fixation, comparative cost advantage.
3. Planning for public transport, desired characteristics, modes and optimal pricing, services, ownership and regulation.
4. Transport Policy: Problem oriented planning, and objective-led approach; Infrastructure, Management, Information, Pricing and landuse components; National transport policy (national highways, railways and waterways).
5. Communication Technology- roles in reducing transport demand.

PAPER – GEO 303: SPECIAL PAPERS Full Marks: 50 Credit: 4

303A: ADVANCED GEOMORPHOLOGY

GEO 303A.1: PROCESS GEOMORPHOLOGY-1

Course Outcome:

Students will learn about the mechanism and working principle of geomorphic processes in details that lead to shape present earth-surface. This understanding may help in formulating engineering plan for management of land, water and soil, three basic resources on earth surface. They will also have a clear insight into the process and forms on the surface of Moon and Mars

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

1. Geomorphic Thresholds: Reynold Number, Froude Number, Critical shear Stress and Shield Diagram, Slope stability thresholds.
2. Weathering Process and Soils with special reference to laterisation; Development of badland topography.
3. Slope forms and Processes: Mass Movement, Slope Morphology and Evolution.
4. Fluvial Processes: Drainage network development; Channel Morphology in alluvial and bedrock channels, Open channel flow, Sediment Transport, Fluvial response to changing conditions with special reference to channel patterns. Development of fluvial landforms.
5. Planetary geomorphic processes and landforms: Moon and Mars.

GEO 303A.2: PROCESS GEOMORPHOLOGY-2

Course Outcome:

Students will learn about the mechanism and working principle of geomorphic processes in details that are operating since historical time to shape present earth-surface. This course aims to build an understanding role of humans in shaping earth surface and regulating natural processes and their outcome on natural systems. Learners may take part in sustainable resource management.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Long term landform evolution with special reference to planation development
2. Quaternary Environmental Change and Landform Development with special reference to glaciations and sea level change.
3. Glacial and Periglacial processes and landforms.
4. Anthropogeomorphology: Man as active geomorphic agent. Landuse change and its geomorphic implications.
5. Identification of Geomorphosites with special reference to India.

303B: COASTAL MANAGEMENT

GEO 303B.1: COASTAL PROCESSES

Course Outcome:

The learners will understand the systematic interactions among terrestrial atmospheric and marine processes along the coast as a systematic whole. They will learn the dynamic and functional interrelationship between forms and processes in a coastal region and their dynamic equilibrium.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Definition of coastal zone, relevance of coastal study, classification of coast - Beach stage model.
2. Wave hydrodynamics; wave modification near coast with special reference to attenuation, breaker types, energy dissipation during breaking wave.
3. Tide; diurnal and semi-diurnal, rotating and progressive tide, concept of live storage, tidal environment with special reference to estuary.
4. Coastal current; intensity of long shore component and its implications, cell circulation.
5. Macro land forms with special reference to beaches and dunes; micro and biogenic forms.

GEO 303B.2: COASTAL ENVIRONMENTS: FOCUS ON INDIAN REGIONS

Course Outcome:

Students will get knowledge about long term and short-term development of landforms by several processes in some of the coastal regions in India and form process relationships in different spatial and temporal scales. They will understand the problems of coastal erosion and other hazards in the context of global climatic change.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Tide dominated coastal environment: (Estuaries of India, estuary morphology, estuary hydrolodynamics); wave dominated coastal environments: (The shore face, beaches, barriers and human activity)- Indian experiences.
2. Morphodynamic behavior of coastal systems (Modification of coastal features in temporal and spatial scales with feedback mechanisms).
3. Carbonate platforms and beach rocks (Andaman and Nicobar Islands).
4. Coastal erosion problems (West Bengal, Orissa coasts), land reclamations and associated problems (Sundarban coastal tract).
5. Techniques for assessing coastal hazards areas (Hazard zonation along the coasts).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

303C: URBAN GEOGRAPHY AND REGIONAL PLANNING

GEO 303C.1: FOUNDATION OF URBAN GEOGRAPHY

Course Outcome:

This paper will provide knowledge on spatial analysis of functions of urban areas. Social and economic characteristics of cities and suburbs will be discussed under this paper. Urban land use and its impact on environment and ecology will be addressed. This paper will introduce students to the basics of urban geography, such as definition of cities, central place theory, National urban systems, and traditional models of urban spatial structure. More importantly, students will be exposed to contemporary urban topics such as global cities, urban sprawling, urban green space, urban ecology and footprints etc. Emphasis will be placed on the urban experience of developing countries, especially India. The students will be able to assemble knowledge of urbanism and urbanization as historic, geographic, social, and cultural processes, historical development, contemporary condition, and environmental impact of cities and urban related issues growing from exposure to the disciplines of Geography and Planning

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Development of urban geography: Definition of Towns, cities and metropolitan area. Trends of Urbanisation in the World and India.
2. Concept and definitions of urban system: Urban, urbanization, urbanism and urban ecology, National urban system, National urbanisation policy.
3. Today's cities and suburbs: suburban sprawl, smart growth, exurbs, the new cities and gated communities, gentrification, green city, Urban Livability Index.
4. Origin and growth of urban living: bases and processes, Historical perspectives on world urbanization
5. Urban planning, policies and regeneration: Architectural vision, European, Anglo American tradition and planning the social city, the new towns movement, toward planning for sustainable urban development.

GEO 303C.2: CONTEMPORARY URBAN ISSUES

Course Outcome:

Student will understand through this module various socio-economic and environmental problems with the growing urbanisation in our country as well as various parts of the world. This knowledge will help them to surmise the necessity of urban planning and they will be able to evaluate the effectiveness of various govt programmes for urban planning.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Changing spatial and temporal scenario of metropolitan development in India.
2. The economy of urban areas: structure of urban economy-basic and non-basic activities.
3. Social environment of the city: Social stratification, social class diversity, suburban social class, poverty, strangers, crowding, crime and homelessness.
4. Urban environment problems: Heat island, drainage, sewerage, sanitation, solid waste, transport, pollution and health, the city's ecological footprint.
5. Urban renewal and Urban redevelopment in India: Role of JNNURM, Smart city, AMRUT and Housing for All by 2022.

303D: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

GEO 303D.1: PHYSICAL BASIS OF REMOTE SENSING

Course Outcome:

The course is designed to give fundamental and some advanced knowledge of space based remote sensing and aerial photography. From orbital parameters of satellite to complexity of aerial camera and film in association with the flight parameters, all of these will allow students to get an in-depth understanding of remote sensing and aerial photographic system.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Physics of Remote Sensing: Source of Energy, Electro Magnetic Radiation (EMR), Radiation laws (wavelength-frequency-energy relationship of EMR), influence of atmosphere on Remote Sensing operation.
2. Fundamental of Thermal Remote Sensing: Radiant temperature, Kinetic temperature, Black body and real body radiation.
3. Satellite orbits and Trajectories: Principles of satellite movements, orbits and trajectory, orbiting satellites-basic principles, orbital parameters, types of satellites.
4. Satellite Platforms and Sensors: Types of platform for civilian applications, advantages, disadvantages and characteristics of various satellite platforms. Physical principles and characteristics of various satellites sensor, sensor selection parameters, resolution.
5. Remote Sensing Data: Data acquisition and reception, Data products, storage and Dissemination.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO 303D.2: PHOTOGRAMMETRY, AERIAL PHOTO AND SATELLITE SYSTEM

Course Outcome:

The course is designed to give fundamental and some advanced knowledge of space based remote sensing and aerial photography. From orbital parameters of satellite to complexity of aerial camera and film in association with the flight parameters, all of these will allow students to get an in-depth understanding of remote sensing and aerial photographic system.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Basics of Aerial Photograph: Types of aerial photographs, Geometry of single Aerial Photograph, Photographic overlap, flight planning, Scale, Lens Distortions, Relief distortions and Tilt distortions. Image displacement and parallax.
2. Aerial Photographic Film: Film density and Characteristics Curve, Colour Infrared Films, Film resolution, Filters.
3. Photogrammetry: Development of Photogrammetry, Classification, processes and Limitations of photogrammetry.
4. Stereo photogrammetry: Conditions for Stereo vision, stereoscopic measurements, Sterescopic 3D viewing, Image parallax, Rectification, Orthorectification.
5. Satellite Systems: Whiskbroom system, Pushbroom system, Microwave system, coarse resolution, fine resolution and very fine resolution system.

ELECTIVE PAPER

PAPER - C-GEO 304: Environmental Issues and Management

Full Marks: 50 Credit: 4

C-GEO 304.1: Emerging Issues and Policies on Environment

Course Outcome:

Students will develop their interest in various aspects of environment and contemporary environmental issues. Students will develop their deep understanding in the nature of increasing intensity and magnitude of various hazards in connection to global pattern of economic disparity, social discrimination and climate change.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

1. Global climate change, water scarcity and politics of water.
2. Environmental degradation and pollution.
3. Environment and development: Debate and Issues.
4. Social and Cultural Hazards.
5. Globalization and Environment.

C-GEO 304.2: Environmental Hazards and Disaster Management

Course Outcome:

Students will foster their skill in managing various types of natural hazards by analysing their risk and vulnerability. They will be trained in the procedures of hazard management through proactive approach by increasing the resilience of the community in tune with national policy of hazard management and international laws.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Concepts and techniques for analysis of risk, hazard, disaster, vulnerabilities and resilience.
2. Cyclone and storm surges, thunderstorms and lighting, earthquake, tsunami wave and landslide hazards.
3. Natural hazard and disaster management in India, Agricultural drought hazard and the national experience.
4. International Disaster Response Laws Rules (IDRL).
5. National policy and appraisal of hazard

PRACTICAL COURSES (100 Marks)

PAPER – GEO 395: GIS APPLICATION IN RESEARCH

Full Marks: 50 Credit: 4

GEO 395. 1: APPLICATIONS OF REMOTE SENSING &GEOGRAPHIC INFORMATION SYSTEM

Course Outcome:

The course is designed for the general ideas of GIS and image-based information. Upon completion of this course, students get benefit from these baseline concepts to further increase their knowledge.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

1. Geo-referencing of maps and satellite images.
2. Preparation of different types of FCC. Image enhancement, Band rationing, Density slicing..
3. Supervised and Unsupervised Classification Techniques, generation of signature statistics and signature reparability reports. Generation of NDVI.
4. GIS: RS, GIS and GNSS.
5. Map layers: Overlay analysis, buffering and map composition

GEO 395.2: RESEARCH METHODOLOGY

Course Outcome:

The learners will get the initial training on various steps involved in geographical research. They will develop the idea on fundamentals of research methodology including data collection, methodology and report writing. This course aims to develop fundamental research aptitude among all the students.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Research ethics and paradigm shift of research methodology in Geography.
2. Need for research, basic research types.
3. Identification of research problems, development of theoretical background- literature review, research gap and research question and specification of the objectives of study; hypothesis building, Framework of research writing.
4. Methods of data collection- primary and secondary; Preparation of questionnaire and survey schedule and their differences, research ethics.
5. Methods of writing notes, style of referencing, bibliography and appendices, abstract and synopsis writing.

PAPER – GEO 396: SPECIAL PAPER BASED FIELD WORK

Full Marks: 50 Credit: 4

Course Outcome:

This course aims to present the essence of geography as a field science. Students will develop their aptitude in observation, data generation through field survey, data analysis with various software and advanced techniques. They will also know how to represent spatial data through various cartographic techniques and mapping. A hands on practical training is practiced through rigorous involvement in all the stages of pre-field, field and post field works.

396A: Advanced Geomorphology

GEO 396A.1: FIELD WORK

Field works in Advanced Geomorphology

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO 396A.2: FIELD REPORT
Presentation of research work-25 (Grand Viva-10 and/or Power Point presentation-15)

Generation of report (within about 100 A4 size pages including 30-40 maps/diagrams/field photographs) on the basis of field works carried out under Unit-47.

396B: Coastal Management

GEO 396B.1: FIELD WORK

Field works in Deltaic/ Non-deltaic or Rocky Coastal Environments

1. Studies on the shore profile forms and channel cross sections using echo-sounder and current meter. Littoral environment observation with special reference hydrological parameters: Waves, tides, winds and currents.
2. Coastal sediment budget analysis.
3. Analysis of population pressure on the coastal zones.
4. Analysis of coastal ecosystem diversity using remote sensing.
5. Hazard mapping and community vulnerability mapping Mapping CRZ violation areas using GPS handset, Nearshore geomorphological mapping with conventional surveying equipments or with Total Station. Mapping of the forms of coastline changes

GEO 396B.2: FIELD REPORT
Presentation of research work-25 (Grand Viva-10 and/or Power Point presentation-15)

Generation of report (within about 100 A4 size pages including 30-40 maps/diagrams/field photographs) on the basis of field works carried out under Unit-47.

396C: Urban Geography and Regional Planning

GEO 396C.1: FIELD WORKS

Evaluation will be done on Participation of the candidate in field work- 10; Report making- 15;

Field works on focused urban issue(s) in an urban area e.g. Small town/ Big city/ Few wards of a Big City

1. Wardwise landuse/land cover survey using high resolution Remote Sensing data. Wardwise distribution of population and its change over time.
2. Survey of spatial distribution of urban facilities (Bank, School, College, Offices, Hospitals etc.), urban transport: Nodes, Network and flow: Collection of database (Primary and Secondary), Water supply system: waste collection and disposal system.
3. Study of Urban sprawling, renewal, economics, environmental problems etc.: Collection of database (Primary and Secondary).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

4. Income/Social grouping, Ethnic groups Education; Occupation; Age-sex Composition etc.
5. Enquiries on future prospects and planning strategies

GEO 396C.2: FIELD REPORT
Presentation of research work-25 (Grand Viva-10 and/or Power Point presentation-15)

Generation of report (within about 100 A4 size pages including 30-40 maps/diagrams/field photographs) on the basis of field works carried out under Unit-47

396D: Remote Sensing and Geographic Information System

GEO 396D.1: Field Works
Evaluation will be done on Participation of the candidate in field work- 10; Report making- 15;
Field works for ground truth verification in a selected field area

1. Remote Sensing in Earth Sciences: Geomorphic Mapping; Visual interpretation of landforms; Basic Concepts, Recognition elements, interpretation of drainage pattern, erosion and deposition landforms.
2. Remote Sensing in Agricultural Applications: Soil Mapping, Crop Mapping/ Crop stress determination. Forest Management-Forest density mapping, Forest type mapping.
3. Remote Sensing in Land and Water Management: Landuse/ Land cover Planning, Land resource management; Water Resources: Surface water-ground water, water deciphering, quality inventory and monitoring, quality assessment; Watershed Management: Morphometric Analysis, Hydro-morphogeologic interpretation techniques for targeting ground water potential zones in alluvial, sedimentary and hard rock areas; flood assessment and watershed management.
4. Remote Sensing in Urban and Rural Development: Mapping of human habitation and type.
5. Remote Sensing in Coastal Management: Coastal Landuse, Spatial and temporal changes, SST, Phytoplankton assessment, Sediment assessment.

GEO 396D.2: FIELD REPORT
Presentation of research work-25 (Grand Viva-10 and/or Power Point presentation-15)

Generation of report (within about 100 A4 size pages including 30-40 maps/diagrams/field photographs) on the basis of field works carried out under Unit-47.

SUGGESTED REFERENCES

GEO301.1: Regional Approach in Geography

Bhat, L.S. (1973): *Regional Planning in India*, Statistical Pub. Society.
Chand, M. and Puri, V.K. (1988): *Regional Planning in India*, Vikas, New Delhi .
Chandana, R.C.(2000): *Regional Planning and Development*, Kalyani Publishers.
Glasson, J. (1974): *An Introduction to Regional Planning*, Hutchinson, London.
Greed (2000): *Introducing Planning*, Athlone Press, London.
Hall, P. (174): *Urban and Regional Planning*, Penguin, London.
Mishra, R.P. (1969): *Regional Planning, Concept, Techniques, Policies*, the University of Mysore Press.
Misra,R.P,Sundaram and Rao (1974): *Regional Planning In India*, Viking, Delhi.
Mitra, A. (1971): L*evels of Regional Development India*, Census of India.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Tim, Hall (2006): *Urban Geography*, Routledge.

GEO301.2: Rural Development

Chand, M. and Puri, V.K. (1988): *Regional Planning in India*, Vikas, New Delhi

Singh, Katar (1986). Rural development : principles, policies and management, Sage Publications India New Delhi.

Vijay, Chand Mal (1989). Rural development administration in India, Akashdeep Publishing House, New Delhi.

Upadhyay, H.C (1991). Modernization and rural development, Anmol Publications, New Delhi.

Riley, John M (2002). Stakeholders in rural development : critical collaboration in state-NGO partnerships, Sage Publications India, New Delhi

Ray, C.N (1994). Politics of rural development : The case of anti-Poverty programme in West Bengal and Gujarat, Rawat Publications, Jaipur.

Mahajan, V.S(1996). Agriculture,rural development and panchayati raj, Deep and Deep Publications, New Delhi.

Kar, Samit (1991). Rural development in West Bengal : a quest, Sarat Book House, Kolkata.

Yugandhar, B.N., Mukherjee, Neela (1991). Studies in village India : Issues in rural development, Concept Publishing, New Delhi.

Subramanian, S (1988). Rural development : an inside Look at Problems and prospects, Yatan Publications, New Delhi.

Kumar, Sunil (1990). Regional rural banks and rural development, Deep and Deep Publications, New Delhi

Saudhu, Baldere S (1996). Banking and rural development, Deep and Deep Publications, New Delhi.

Reddy, K. Venkata(1988). Rural development in India, Himalaya Publishing House, Bombay.

Lakshman, T.K.., Narayan, B.K.. (1984). Rural development in India : a multi-demensional analysis, Himalaya Publishing House, Bombay

Yadav, Subah Singh., Gurjar, Ram Kumar (1997). Rural development and poverty alleviation, Pointer Publishers, Jaipur.

Dutta, Siba kanta (1986). Co-operative societies & rural development, Mittal Publications, New Delhi.

Desai, Vasant (1991). Fundamentals of rural development : a system approach, Himalaya Publishing House, Bombay.

Ahmed, Rais (1996). Comparatives and integrated rural development programme, Mittal Publications, New Delhi.

Ministry of rural development, Government of India, web add: http://rural.nic.in/

GEO302.1: Concepts in Settlement Geography

Brian,K.R(1996):*Landscapes of Settlements:Prehistory to the Present*, Routledge,London

De Blij H.J. (1995): *The Earth: An Introduction to its Physical and Human Geography*, John Wiley and Sons Inc., New

De Blij H.J. (1996): *Human Geography: Culture, Society and Space*, John Wiley and Sons Inc., New York: 531 p.

Ghosh, S. (1998): *Introduction to Settlement Geography*, Orient Longman Ltd., Calcutta: 158p.

Hudson, F.S. (1970): *Geography of Settlements*, Macdonald and Evans Ltd., Plymouth

Hussain, M. (1994): *Human Geography*, Rawat Pub. Co., New Delhi: 485p.

Misra. H.N. (ed) (1987): *Contributions to Indian Geography*, Volume 9: *Rural Geography*, Heritage Pub., New Delhi.

Racine, J. (ed) : *Calcutta 1981*, Concept Pub. Co., New Delhi.

Rodwin (2006): *Shelter, Settlement and Development*, Rawat Pub.

Singh, R. Y. (1994) : *Geography of Settlements*, Rawat Pub. Co., New Delhi: 335p.

Singh, R.L. et. al. (ed) (1976): *Geographic Dimensions of Rural Settlements*, National Geographical Society of India, Varanasi.

Ramachandram, R. (1999): Urbanization and urban systems in India, Oxford University Press, New Delhi

Verma, L (2009): Urban Geography, Rawat publication, Jaipur

Roy Chaudhuri, J. (2001): An Introduction to Development and Regional Planning-with special reference to India, Orient Blackshawn, Hyderaband

GEO302.2: Transport Geography

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Adler, H.A (1987): *Economic Appraisal of Transport Project*, John Hapkins Press. Washington.
Dasgupta, A.K. and Pearee, D.W. (1972); *Cost Benefit analysis, theory and practice*; Mac Millan, London.
Flahesly CAO (2006): *Transport Planning and Traffic Engineering*, Butterworth- Heinemann
Gwillian, K.M. (Ed.) (1993): *Transport Policy and Global Warming*, European Conference of Ministers of Transport, Paris.
Lays M.G. (1993*): Wags of the World*, Primarera Press, Sydwen
Pearce D.W. and Markyanda, A. (1989*): Environmental policy Benefits*, Manetany valuation OECD ,Paris.
While, P. (1986): *Public Transport Planning*, Management and operation, Hatechinson, London.

303A

GEO303A.1: Process Geomorphology-1

Anderson Robert S. and Anderson Suzanne P., 2010 Geomorphology (1st Edition, Kindle Edition) by , Cambridge University Press.
Anderson, M.G. (1988) Modelling Geomorphological Systems, John Wiley & Sons, New York
Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.
Chorley, R.J. Schumm,S.A. & Sugden, D.E. (1985): Geomorphology, Methuen & Co. Ltd., London, New York.
Christopherson, R.W. (1995): Elemental Geosystems: A Foundation in Physical Geography, Prentice Hall Englewood Cliffs, New Jersey.
Coates, D.R. and Vitek, J.D. (1980) (eds), Thresholds in Geomorphology, George Allen & Unwin, London.
Crozier, M. J. (1986), Landslides: Causes, Consequences and Environment, Croom Helm, London.
Greeley, Ronald (2013) Introduction to Planetary Geomorphology, Cambridge University Press
Gupta, A. (2011) Tropical Geomorphology, Cambridge University Press
Knighton, D. (1990) Fluvial Forms and Processes, Hodder Education, UK.
Leopold, L.B. Wolman, M.G. & Miller, J.P. (1964): Fluvial Processes in Geomorphology, W.H.Freeman
Maiti, R.K. (2016) Modern Approaches to Fluvial Geomorphology, Primus Books.
Mondal S. and Maiti, R.K. (2015) Semi-quantitative Approaches in Landslide Assessment and Prdiction, Springer.
Morisawa, M. (1985) Rivers, Longman, London.
Ollier, C. D. (1969) **Weathering**. Elsevier, New York.
Pity A.F., 1971, Introduction to Geomorphology, Methuen, London.
Ritter, D.F. (1986) Process Geomorphology, Wm. C. Brown Publisher, Dubuque, Iowa.
Ritter, Kochel and Miller Process Geomorphology, 4th edition, Waveland Press 2006 (ISBN 13: 978-1-57766-461-1).
Robinson, Harry (1969): Morphology and Landscape, University Tutorial Press Ltd. London.
Selby, M.J. (2005) Hill slope materials and processes, Oxford University Press, Oxford.
Selby, R.C. (1976), An Introduction to Sedimentology, Academic Press, London.
Sparks, B.W (1972) Geomorphology, Longman, London.
Thomas Michael F. 2014 Geomorphology in the Tropics, , Wiley.
Worcester, P. G. (1948): Textbook of Geomorphology, Princeton, D.Van, Nortrand.
Zaruba, Q. et al (1969) Landslides and their control. Elsevier, Amsterdam.

GEO303A.2: Process Geomorphology-2

Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.
Gamen,H.F. (1974) The Origin of Landscapes-A Synthesis in Geomorphology, Oxford University Press.
Kale, V.S. (2018) (ed) Geomorphosites in India. IGI
Lobeck, A.K. (1939) Geomorphology, McGraw Hill, New York.
Ritter, D.F. (1986) Process Geomorphology, Wm. C. Brown Publisher, Dubuque, Iowa.
Spark, B. W. (1986) Geomorphology, Longman, London.
Sparks, B.W (1972) Geomorphology, Longman, London.
Wadia, D.N. (1993) Geology of India, Tata McGraw Hill Edition, New Delhi.
Valdia, K.S. (2010) The Making of India: Geodynamic Evolution
Selby Michael John (1985) Earth's Changing Surface: An Introduction to Geomorphology, Clarendon Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

303B

GEO303B.1: Coastal Processes

Carter, R.W.G (1988): *Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines*, Academic Press, London

Dayer K.R. (1979): *Estuary Hydrography, and Sedimentation*, Cambridge Univ. Press, Cambridge.

Devis R.A. (ed) (1978): *Coastal Sedimentary Environmental*; Springer-Verlag, New York.

Harikawa , K. (1978): *Coastal Engineering*, Univ Of Tokyo Press, Tokyo.

Inman, D.L. (1960): *Shore Processes, Encyclopedia of Science & Technology*, Mc Graw Hill, New York.

Knight, B. and Philip, A. (1979): *Estuarine and coastal Land reclamation and water storage*, Saxon House.

Laussn, E and Lato, I.(ed*): Chemistry and Biochemistry of estuaries*, Wiley, New York.

Pethick, J. (2000): *An Introduction to coastal Geomorphology*, Arnold, London.

Stanley, D.J. and Suist D.J.P.(ed)(1976): *Marine Sediment Transport and environmental management*;Wiley, NewYork.

Wagret,P. (1968*): Polderlands*, Methuen, London.

GEO303B.2: Coastal Environments:Focus on Indian Regions

Carter, R.W.G (1988): *Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines*, Academic Press, London

Dayer K.R. (1979): *Estuary Hydrography, and Sedimentation*, Cambridge Univ. Press, Cambridge.

Devis R.A. (ed) (1978): *Coastal Sedimentary Environmental*; Springer-Verlag, New York.

Harikawa , K. (1978): *Coastal Engineering*, Univ Of Tokyo Press, Tokyo.

Inman, D.L. (1960): *Shore Processes, Encyclopedia of Science & Technology*, Mc Graw Hill, New York.

Knight, B. and Philip, A. (1979): *Estuarine and coastal Land reclamation and water storage*, Saxon House.

Laussn, E and Lato, I.(ed*): Chemistry and Biochemistry of estuaries*, Wiley, New York.

Pethick, J. (2000): *An Introduction to coastal Geomorphology*, Arnold, London.

Stanley, D.J. and Suist D.J.P.(ed)(1976): *Marine Sediment Transport and environmental management*;Wiley, NewYork.

Wagret,P. (1968*): Polderlands*, Methuen, London.

303C

GEO303C.1: Foundation of Urban Geography

Carter, H. (2002): *Urban Geography*, 4th edition Arnold-Heinemann, New Delhi: 434p.

De Blij, H.J. and Muller, P.O. (1997): *Geography: Realms Regions and Concepts*, 8th edition, John Wiley and Sons Ltd., New York: 569p.

Dickinson, J., Gould, B., Clarke, C., Mather, S., Prothero, M., Siddle, D., Smith, C. and Thomas-Hope, E. (1996): *A Geography of the Third World*, 2nd edition, Routledge, London: 334p.

Dickinson, R.E. (1968): *City and Region: A Geographical Interpretation*, Routledge and Kegam Paul Ltd. London.

Ghosh, S. (1998): *Introduction to Settlement Geography*, Orient Longman Ltd., Calcutta: 158p.

Gore, Charles (1984). : *Region in question*, Routledge Publisher.

Hudson, F.S. (1970): *Geography of Settlements*, Macdonald and Evans Ltd., Plymouth:

Knox, P. (1982): *Urban Social Geography*, Longman Scientific and Technical, Harlow.

Pacione, M. (2007): *Urban Geography*, Routledge,

Ramachandran R. (1989): *Urbanisation and Urban Systems in India*, Oxford University Press, New Delhi.

Singh, R.L. (editor) (1971): *India: A Regional Geography*, National Geographical Society of India / UBS Pub. Distributors Ltd., New Delhi: 992p.

Singh, R.L. et. al. (ed) (1976): *Geographic Dimensions of Rural Settlements*, National Geographical Society of India, Varanasi.

Spate, O.H.K. and Learmonth, A. T.A. (1967): *India and Pakistan*, 3rd edition, Munshiram Monoharlal Pub. Pvt. Ltd., New Delhi: 877p.

Tewari, V. Weinston, J. and Prakash Rao, V.L.S. (1986): *Indian Cities: Ecological Perspectives*, Concept Pub. Co., New Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO303C.2: Contemporary Urban Issues

Ahuja,R (1999): *Social Problem in India*, Rawat, Jaypur
Carter, H. (1981): *Urban Geography*, 3rd edition Arnold-Heinemann, New Delhi: 434p.
Herbert, D. (1977): *Urban Geography- A social Perspectives*, David and charles, London
Herbert, D. and Johnston, R,J. (1979): *Geography and Urban Environment*, John wiley, New York
Kleniewski, N. (2005): *Cities and Society*, Blackwell,
Linder, C (2006): *Urban Space and Cityscapes*, Pergamon Press
Pacione, M. (2007): *Urban Geography*, Routledge,
Palen, J(1992): *The Urban World*, Mc Grow Hill, New York
Sovani, N.V. (1964): *The Analysis of Over Urbanization: Economic Development and Cultural Change*,
Macionis, J.J and Parrillo, V.N (2010): Cities and Urban life, Pearson Education, New Jersey

303D

GEO303D.1: Physical Basis of Remote Sensing

Campbell, J .B. (1996): *Introduction to Remote Sensing*, 2nd edition, Taylor & Francis, London; 622p.
Cracknelll, A.P., and L.W.B.Hayes, (1991): *Introduction to Remote Sensing*, Taylor and Francis, Washington, DC.
Curran, P.J. (1980*): Mulltispectral remote sensing of vegetation amount*, Progress in Physical Geography
Guha, P.K. (2003*): Remote Sensing for the Beginner*, Affiliated East-West Press Pvt. Ltd., New Delhi
Joseph, George, (2003): *Fundamental of Remote Sensing*, Orient Longman Pvt. Ltd.
Lillesand, T.M. and Kieffer, R.W. (2003): *Remote Sensing and Image Interpretation*, 5th Edition, Wiley, New York
Marcolongo, B. And Mantorani, F. (1997): *Remote Sensing Application in Earth Science*, Oxford and
Rajan, M.S. (1995): *Space Today*, 2nd edition, National Book Trust, New Delhi, 344p.
Sabins, F.F. (1997): *Remote Sensing: Principles and Applications*, 3rd edition, W.H. Freeman & Company, New York:

GEO303D.2: Photogrammetry, Aerial Photo and Satellite Systems

American Society of Photogrammetry (ASP), (1983): *Manual Of Remote Sensing*, second edition, ASP, Fallschurch, VA,
Chaisman, N. (1992): *Exploring Geographical Information Systems*, John Wiley and Sons Inc., New York: 198p.
Chrisman, N.R. (1997): *Exploring Geographic Information Systems*; John Wiley and Sons. (Inc).
John, R. J. (1998): *Introductory Digital Image Processing – A Remote Sensing Perspective*, Prentice Hall Series.
Lillesand, T.M. and Kieffer, R.W. (1979): *Remote Sensing and Image Interpretation*, 5th Edition, Wiley, New York
Martin, D. (1991): *Geographical Information Systems and their Socioeconomic Applications*. London, Routledge.
Robert A. Schowengerdt,(1997): *Techniques for Image Processing and Classification in Remote Sensing*, Academic Press.
Ulaby, F.T., Moore, R. K. and Fung, A.K. (1982): *Microwave Remote Sensing Active and Passive*, Volume II, Radar

C-GEO304 (*Elective/CBCS)*

C-GEO304.1: Emerging Issues and Policies on Environment

Maryk, Theodore (1996): *Major Environmental Issues Facing 21st Century*, Prentice Hall
Park, C. (1998): *The Environment: Principles and Applications*, Routledge, London:
Pickering, K. and Owen, L.A.(1997) : *An Introduction to Global Environmental Issues*, 2nd edition, Routledge, London.
Farmer, A. (1997): *Managing Environmental Pollution*, Routledge, London: 246p.
Roberts, N. (editor) (1994): *The Changing Global Environment*, 3rd edition, Blackwell Pub. Co., London: 531 p.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Kevin T. Pickering, Lewis A. (1997): *An Introduction to Global Environmental Issues* Rutledge, London
Edmond A. Mathez (2009): *Climate Change: The Science of Global Warming and Our Energy Future*, Columbia University Press,New York
Frances Drake, (2000): *Global Warming: The Science of Climate Change*:, Arnold Pub.
Harvey Danny(1999): *Global Warming*:, Pearson Education India
Mike Gonzalez, Marianella Yanes(2015): *The Last Drop-The Politics of Water*, Pluto Press,
Wendy Nelson Espeland (2015): *The Struggle for Water: Politics, Rationality, and Identity in the American Southeast*, University of Chicago Press
Paolo F. Ricci (auth.) (2006): *Environmental and Health Risk Assessment and Management: Principles and Practices*, Springer Netherlands
Marquita K. Hill (2010): *Understanding Environmental Pollution*, Cambridge University Press
Chris Barrow (2005): *Environmental Management and Development*. Routledge
Andrew E. Collins, Jones Samantha, Bernard Manyena, Janaka Jayawickrama, (2014): Hazards, *Risks, and Disasters in Society*, Elsevier
Fred Krüger, Greg Bankoff, Terry Cannon, Benedikt Orlowski, E. Lisa F. Schipper(2015): *Cultures and Disasters: Understanding Cultural Framings in Disaster Risk* Routledge
Peter Christoff, Robyn Eckersley: *Globalization and the Environment*, ,Rowman and Littlefield ,Newyork

C-GEO304.2: Environmental Hazards and Disaster Management

Alexander, D. (1993): *Natural Disasters*, Research Press, New Delhi: 619p.
Baarrsches, W.H. (1996): *Eco-facts and Eco-fiction: Understanding the Environmental Debate*, Routledge, London.
Chapman, D. (1994): *Natural Hazards*, Oxford University Press, Melbourne: 174p.
Dasgupta, P. and Mller, K.G. (1997): *The Environment and Emerging Development Issues*, Volumes I and 2, Clarendon
Elsom, D.M. (1992): *Atmospheric Pollution: A Global Problem*, 2nd edition, Blackwell Pub. Co., London: 422p.
Farmer, A. (1997): *Managing Environmental Pollution*, Routledge, London: 246p.
Hyndman, Donald and Hyndman, David. (2008): *Natural Hazards and Disasters*; Cengage Learning.
Keller, Edward A. and Blodgett,Robert H. (2007): *Natural Hazards: Earth's Processes As Hazards, Disasters and Catastrophes*; Pearson Prentice Hall.
Middleton N. (1995): *The Global Casino: An .Introduction to Environmental Issues*, John Wiley and Sons.
New Park, C. 1998: *The Environment: Principles and Applications*, Routledge, London:York: 332p.
Pickering, K. and Owen, L.A. (1997): *An Introduction to Global Environmental Issues*, 2nd edition, Routledge, London:
Roberts, N. (editor) (1994): *The Changing Global Environment*, 3rd edition, Blackwell Pub. Co., London: 531 p.
Smith, Keith and Petley, David N. (2009): *Environmental Hazards: Assessing Risk And Reducing Disaster*; Taylor & Francis.
Valancy, F. and Bronstein, D.A. (1995): *Environmental and Social .Impact Assessment*, John Wiley and Sons inc., New York: 325p.
Vogler, J. (1995): *The Global Commons: A Regime Analysis*, John Wiley and Sons Ltd., Chichester: 233p.

GEO395.1: Application of Remote Sensing In Geography

Allison, L.J., Schnapf, A.(1983): *Meteorological satellites*: In Colwell, R.N.(ed.) Manual of Remote Sensing (2nd edn).
Avery,T.E.,and G.L.Berlin, (1992): *Fundamental of remote sensing and air photo interpretation*,5th ed, Macmillan, New York,
Billingsley, F.C. (1983): *Data Processing and Reprocessing*: In Colwell, R.N.(ed.) Manual of Remote Sensing (2nd edn).
Bukata,R.P., et al., (1995): *Optical Properties And Remote Sensing Of Inland And Coastal Waters*, CRC press, New York,
Campbell, J .B. (1996): *Introduction to Remote Sensing*, 2nd edition, Taylor & Francis, London: 622p.
Canada Center for Remote Sensing, *Remote Sensing Tutorial*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Cracknelll, A.P., and L.W.B.Hayes, (1991): *Introduction to Remote Sensing*, Taylor and Francis, Washington.
Curran, P.J. (1980): *Mlltispectral remote sensing of vegetation amount*, Progress in Physical Geography
Curran, P.J. (1988): Principles of Remote Sensing, ELBS Edn. Longman Group UK Ltd.
Guha, P.K. (2003): *Remote Sensing for the Beginner*, Affiliated East-West Press Pvt. Ltd., New Delhi
Joseph, George, (2003): *Fundamental of Remote Sensing*, University Press (India) Pvt. Ltd, Orient Longman Pvt. Ltd., Hyderabad, India
Lillesand, T.M. and Kieffer, R.W., 2003. Remote Sensing and Image Interpretation, 5th Edition. Wiley, NY.
Marcolongo, B. And Mantorani, F. (1997): *Photogeology: Remote Sensing Application in Earth Science*, Oxford and IBH Pub. Pvt. Ltd., New Delhi: 195p.
Rajan, M.S. (1995): *Space today*, 2nd edition, National Book Trust, New Delhi, 344p.
Sabins, F.F., (1997): *Remote Sensing: Principles and Applications*, 3rd edition, W.H. Freeman & Company, New York: 494p.

GEO395.2: Research Methodology

Compton,R.R.(1985): *Geology in the Field*, John Wiley and Sons.
Gardiner,V. and Dacombe,R.(1983):*Geomorphological Field Mannual*,George Allen and Unwin, London
Ghosh,B.N.(1982): *Scientific Methods and Social Research* ,Starling Publishers Private Ltd. New Delhi.
Goudie, A.(1981): *Geomorphological Techniques*, George Allen and Unwin, London
Kothari,R.C(2004):*Research Methodology*,New Age International Publishers, New Delhi.
Mishra,H.N(1998): *Research Methodology in Geography*, Rawat Publication.
Ramachandran,P.(1971):*Training in Research Methodology in Social Sciences in India*, ICSSR, New Delhi
Shama,B.A.V. et al (1983): *Research Methods in Social Sciences*, Chaitanya Publishing House, Allahabad.
Sjoberg g. and Nett (2002*): Methodology of Social Research*, Rawat Publication
Wang, X and Vonhofe, R.A (200&): *Research Method in Urban and Regional Planning*, Springer
Young,P.V.(1960): *Scientific Social Surveys and Research;* 3rd Ed ,Prentice Hall, New York
Bordens, K,S and Abbott, B.B (2011): Research Design and Methods, Tata McGraw Hill Edition, New Delhi

GEO396.1: Field Works

Compton,R.R.(1985): *Geology in the Field*,John Wiley and Sons.
Gardiner,V. and Dacombe,R.(1983): *Geomorphological Field Manual*, George Allen and Unwin, London
Goudie, A.(1981): *Geomorphological Techniques*, George Allen and Unwin, London
Kothari,R.C(2004):*Research Methodology*,New Age International Publishers, New Delhi.
Mahmood, A (1977): *Statistical methods in Geographical studies*, Rajesh Pub. New Delhi
Mathur,S.M (2001): *Guide to Field Geology*, Prentice Hall, India
Mishra,H.N (1998): *Research Methodology in Geography*,Rawat Publication.
National Family Health Survey (NFHS-3) 2005-2006, Vol-I and II International Institute for population Science,Mumbai
Pal, S.K. (1999): *Statistics for Geoscientists*, Concept publishing Company, New Delhi: 423p.
Ramachandran, P.(1971):*Training in Research Methodology in Social Sciences in India*, ICSSR, New Delhi
Shama,B.A.V. et al (1983): *Research Methods in Social Sciences*, Chaitanya Publishing House, Allahabad

GEO396.2: Field Report

Goudie, A.(1981): *Geomorphological Techniques*, George Allen and Unwin, London
Mathur,S.M(2001): *Guide to Field Geology*, Prentice Hall, India
National Family Health Survey (NFHS-3) 2005-2006, Vol- I and II International Institute for population Science,Mumbai
Pal, S.K. (1999): *Statistics for Geoscientists*, Concept publishing Company, New Delhi: 423p.
Ramachandran, P.(1971):*Training in Research Methodology in Social Sciences in India*, ICSSR, New Delhi
Shama,B.A.V. et al (1983): *Research Methods in Social Sciences*, Chaitanya Publishing House, Allahabad.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Semester- IV (300 Marks)

THEORETICAL COURSES (200 Marks)

PAPER – GEO 401: GEOGRAPHICAL PHILOSOPHY

Full Marks: 50 Credit: 4

GEO 401.1: SCHOOLS IN GEOGRAPHICAL THOUGHT

Course Outcome:

The course incorporated the fundamental concepts of geographical thought. It includes the premier concepts of geography at the time of its emergence to the past century (20th century). Upon completion of this course, the students would have a comprehensive idea of the fundamental nature of Geography and how it evolves with time.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. The Field of Geography, Place of Geography in classification of knowledge and other disciplines, Geography as a social science, Physical and Human Geography. Linkages among the sub-disciplines of physical and human geography.
2. Development of Geography in 19th Century: Contribution of German, French, British and American schools of thought.
3. Conceptual and methodological development in 20th Century: changing paradigms, evolution of man-nature relation.
4. Typology of models and uses: structure component and characters.
5. Dualism and dichotomies in Geography: Determinism and Possibilism, Systematic and Regional, Aerial differentiation and Spatial organization.

GEO 401.2: CONTEMPORARY DISCOURSES IN GEOGRAPHY

Course Outcome:

Students will learn about the philosophical background that guides the approaches and ways of thinking to design teaching-learning and research under different discourses of Geography. It aims to achieve a clear insight into theoretical foundation of the subject that is articulated among different courses and guides to design objectives and methodological framework of geographical enquiry. This understanding helps the learners to locate themselves in the wide and dynamic philosophical domain of the discipline and help them to concentrate towards developing geography as a science of holistic synthesis.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4***

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

marks *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Pragmatism, Positivism and Quantitative revolution in geography
2. Development of critical social theories: Humanistic geography, Behaviouralism, Radicalism, Welfare geography, Feminist geography
3. Structuralism and Post-structuralism, Modernism and Postmodernism.
4. Concept of space: absolute, relative, material and social space, concept of 3rd space in geography, temporal geography, time-space prism
5. Recent trends in geography.

PAPER - GEO 402: POLITICAL GEOGRAPHY AND GLOBALIZATON

Full Marks: 50 Credit: 4

GEO 402.1: POLITICAL GEOGRAPHY

Course Outcome:

Students will develop their understanding on politics of space and spatial patterns of political and economic power distribution. This course will enable the of Government in India based on the principle of regional disparities in India. They will also know about the nature of conflict at national and global level centered on water and power resources. They will develop their interest in analyzing factors and local as well as global implications of economic and political agglomerations in the form of economic and political blocs.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
Pattern of setting questions: ***Group- A*** *(Long Answer Type): Two questions, each of* ***8 marks*** *(without division), will be set for answering any one.* ***Group- B*** *(Semi-long Answer Type): Four questions, each of* ***4 marks*** *(without division), will be set for answering any two.* ***Group- C*** *(Short Answer Type): Four questions, each of* ***2 marks*** *(without division), will be set for answering any two.*

1. Politics and Geography: Politics of Space, Scope of electoral geography, Global strategic views- Heartland and Rimland theories and their significance in present international politics.
2. Geopolitical significance of core-periphery theory; Nationalism and Regionalism.
3. Geography and federalism; Reorganization of Indian states since independence, Partition of India and its consequences
4. International and interstate water disputes in India.
5. Political and economic blocs; Geopolitics in the context of globalization, colonialism and post colonialism.

GEO 402.2: GEOGRAPHY OF GLOBALIZATION

Course Outcome:

Course objectives and expected outcome: This course is focused on the fundamental concepts of globalization and its overall impacts on agriculture, industry, trade and culture. It also focused on the issues and challenges of globalization faced by the

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

countries across the world. The students get a leading idea about the globalization and its consequences upon completion of this course.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Transformed Geography: Concept of Liberalization, Privatization and Globalization (LPG), beginning of the globalization, globalization to glocalilisation.
2. Globalization and Economic Geography: Impact of globalization on agriculture, industry and trade.
3. World economic order: Economic booms and crisis.
4. Globalization and cultural changes: Globalization and cultural transformations.
5. Future of globalization and global challenges: Issues and recent trends.

PAPER – GEO 403: SOCIETY AND REGIONAL PLANNING

Full Marks: 50 Credit: 4

GEO 403.1: SOCIAL AND CULTURAL GEOGRAPHY

Course Outcome:

The paper is based on the nature, scope and content of social and cultural Geography. The paper will examine the role of social divisions such as class, 'race'/ethnicity, gender and sexuality in shaping the social geographies of regions. Emphasis is given on cross-disciplinary, critical engagement with current events. On completion of the course, students are able to Understand the nature, scope, and concept, relationship between culture and social environment, and right of information act, the cultural complex and traits of culture and its concepts, evolution to civilization and cultural system according to religion, language and geography, and global cultural changes.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Nature, scope and content of social Geography; Ethnicity, tribe, dialect, language, caste and religion.
2. Social structure and processes, social exclusion, geographies of social well-being with special reference to India.
3. Cultural Geography: Definition, scope and nature. Race, religion, language as cultural attributes with special reference to India, North-South, social -cultural divide.
4. World cultural Realms, Morphology of cultural landscape (Carl O Sauer) and cultural diversity. Cities as melting pot of culture. Traditional folk culture- crisis and transformation

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

5. Cultural processes: Diffusion, acculturation, assimilation and cultural pluralism

GEO 403.2: REGIONAL PLANNING

Course Outcome:

The learners will be able to know the process of planning in India, its role and various strategy for the development of our country. The students will understand how they can participate in the planning and development of the nation. This knowledge is very effective for the government also for smooth conduction of the development planning.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Concept of planning: Levels of planning: Types of planning
2. Basic principles and methodology of regional planning
3. Regional planning strategies: Centralized, decentralized and multilevel planning for rural and urban areas, people's participation in planning- Panchayati Raj Institution.
4. Regional disparities: Concept, Types; Demographic, social and economic disparities in India.
5. Planning of problem regions: Tribal, coastal, drought prone area, flood prone area.

PAPER – GEO 404: SPECIAL PAPERS

Full Marks: 50 Credit: 4

404A: ADVANCED GEOMORPHOLOGY

GEO 404A.1: ADVANCED GEOMORPHIC TECHNIQUES

Course Outcome:

Students will learn about the empirical methods to estimate various geomorphic attributes by using field instruments or through models run by sophisticated software. This will offer them training on data generation, computation and analysis. This course aims to enable learners deal with real world problems using advanced technology recently available to the department from DST-FIST programme, Department of Science and Technology, Govt. of India.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

1. Modeling concepts and approaches in geomorphology; Data sources and Freeware models; Dating procedures and uses.
2. Estimating flow velocities, discharge and stage.; Estimation of stream hydraulic parameters (Critical flow, Froude number, Reynolds number). Inundation estimates.
3. Manning equation: Required data, data measurements, and limitations; Tractive force and stream power estimation.
4. Sediment transport and sediment discharge estimates: Bed load and suspended load
5. Watershed delineation, preparation of DEM; micro-landscape analysis (landscape unit map) using GIS (Case study on a badland area)

GEO 404A.2: APPLIED GEOMORPHOLOGY

Course Outcome:

Students will learn how to apply theoretical knowledge of geomorphology in wide range of engineering and management problems ranging from drainage basin management to hazard management. They are trained to apply geomorphic understanding on water management, landuse planning, sewage and solid waste management. They are also trained on their contribution in EIA and EMP. This course aims in revival of the applied value of the discipline.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Applied Geomorphology in River Basin Management (Case study on Shilabati/ Kangsabati/ Subarnarekha Basin)
2. Applied Geomorphology in Hazard Management: Flood, Coastal and River Bank Erosion, Soil Piping, Soil Erosion (Case study on Shilaboti flood/ Old Digha Erosion/ Bhagirathi erosion, Western Ghat)
3. Geomorphology in dam site selection and impact assessment: (Case Study on Farakka)
4. Geomorphology in urban management: Landuse planning, Sewage treatment, Storm-water management, Ground water recharge and discharge (Case study on Kolkata)
5. Geomorphology in EIA and EMP (Case study on Nayachar/ Singur/Salboni)

404B: COASTAL MANAGEMENT

GEO 404B.1: COASTAL ECOLOGY AND HAZARDS

Course Outcome:

Students will understand the ecological importance of coast as an important habitat between terrestrial and marine system. They will also develop their deep insight into the significance and techniques of coastal study in the context of increasing hazards forced

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

by global climatic change. They will be exposed to the information on the future scope of coastal studies in India.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Study and management of- Sea weeds; seaweed ecosystem, artificial seaweeds.
2. Dune vegetation: Dune initiating and dune building types, adaptation and reproduction, plant-animal interaction in sand dune. Mangroves: physical environment and ecology.
3. Coastal hazards and their management: Sea level change- long and short term changes, regional and global effects on shore; Coastal erosion- causes and effects; Storm hazard- role in sediment transfer, effects on open and estuarine coast, management of storm hazard.
4. Techniques of monitoring coastal processes and land forms.
5. Coastal studies in India: Monitoring and research.

GEO 404B.2: COASTAL ISSUES AND MANAGEMENT

Course Outcome:

Students will understand about the complexities of emerging coastal issues and their better management techniques. They will get employment opportunities as research scientist in the various institutes like INCOIS, MOEF, DST, NIO, NCSCM, Dept. of Earth Sciences and TOURISIM Department etc.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Coral bleaching: Impact of Global warming, coastal eutrophication and habitat conservation (Coastal lagoons, other coastal wetlands)
2. Coastal tourism and environment conflicts (Beaches and barrier coasts, mangrove dominated coasts, coral coasts, environmental regulations).
3. Application of remote sensing and GIS techniques in coastal management (Geomorphological mapping, coastal cell circulation systems, environmental zoning approach, identification and diversity of coastal habitats)
4. Managing coastal change: Assessment of coastal vulnerability, ecosystem valuation of coast, integrated coastal zone management, coastal regulations); Coastal engineering: Developments in hard structure designs, developments in soft structure designs, new dredging techniques and procedures.
5. Coastal urbanization and population pressures, Coastal resource management.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

404C: URBAN GEOGRAPHY AND REGIONAL PLANNING

GEO 404C.1: THEORETICAL BASES OF REGIONAL PLANNING

Course Outcome:

This paper will provide knowledge on spatial analysis of functions of urban areas. Social and economic characteristics of cities and suburbs will be discussed under this paper. Urban land use and its impact on environment and ecology will be addressed. This paper will introduce students to the basics of urban geography, such as definition of cities, central place theory, National urban systems, and traditional models of urban spatial structure. More importantly, students will be exposed to contemporary urban topics such as global cities, urban sprawling, urban green space, urban ecology and footprints etc. Emphasis will be placed on the urban experience of developing countries, especially India.The students will be able to assemble knowledge of urbanism and urbanization as historic, geographic, social, and cultural processes, historical development, contemporary condition, and environmental impact of cities and urban related issues growing from exposure to the disciplines of Geography and Planning

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. History of regional planning in India, theories of regional planning. Concept of balanced and unbalanced growth
2. Regional development perspectives: Colonial period (Dependency theories- Friedman, Andre Gander Frank, David Slater)
3. Growth Pole theories and the developing world by Perroux, Myrdal, Hirschman, and Boudiville.
4. Agropolitan Development, Basic need approach (E.A.J Johnson, Dennis Rondinelli-USAID)
5. Regional Environmental issues in Purba and Paschim Medinipur Districts- Flood, Drought, coastal erosion, Salinization, Deprivation and related social conflicts, conflict in forest society interface.

GEO 404C.2: PLANNING FOR URBAN DEVELOPMENT

Course Outcome:

Students will understand the urban planning process in various issues like sanitation, transport, housing, water supply etc and various policies of the govt. The knowledge about the remote sensing and GIS is also important for urban planning. The students will be able to participate in various works relating to urban planning.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

1. Concept of developed and underdeveloped economy, Intra- and Inter-regional planning. Policies of Urban planning and development.
2. Urban infrastructure planning: Sanitation and Water supply systems, Waste Water disposal systems, Solid waste collection and disposal.
3. Urban traffic and transportation planning.
4. Planning for Urban housing: concepts of land use and land valuation, Needs and types of housing; Housing Policy and programmes in India; Real estate development.
5. Application of Remote Sensing and GIS in urban planning and management.

404D: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

GEO 404D.1: ADVANCED REMOTE SENSING

Course Outcome:

This core content of this course is focused on some advanced ideas of microwave and hyperspectral remote sensing including image-based statistics for digital image processing. The course is also focused on some of the advanced ideas of GIS including remote sensing and GIS integration. It includes the application of GIS and remote sensing in various purposes. Upon completion of this course, students would be benefited from these advanced level of applications, and allow them to pursue their future career in GI Science.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Thermal Remote Sensing: Concept, Sensors and Utility.
2. Microwave Remote Sensing:Concept, Comparison with optical system, advantages and disadvantages, spatial resolution, Real and Synthetic Aperture Radar, Passive Microwave Remote Sensing, Lidar.
3. Hyperspectral Remote Sensing: Concept, Sensors and utility.
4. Visual Image Processing& Digital image interpretation: Elements of Visual image interpretation, generation of thematic maps, information extraction.
5. Digital Image Processing: Pre-processing, Image Registration, Image geometric operations, Enhancement, Spatial filtering, Transformation, classification, data compression, spectral pattern recognition, output generation.

GEO 404D.2: ADVANCED GIS AND APPLICATIONS OF REMOTE SENSING

Course Outcome:

This core content of this course is focused on some advanced ideas of microwave and hyperspectral remote sensing including image-based statistics for digital image processing. The course is also focused on some of the advanced ideas of GIS including remote sensing and GIS integration. It includes the application of GIS and remote sensing

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

in various purposes. Upon completion of this course, students would be benefited from these advanced levels of applications allow them to pursue their future career in GI Science.

Full Marks- 25 (End term Examination- 20 and Internal Assessment- 5)
*Pattern of setting questions: **Group- A** (Long Answer Type): Two questions, each of **8 marks** (without division), will be set for answering any one. **Group- B** (Semi-long Answer Type): Four questions, each of **4 marks** (without division), will be set for answering any two. **Group- C** (Short Answer Type): Four questions, each of **2 marks** (without division), will be set for answering any two.*

1. Advanced GIS: Spatial data model, Data entry, data analysis, Data models. Data sources, Data captures, attribute data management and Meta data concept.
2. Data Infrastructure: Spatial Data Infrastructure: NSDI.
3. Modern trend in GIS: Local to Global concept in GIS, Integration of GIS and Multimedia, 3D GIS and Web GIS, Real time GIS, Mobile GIS, Collaborative GIS, concept and application of GPS and GNSS.
4. Integration of Remote sensing and GIS: Concept and importance of Remote Sensing and GIS integration in Geographical studies.
5. Applications of Remote Sensing and GIS: Landuse/land covers mapping, soil and agricultural mapping, geomorphological mapping, watershed mapping.

PRACTICAL COURSES (100 Marks)

PAPER – GEO 495: GEODESY AND GIS

Full Marks: 50 Credit: 4

Course Outcome:

The course is designed for providing the fundamental ideas of Geodesy and map projection. It includes some advance projective transformation from 3D to 2D surface. The course also includes the fundamentals of GI science and its application. The students get an exposure to the theoretical and practical understanding upon completion of this course.

GEO 495.1: MAP TRANSFORMATION AND GEODESY

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Map transformation: Scale factor; distortion types; systems of map projections; principles of choosing map projection; importance of map projection in GIS.
2. Principle, construction, properties and uses of following map projections:

   a) Conformal Projections- Mercator's Projection; Transverse Mercator Projection and Lambert's Conformal Conic (LCC) Projection.
3. Principle, construction, properties and uses of following map projections

   b) Equal Area Projection- Mollweide's Projection.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

c) Conical Projection- Simple Conical Projection with Two Standard Parallels.

4. Geodesy: Scope and application; concept of Geoid, reference ellipsoid and spheroid- WGS 84, Everest Spheroid.
5. Coordinate Systems: Cartesian, Rectangular, Spherical, Curvilinear, Spherical, UTM Grid System.

GEO 495. 2: GEOGRAPHIC INFORMATION SYSTEM

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Basic Concepts and components in GIS: An overview of the development of the GIS fields, Data Sources; Data acquisition methods
2. Data structure: Vector and Raster data structures, data storage.
3. Modern trends in GIS: 3D GIS and Web GIS, Real time GIS, Mobile GIS and application of GIS
4. Basics of GPS Surveying: Conceptual Framework, Space Segment, Ground Segment, Control Segment, Satellite Triangulation, Pseudo Random Code. DGPS and GNSS
5. GPS-aided traversing; Manual and Computer plotting for preparation of maps.

PAPER - GEO 496: SPATIAL ANALYSIS AND PROTOTYPE RESEARCH

Full Marks: 50 Credit: 4

GEO 496. 1: SPATIAL ANALYSIS IN GEOGRAPHY

Course Outcome:

The focus of this course is to give a comprehensive understanding of the spatial organization through mathematical and statistical analysis. Upon completion of this course, the students get an inclusive knowledge and skills to perform spatial analysis at different spatial scale.

Full Marks- 25
*Pattern of Setting Questions: **Three** compulsory questions bearing marks **7, 7 and 6** respectively, will be set covering the whole unit. **5** marks will be allotted for Laboratory Note Book and Viva-voce.*

1. Transport network analysis: Centrality Indices, Shortest path analysis(Transport and allocation problems), Detour and spread.
2. Distance Matrix (Aggregate Travel Distance).
3. Point spatial distribution analysis: Uniformity, randomness and compactness.
4. Analysis of Directional Data; Rose diagram, Dominant Direction, Mean direction.
5. Analysis of Shape: Measures based on axial ratios, perimeters to areas, areas to axial length.

GEO 496. 2: RESEARCH EXERCISE IN GEOGRAPHY

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Full Marks- 25 (Evaluation of written report-10 and Viva-voce based on Power point presentation- 15)

Field work on a specific environmental issue and generation of report (within about 50 A4 size pages including 15-20 maps/diagrams/field photographs).

SUGGESTED REFERENCES

GEO401.1: Schools in Geographical Thought

Adhikari, S. (1992): *Geographical Thought*, Chaitanya Pub. House, Allahabad: 272p.

Chorley, R.J. and Hagget, P. (editors) (1965): *Frontiers in Geographical Teaching*, OUP, Oxford: 231p.Delhi: 195p.

Dikshit, R.D. (edt.) (1994): *The Art and Science of Geography: Selected Readings*, Prentice Hall India Ltd., New

Dunbar, G.S. (edt.) (1991): *Modern Geography: An Encyclopaedic Survey*, St. James Press, Chicago: 219p.

Gregory D. and Walford, R. (editors) (1988): *Horizons in Human Geography*, Macmillan, London: 390p.

Hussain, M. (1995): *Evolution of Geographical thought*, 3rd edition, Rawat Pub. Co., New Delhi: 432p.

Messy, D. and Allen, J. (editors) (1984): *Geography Matters: A Reader*, Cambridge University Press, Cambridge: 204p.

Stoddart, D.R. (1986): *On Geography and its History*, Basil Blackwell, Oxford: 236p.

GEO401.2: Contemporary Discourses in Geography

Adhikari, S. (1992): *Geographical Thought*, Chaitanya Pub. House, Allahabad: 272p.

Bird .J.(1989): *Changing Worlds of Geography: A Critical Guide to Concepts and Methods*, Oxford University Press

Chorley, R.J. and Hagget, P. (editors) (1965): *Frontiers in Geographical Teaching*, OUP, Oxford: 231p.Delhi

Dikshit, R.D. (editor) (1994): *The Art and Science of Geography: Selected Readings*, Prentice Hall India Ltd., New Delhi.

Dunbar, G.S. (editor) (1991): *Modern Geography: An Encyclopedi Survey*, St. James Press, Chicago: 219p.

Gregory D. and Walford, R. (editors) (1988): *Horizons in Human Geography*, Macmillan, London: 390p.

Hussain, M. (1995): *Evolution of Geographical thought*, 3rd edition, Rawat Pub. Co., New Delhi: 432p.

Johnston, R..J (1997): *Geography and Geographer: Anglo American Human Geography*, Arnold pub.

Johnston, R. J. (ed.) (2006): *Dictionary of Human Geography*, Blackwell.

Messy, D. and Allen, J. (editors) (1984): *Geography Matters: A Reader*, Cambridge University Press, Cambridge: 204p.

Stoddart, D.R. (1986): *On Geography and its History*, Basil Blackwell, Oxford: 236p.

GEO402.1: Political Geography

Adhirari, S. (2004): *Political Geography*, Rawat Pub. Jaipur.

Alexander, L.M.(1963): *The World Political Pattern*, Rand Mcnally, Chicago.

Alland, A. (1972*): The Human Imperatives*, Atheneum, New York.

Bergman, E. (1975): *Modern Political Geography*, WMC Brown Co. Pub. Iowa.

Dikshit R. D. (1975): *Political Geography, - A contemporary perspective*, Tata McGraw Hill Pub. Company, New Delhi

Dwivedi, R.L.(1990): *Fundamental of political Geography*, Chaitanya publising House, Allahabad.

Goblet, Y.M. (1955): *Political Geography and the World Map*, George Philip and sons Ltd.

Hartshorne,T.A and Alexander ,J.W. (1988): *Economic Geography* (3rd Edition), Prentice Hall of India Pvt. Ltd.

Jackson, WAD (1964): *Politics and Geographic Relationship*, PrenticeHall.

Taylor, P.J.(1985): *Political Geography, World Economy, Nation, State & Locality*, Longman, Landon.

Weigest, H. (1957): *Principles of Political Geography*, Appleton century, Crasts Inc. New york.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO402.2: Geography of Globalization

Appaduria, A. (2001): *Globalization*, Duke University Press
Cofman, E and Youngs, G (1996): *Globalization: Theory and Practice*, Continum International Publishing Group.
Dasgupta, Biplab (2005): *Globalization- India's Adjustment Experience*; SAGE, New Delhi.
Haggett, P. (2001): *Geography: A Global synthesis*, Prentice Hall
Mackinnon, D. and Cumbess, A. (2007): *An Introduction to Economic Geography: Globalization, Uneven development and ……*, Prentice Hall
Mc Cann(Eds)(2004):*From Local to the Global*, Rawat Publishers
Tomlinson, J (1999): *Globalization and Culture*, Cambridge Polity presss
Vertova, G. (2006): *The changing economic geography of Globalization*, Routledge
W.Murray (2006): *Geographies of Development*, Routhledge Publication
Youngs, G. (2001): *Globalization, Communication and Technology*, Cambridge.
Goldin, I and Reinert, K (2012) : Globalization for Development, Oxford University Press, New York
Potter, R.B and Binns, Tony (Eds) (2001); Globalization and Development, Pearson Education Limited, Harlow

GEO403.1: Social and Cultural Geography

Bist,B.S.and Panth,V.K(1998): *Backward Communities in India*, Rawat Pub.
Harvey,G.(2006): *Readings in Indigenous Religion* ,Rawat Pub.
Hichcock,S.(2006): *Geography of Religion*, Rawat Pub.
Knox,Paul.L.(1975): *Social Wellbeing: Human Spatial Perspectives*, Oxford University Press.
Mahanti.M (ed)(1994): *Class, Caste and Gender- Tribal Issues in India*, Sage Pub.
Sahu, C.(2006): *Encyclopedia of Indian tribes*
Tiwari, S.K.(1998): *Antiquity of Indian Tribes*.ISBN-81-7625-016-3.
Smith, S.J and Pain,R (Eds) (2010): Social Geographies, Sage, Los Angles
Perry, A.J and Perry, E.K (2010) : Contemporary Society: An Introduction to Social Science, Pearson Education, Noida, India
Guha-Banerje, S. (2001): *Space, society and geography*, Rawat Publication, Jaipur.
Norton, W (2006): *Cultural Geography: Environments, Landscape, Identities and Inequities*, Oxford University Press, Oxford.
Carter, J. And Jones, T. (1989):*S ocial Geography: An Introduction to Contemporary Issues* , Edward Arnold, London
De Blij H.J. (1996): *Human Geography: Culture, Society and Space*, John Wiley and Sons Inc., New York: 531 p.
Norton, W (2006): *Cultural Geography: Environments, Landscape, Identities and Inequities*, Oxford University Press, Oxford.
Mitchell, D. (2000): *Cultural Geography: A Critical Introduction*, Wiley
Mike,C. (2000): *Cultural Geography*, Routledge, London
Hussain, M. (2005): *Cultural Geography*, Anmol Publication, New Delhi
Alison,B et.al (2003): *Cultural Geography in practice*, Arnold, New Delhi
Singh, G.N and Nath, Kashi (2004): *Cultural Geography-Form and Process*, Concept Publication, New Delhi
Jackson, A.K and et.al (2005): *Cultural Geography: A critical dictionary of key concepts*, Tauris, London

GEO403.2: Regional Planning

Bhat, L.S. (1973): *Regional Planning in India*, Statistical Pub. Society.
Chand, M. and Puri, V.K. (1988): *Regional Planning in India*, Vikas, New Delhi
Chandana, R.C. (2000): *Regional Planning and Development*, Kalyani Publishers
Glasson, J. (1974): *An Introduction to Regional Planning*, Hutchinson, London
Greed, C (2000): *Introducing Planning*, Athlone Press, London
Hall, P. (174): *Urban and Regional Planning*, Penguin, London
Mishra, R.P. (1969): *Regional Planning, Concept, Techniques, Policies*, The University of Mysore Press.
Mitra, A. (1971): *Levels of Regional Development India*, Census of India

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Roy,G.L and Mondal, S. (1993): *Gram Panchayat Organization: Effective Management for Rural Development*
Sanyal, B. M (2001): *Decentralized Planning- Themes and Issues*, Concept.
Tim, Hall (2006): *Urban Geography*, Routledge.

GEO404A.1: Advanced Geomorphic Techniques

Anderson Robert S. and Anderson Suzanne P., 2010 Geomorphology (1st Edition, Kindle Edition) by , Cambridge University Press.
Anderson, M.G. (1988) Modelling Geomorphological Systems, John Wiley & Sons, New York
Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.
Coates, D.R. and Vitek, J.D. (1980) (eds), Thresholds in Geomorphology, George Allen & Unwin, London.
Goudie, A.G. et al. (1990) (eds) Geomorphological Techniques, Unwin, Hyman, London.
Knighton, D. (1990) Fluvial Forms and Processes, Hodder Education, UK.
Maiti, R.K. (2016) Modern Approaches to Fluvial Geomorphology, Primus Books.
Maity S.K. and Maiti, R.K. (2018) Sedimentation in the Rupnarayan River, Vol 1, Hydrodynamic Processes under Tidal System, Springer.
Maity S.K. and Maiti, R.K. (2018) Sedimentation in the Rupnarayan River, Vol 2, Estuarine Environment of Deposition, Springer.
Morisawa, M. (1985) Rivers, Longman, London.
Selby, R.C. (1976), An Introduction to Sedimentology, Academic Press, London.

GEO404A.2: Applied Geomorphology

Anderson Robert S. and Anderson Suzanne P., 2010 Geomorphology (1st Edition, Kindle Edition) by , Cambridge University Press.
Anderson, M.G. (1988) Modelling Geomorphological Systems, John Wiley & Sons, New York
Brierley, G.J. & Fryirs, K.A. (2005): Geomorphology and River Management, Blackwell Publishing, Oxford, UK.
Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.
Chorley R.J. (Ed.) (1972) Spatial Analysis in Geomorphology., Methuen & Co., London.
Coates, D.R. and Vitek, J.D. (1980) (eds), Thresholds in Geomorphology, George Allen & Unwin, London.
Cook, R.U. & Doornkamp, J.C. (1974): Geomorphology in Environmental Management, an Introduction. Clarendon Press. Oxford. .
Goudie, A.G. et al. (1990) (eds) Geomorphological Techniques, Unwin, Hyman, London.
Hart, M.G. (1986): Geomorphology Pure and Applied, George Allen and Unwin, London.
Knighton, D. (1990) Fluvial Forms and Processes, Hodder Education, UK.
Lee, N. and George, C. (eds.)(2000), Environmental assessment in developing and transitional countries. John Wiley & Sons Ltd.
Maiti, R.K. (2016) Modern Approaches to Fluvial Geomorphology, Primus Books.
Maity S.K. and Maiti, R.K. (2018) Sedimentation in the Rupnarayan River, Vol 1, Hydrodynamic Processes under Tidal System, Springer.
Maity S.K. and Maiti, R.K. (2018) Sedimentation in the Rupnarayan River, Vol 2, Estuarine Environment of Deposition, Springer.
Morisawa, M. (1985) Rivers, Longman, London.
Paul A. () Coastal Geomorphology---------- acb Publication, Kolkata.
Selby, R.C. (1976), An Introduction to Sedimentology, Academic Press, London.
Shit, P.K. and Maiti, R.K. (2012), Rill Gully Erosion in Badland Topography – Field Measurement and Monitoring (A case study on western part of West Bengal, India), LAMBERT Academic Publication, Germany
Shit, P.K. and Maiti, R.K. (2013), Management techniques of Rill-Gully Erossion in Badland Topography (Experimental Research at Laboratory, Plot and Catchments Scale), LAMBERT Academic Publication, Germany

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO404B.1: Coastal Ecology and Hazards

Bird, E.C.F. (2000): *An Introduction to Coastal Geomorphology*, John Wiley and Sons Ltd. New York: 340 P.

Carter, R.W.G (1988): *Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines*, Academic Press, London

Inman, D.L. (1960): *Shore Processes, Encyclopedia of Science & Technology*, Mc Graw Hill, New York.

Komar, P.D. (1996): *Beach Processes and Sedimentation*, Prentice Hall.

Laussn, E and Lato, I.(ed): *Chemistry and Biochemistry of estuaries*, Wiley, New York.

Paul, A.K. (2002): *Coastal Geomorphology and Environment*, ACB Publication.

GEO404B.2: Coastal Issues and Management

Allen, J.R.L (1970): *Physical Processes of Sedimentation*, Jorge Allen & Unwin, London

Bird, E.C.F. (1985): *Coastline Changes*, Wiley.

Carter, R.W.G (1988): *Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines*, Academic Press, London

Dayer K.R. (1979): *Estuary Hydrography, and sedimentation, Cambridge Univ. Press, Cambridge*.

Devis R.A. (ed) (1978): *Coastal Sedimentary Environment*, Springer Verlag, New York.

Fitzerled and Davis Jr. (2002): *Beaches and Coasts*.

Harikawa , K. (1978): *Coastal Engineering*, Univ of Tokyo Press, Tokyo.

Hsasleff, S.K. (2000): *Coastal Systems*, Routledge.

Inman, D.l. (1960): *Shore Processes, Encyclopedia of Science & Technology*, Mc Graw Hill, New York.

Ivan, V. (2006): *Global Coastal Change*, Blackwell.

Kay,R. and Alden, J.(1999): *Coastal Planning and Management*, E and FN Spon, London

Komar, P.D. (1996): *Beach Processes and Sedimentation*. Prentice Hall.

Laussn, E and Lato, I.(ed): *Chemistry and Biochemistry of estuaries*, Uniley, New York.

Paul, A.K. (2002): *Coastal Geomorphology and Environment*, ACB Publication.

Paul, A.K. (2005): *Tsunami- An Assessment of Disaster in Indian Ocean Nations*, ACB Publication.

Pethick, J.(2000): *An Introduction to coastal Geomorphology*, Arnold, London.

Schwartz, M.L (2005): *Encyclopedia of Coastal Science*, Springer.

Stanley, D.J. and Suist D.J.P.(ed)(1976): *Marine Sediment Transport and environmental management*, Wiley, New York.

Woodroffe, C. D. (2002): *The Coast- Form, Process and Development*, Cambridge University Press.

GEO404C.1: Theoretical Bases of Regional Planning

Bhat, L.S. (1973): *Regional Planning in India*, Statistical Pub. Society.

Chand, M. and Puri, V.K. (1988): *Regional Planning in India*, Vikas, New Delhi

Chandana, R.C. (2000): *Regional Planning and Development*, Kalyani Publishers

Glasson, J. (1974): *An Introduction to Regional Planning*, Hutchinson, London

Greed, C (2000): *Introducing Planning*, Athlone Press, London

Hall, P. (174): *Urban and Regional Planning*, Penguin, London

Mishra, R.P. (1969): *Regional Planning, Concept, Techniques, Policies*, The University of Mysore Press.

Mitra, A. (1971): *Levels of Regional Development India*, Census of India

Roy,G.L and Mondal, S. (1993): *Gram Panchayat Organization: Effective Management for Rural Development*

Sanyal, B. M (2001): *Decentralized Planning- Themes and Issues*, Concept.

Tim, Hall (2006): *Urban Geography*, Routledge.

GEO404C.2: Planning For Urban Development

Bhat, L.S. (1973): *Regional Planning in India*, Statistical Pub. Society.

Chand, M. and Puri, V.K. (1988): *Regional Planning in India*, Vikas, New Delhi

Glasson, J. (1974): *An Introduction to Regional Planning*, Hutchinson, London

Hall, P. (174): *Urban and Regional Planning*, Penguin, London

Mishra, R.P. (1969): *Regional Planning, Concept, Techniques, Policies*, The University of Mysore Press.

Mitra, A. (1971): *Levels of Regional Development India*, Census of India.

Tim, Hall (2006): *Urban Geography*, Routledge.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

Faira Arthur B. Gallion (2003).The Urban pattern: City planning and Design, CBS Publication
Rao,P. (2009). Urban Planning: Theory and Practice, CBS Publication
Hiraskar,G.K. (2012). Fundamentals of Town Planning. Dhanpat Rai Publication
Das Amiya Kumar (2007). Urban Planning in India. Rawat
Catanese (2014). Urban Planning. McGrow Hill
KulshresthaS.K. (2012). Urban and regional Planning in India: A handbook for Professional Practice. Sage Publication
Jane Jacob (1992). The Death and Life of Great American Cities. Vintage Publication

GEO404D.1: Advanced Remote Sensing

Campbell, J .B. (1996): *Introduction to Remote Sensing*, 2nd edition, Taylor & Francis, London: 622p.
Cracknelll, A.P. and Hayes, L.W.B. (1991): *Introduction to Remote Sensing*, Taylor and Francis, Washington.
Curran, P.J. (1980): *Multispectral Remote Sensing of Vegetation Amount*, Progress in Physical Geography
Curran, P.J. (1988): *Principles of Remote Sensing*, ELBS Edn. Longman Group Ltd. UK
Guha, P.K. (2003*): Remote Sensing for the Beginne*r, Affiliated East-West Press Pvt. Ltd., New Delhi
Joseph,, George (2003*): Fundamental of Remote Sensing*, University Press (India) Pvt. Ltd,
Lillesand, T.M. and Kieffer, R.W. (2003): *Remote Sensing and Image Interpretation*, 5th Edition., Wiley, NY.
Marcolongo, B. and Mantorani, F. (1997): *Photogeology: Remote Sensing Application in Earth Science*, Oxford
Rajan, M.S. (1995): *Space today*, 2nd edition, National Book Trust, New Delhi, 344p.
Sabins, F.F. (1997): *Remote Sensing: Principles and Applications*, 3rd edition, W.H. Freeman & Company, New York:

GEO404D.2: Advanced GIS and Application of Remote Sensing

A.S.P. (1981): *Manual of Photogrammetry*; (4th edn). American Society of Photogrammetry, Falls Church, Virginia.
American society for Photogrammetry and Remote Sensing, Glossary of mapping science, ASPRS,Bethesda, MD,1994
Castleman, K.R. (1979*): Digital Image Processing*. Prentice Hall Inc, New Jersey.
Chaisman, N. 1992: *Exploring Geographical Information Systems*, John Wiley and Sons Inc., New York: 198p.
Foresman,T.W.(ed) (1998*): History of GIS*, Prentice-Hall, Upper saddle river, NJ,
Martin, D. (1991): *Geographical Information Systems and their Socioeconomic Applications*. London, Routledge.
Masser, Ian and Blakemore, Michael (1991): *Handling Geographical Information: Methodology and Potential Application*, 3rd ed., Longman Scientific and Technical.
Robert A. Schowengerdt,(1997): *Techniques for Image Processing and Classification in Remote Sensing*, Academic Press.
Ulaby, F.T., Moore, R,K. and Fung, A.K. (1982): *Microwave Remote Sensing Active and Passive*, Volume II, Radar

GEO495.1: Spatial Analysis in Geography

Clark, C.D. and Wilson, C.(1994): *Spatial Analysis of Lineaments: Computer and Geosciences*, V.20.No. 7/8,p. 1237-1258.
Cliff, A.D. and J.K.Ord (1981): Spatial Processes: Models and Applications. London, Pion Ltd.
Getis, A. and B. Boots (1978): Models of Spatial Processes: An Approach to the study of Point, Line and Area Patterns. Cambridge, Cambridge University Press.
John, J.C.(2002):*Statistics and data nalysis in Geology*, Singapore, JohnWiley & Sons(Asia).
Watson, D.F. (1992): *Contouring: A Guide to the Analysis and Display of Spatial Data*, Oxford, Pergamon Press.
Watson, G.S. (1970): *Orientation Statistics in the Earth Sciences*, Bull.Geol. Inst.Uppsala, V.2. No. 9, p.73-89.
Watson, G.S. (1983): *Statistics on Spheres*, New York, John Wiley & Sons

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

GEO495.2: Research Exercise in Geography

Alvi. Z. (1995*): Statistical Geography: Methods and Applications*, Rawat Publication, New Delhi
Compton,R.R.(1985): *Geology in the Field*, John Wiley and Sons.
Gardiner,V. and Dacombe,R.(1983):*Geomorphological Field Mannual*,George Allen and Unwin, London
Ghosh,B.N.(1982): *Scientific Methods and Social Research* ,Starling Publishers Private Ltd. New Delhi.
Goudie, A. (1981): *Geomorphological Techniques*, George Allen and Unwin, London
John, C. D. (2002): *Statistics and Data Analysis in Geology*; John Wiley & Sons.
Kothari,R.C(2004):*Research Methodology*,New Age International Publishers, New Delhi.
Mahmood, A (1977): *Statistical methods in Geographical studies*, Rajesh Pub. New Delhi
Mishra,H.N(1998): *Research Methodology in Geography*,Rawat Publication.
Pal, S.K. (1999): *Statistics for Geoscientists*, Concept publishing Company, New Delhi: 423p.
Ramachandran,P.(1971):*Training in Research Methodology in Social Sciences in India*, ICSSR, New Delhi
Shama,B.A.V. et al (1983): *Research Methods in Social Sciences*, Chaitanya Publishing House, Allahabad.
Sjoberg g. and Nett (2002): Methodology of Social Research, Rawat Publication
Wang, X and Vonhofe, R.a (2007): *Research Method in Urban and Regional Planning*, Springer
Young,P.V.(1960): *Scientific Social Surveys and Research* 3rd Ed ,Prentice Hall, New York.

GEO496.1: Map Transformation and Geodesy

Kraak, M.J. and Ormeling, F. (2004): *Cartography- Visualization of Geospatial Data*; Pearson Education, Singapore.
Maling, D.H. (1973*): Co-ordinate systems on Map Projection*; George Philip and Sons Ltd, London
Raisz, E. (1962): *Principles of cartography*; Mc Graw Hill, NY.
Richards, P. and Adler, R.K. (1974): *Map Projections*, North Holland Publishing Company, New Delhi.
Robinson, A.H., Sale, R.D., Morrison, J. (1984): *Elements of Cartography*, Wiley, New York:
Roy, P. (1988): *An Analytical Study of Map Projections*, Volume 1, Kolkata.
Sarkar, A. (1997): *Practical Geography: A Systematic Approach*, Orient Longman Ltd., Hyderabad:
Steers, J.A. (1965): *An Introduction to Map Projections*, 14th ion, University of London Press, London:

GEO496.2: Geographic Information System

Foresman,T.W.(ed) (1998*): History of GIS*, Prentice-Hall, Upper saddle river, NJ,
Marcolongo, B. And Mantorani, F. (1997): *Photogeology: Remote Sensing Application in Earth Science*, Oxford and IBH Pub. Pvt. Ltd., New Delhi: 195p.
Martin, D. (1991): *Geographical Information Systems and their Socioeconomic Applications*. London, Routledge.
Masser, Ian and Blakemore, Michael (1991): *Handling Geographical Information: Methodology and Potential Application*, 3rd ed., Longman Scientific and Technical.
Robert A. Schowengerdt,(1997): *Techniques for Image Processing and Classification in Remote Sensing*, Academic Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 16:36:42; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/PG_Syllabus_CBCS_1819/POCO/Geography_Syllabus_POCO_2018_19.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year BSc (HONOURS)
in
Geography

Under Choice Based Credit System (CBCS)
w.e.f 2017-2018

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

VIDYASAGAR UNIVERSITY

B Sc (Honours) in Geography

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-I								
1	I	Core-1		CT1: Geotectonics and Geomorphology	6	5-1-0	15	60	75
		Core-2		CT2: Cartographic Techniques	6	4-0-4	15	60	75
				CP2 Cartographic Techniques - lab					
		GE-1		TBD	6	4/5	15	60	75
				TBD		2/1			
		AECC-1		English/MIL	2	1-1-0	10	40	50
	Semester –I: total				**20**				**275**
	Semester-II								
	II	Core-3		CT3: Human Geography	6	5-1-0	15	60	75
		Core-4		CT4: Cartograms and Thematic Mapping	6	4-0-4	15	60	75
				CP4:Cartography - Lab					
		GE-2		TBD	6	4/5	15	60	75
				TBD		2/1			
		AECC-2		ENVS	4		20	80	100
	Semester-II : total				**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
	Semester-III								
2	**III**	Core-5		CT5: Climatology	6	5-1-0	15	60	75
		Core-6		CT6: Statistical methods in Geography	6	4-0-4	15	60	75
				CP6: Statistical methods in Geography					
		Core-7		CT7: Geography of India	6	5-1-0	15	60	75
		GE-3		TBD	6	4/5	15	60	75
						2/1			
		SEC-1		TBD	2	1-1-0	10	40	50
		Semester – III : total			**26**				**350**
	Semester-IV								
	IV	Core-8		CT8: Regional Planning and development	6	5-1-0	15	60	75
		Core-9		CT9: Economic Geography	6	5-1-0	15	60	75
		Core-10		CT10: Environmental Geography	6	4-0-4	15	60	75
				CP10: Environmental Geography- Lab					
		GE-4		TBD	6	4/5	15	60	75
						2/1			
		SEC-2		TBD	2	1-1-0	10	40	50
		Semester – IV : total			**26**				**350**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
							CA	ESE	TOTAL
		Semester-V							
3	**V**	Core-11		CT11: Field work and Research Methodology	6	4-0-4	15	60	75
				CP11 : Field work and Research Methodology-Lab					
		Core-12		CT12: Remote sensing and GIS	6	4-0-4	15	60	75
				CP12: Remote sensing and GIS-Lab					
		DSE-1		TBD	6	5-1-0	15	60	75
		DSE-2		TBD	6	5-1-0	15	60	75
		Semester –V : total			**24**				**300**
		Semester-VI							
	VI	Core-13		CT13: Evolution of Geographical thought	6	5-1-0	15	60	75
		Core-14		CT14: Disaster Management	6	4-0-4	15	60	75
				CP14: Disaster Management based Project Work					
		DSE-3		TBD	6	5-1-0	15	60	75
		DSE-4		TBD	6	5-1-0	15	60	75
		Semester – VI : total			**24**				**300**
Total in all semester:					**142**				**1900**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

List of Core Course (CC)

CC-1: Geotectonics and Geomorphology
CC-2: Cartographic Techniques
CC-3: Human Geography
CC-4: Cartograms and Thematic Mapping
CC-5: Climatology
CC-6: Statistical Methods in Geography
CC-7: Geography of India
CC-8: Regional Planning and Development
CC-9: Economic Geography
CC-10: Environmental Geography
CC-11: Field Work and Research Methodology
CC-12: Remote Sensing and GIS
CC-13: Evolution of Geographical Thought
CC-14: Disaster Management

Discipline Specific Electives (DSE)

DSE-1: Hydrology and Oceanography
Or
DSE-1: Geography of Health and Wellbeing
Or
DSE-1: Cultural and Settlement Geography
DSE-2: Resource Geography
Or
DSE-2: Fluvial Geomorphology
Or
DSE-2: Social Geography
DSE-3: Population Geography
Or
DSE-3: Political Geography
Or
DSE-3: Soil and Biogeography
DSE-4: Agricultural Geography
Or
DSE-4:Urban Geography
Or
DSE-4: Project Work

Skill Enhancement Course (SEC)

SEC-1: Coastal Management
Or
SEC-1: Computer Basics and Computer Application
SEC-2: Research Methods
Or
SEC-2: Advanced Spatial Statistical Techniques

Generic Electives (GE)

GE- 1: Disaster Management

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

GE- 2: Geospatial Technology
GE-3: Geography of Tourism
Or
GE3: Rural Development
GE-4: Regional Development
Or
GE-4: Sustainable Development
Or
GE-4: Climate Change: Vulnerability and Adaptations

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Core Course

CC-T: Geotectonics and Geomorphology **Credits 06**

C1T: Geotectonics and Geomorphology

Unit I: Geotectonics **2 Credits**

1. Earth's tectonic and structural evolution with reference to geological time scale
2. Earth's interior with special reference to seismology. Isostasy: Models of Airy and Pratt
3. Plate Tectonics: Processes at constructive, conservative, destructive margins and hotspots; resulting landforms
4. Folds and Faults—origin and types

Unit II: Geomorphology **4 Credits**

1. Degradational processes: Weathering, mass wasting and resultant landforms
2. Processes of entrainment, transportation and deposition by different geomorphic agents. Role of humans in landform development.
3. Development of river network and landforms on uniclinal and folded structures
4. Landforms on igneous rocks with special reference to Granite and Basalt
5. Karst landforms: Surface and sub-surface. Coastal processes and landforms.
6. Glacial and fluvio-glacial processes and landforms; fluvio-glacial landforms
7. Aeolian and fluvio-aeolian processes and landforms; fluvio-aeolian processes
8. Models on landscape evolution: Views of Davis, Penck, King and Hack

Reference Books

- Bloom A. L., 2001: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, Third edition , New Delhi.
- Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
- Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, 8 Ed., Macmillan Publishing Company
- Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
- Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
- Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
- Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to physical Geology, 4th Edition, John Wiley and Sons
- Thornbury W. D., 1969: Principles of Geomorphology, Wiley.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

CC-2: Cartographic Techniques **Credits 06**

C2T: Cartographic Techniques **Credits 04**

1. Maps: Classification and types. Components of a map.
2. Concept and application of scales: Plain, comparative, diagonal and vernier
3. Coordinate systems: Polar and rectangular. Concept of geoid and spheroid
4. Concept of generating globe. Grids: angular and linear systems of measurement
5. Bearing: Magnetic and true, whole-circle and reduced.
6. Map projections: Classification, properties and uses. Concept and significance of UTM projection.
7. Basic concepts of surveying and survey equipment: Prismatic compass, dumpy level, theodolite, Abney level, clinometer.
8. Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps

Reference Books

- Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.
- Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST,
- New Delhi.
- Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
- Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
- Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Sarkar, A. (2015) Practical Geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

C2P : Cartographic Techniques Lab **Credits 02**

A Project File, comprising one exercise each is to be submitted

1. Graphical construction of scales: Plain, comparative, diagonal and vernier
2. Construction of projections: Polar Zenithal Stereographic, Simple conic with two standard parallels, Bonne's, Cylindrical Equal Area, and Mercator's.
3. Delineation of drainage basin from Survey of India topographical map. Construction and interpretation of relief profiles (superimposed, projected and composite), relative relief map, slope map (Wentworth), and stream ordering (Strahler) on a drainage basin.
4. Correlation between physical and cultural features from Survey of India topographical maps. using transect chart

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

CC-3: Human Geography **Credits 06**

C3T:Human Geography

Unit I: Nature and Principles **2 Credits**

1. Nature and scope and recent trends. Elements of Human Geography
2. Approaches to the study of Human Geography; Resource, Locational, Landscape, Environmental
3. Evolution of humans. Concept of race and ethnicity
4. Space, society and cultural regions (language and religion)

Unit :II: Society, Demography and Ekistics **4 Credits**

1. Evolution of human societies: Hunting and food gathering, pastoral nomadism, subsistence farming, industrial and urban societies
2. Human adaptation to environment: Eskimo, Masai, Jarwa, Gaddi, Santhals.
3. Population growth and distribution, population composition; demographic transition model
4. Population–Resource regions (Ackerman)
5. Human population and environment with special reference to development–environment conflict
6. Social morphology and rural house types in India
7. Types and patterns of rural settlements
8. Types and patterns of urban settlements

Reference Books

- Bergman, E.F (1995): Human Geography-Culture, Connections and Landscape, Prentice Hall, New Jersey
- Chisholm. (1975): Human Geography, Penguin Books, Hermondsworth.
- Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
- Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
- Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
- Norton. W. (2001): Human Geography, 4th Edition Oxford University press, Oxford
- Pearce D. (1995): Tourism Today: A Geographical Analysis, 2nd edition, Longman Scientific & Technical, London
- Pickering K. and Owen A. A. (1997): An Introduction to Global Environmental Issues, 2nd edition Rutledge, London.
- Raw, M. (1986): Understanding Human Geography: A Practical Approach, Bell and Hyman. London
- Rubenstein, J.M. (2002), The Cultural Landscape, 7th edition, Prentice Hall, Englewood Cliffs
- Smith D M (1982): Human Geography: A Welfare Approach, Edward Arnold, London

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

CC-4 : Cartograms and Thematic Mapping **Credits 06**

C4 T : Cartograms and Thematic Mapping **Credits 04**

1. Concepts of rounding, scientific notation, logarithm and anti-logarithm, natural and log scales
2. Diagrammatic representation of data: Line, Bar, and Circle
3. Representation of point data: Isopleths.
4. Representation of area data: Dots, proportional circles and choropleth
5. Preparation and interpretation of large scale thematic maps: Geomorphological maps
6. Preparation and interpretation of large scale thematic maps: Climatological maps
7. Preparation and interpretation of large scale thematic maps: Landuse landcover maps
8. Preparation and interpretation of large scale thematic maps: Socio-economic maps

Reference Books

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

C4 P: Cartography (Lab) **Credits 02**

Cartography

A Project File, comprising one exercise each is to be submitted

1. Traverse survey using Prismatic Compass
2. Levelling by Dumpy Level and Prismatic Compass
3. Thematic maps: Proportional squares, pie diagrams with proportional circles, dots and spheres
4. Thematic maps: Choropleth, isoline map, chorochromatic map

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

CC -5: Climatology **Credits 06**

C5T: Climatology

Unit I: Elements of the Atmosphere **2 Credits**

1. Nature, composition and layering of the atmosphere,
2. Isolation: controlling factors. Heat budget of the atmosphere.
3. Temperature: horizontal and vertical distribution. Inversion of temperature: types, causes and consequences.
4. Greenhouse effect and importance of ozone layer**.**

Unit II: Atmospheric Phenomena and Climatic Classification **4 Credits**

1. Condensation: Process and forms. Mechanism of precipitation: Bergeron-Findeisen theory, collision and coalescence. Forms of precipitation.
2. Air mass: Typology, origin, characteristics and modification.
3. Fronts: warm and cold; frontogenesis and frontolysis.
4. Weather: stability and instability; barotropic and baroclinic conditions.
5. Circulation in the atmosphere: Planetary winds, jet stream, index cycle
6. Tropical and mid-latitude cyclones
7. Monsoon circulation and mechanism with reference to India
8. Climatic classification after Köppen, Thornthwaite and Oliver

Suggested Readings:

- Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
- Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
- Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
- Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
- Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
- Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw-

CC-6: Statistical Methods in Geography **Credits 06**

C6T: Statistical Methods in Geography **Credits 04**

Unit I **2 Credits**

1. Importance and significance of Statistics in Geography. Discrete and continuous data, population and samples, scales of measurement (nominal, ordinal, interval and ratio), sources of data
2. Collection of data and formation of statistical tables
3. Sampling: Need, types, and significance and methods of random sampling
4. Theoretical distribution: frequency, cumulative frequency, normal and probability

Unit II **2 Credits**

1. Central tendency: Mean, median, mode, partition values

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

2. Measures of dispersion range, mean deviation, standard deviation, coefficient of variation
3. Association and correlation: Rank correlation, product moment correlation
4. Regression (linear and non-linear) and time series analysis (moving average)

Suggested Readings:

- Berry B. J. L. and Marble D. F. (eds.): Spatial Analysis – A Reader in Geography.
- Ebdon D., 1977: Statistics in Geography: A Practical Approach.
- Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction,
- Oxford University Press.
- King L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
- Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept.
- Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
- Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
- Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
- Spiegel M. R.: Statistics, Schaum's Outline Series.
- Yeats M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.

C6 P – Statistical Methods in Geography **Credits 02**

A Project File, comprising one exercise each is to be submitted

1. Construction of data matrix with each row representing an aerial unit (districts / blocks / *mouzas* / towns) and corresponding columns of relevant attributes.
2. Based on the above, a frequency table, measures of central tendency and dispersion would be computed and interpreted.
3. Histograms and frequency curve would be prepared on the dataset.
4. From the data matrix a sample set (20%) would be drawn using, random, systematic and stratified methods of sampling and locate the samples on a map with a short note on methods used.
5. Based on of the sample set and using two relevant attributes, a scatter diagram and regression line would be plotted and residual from regression would be mapped with a short interpretation.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

CC7: Geography of India **Credits 06**

C7T: Geography of India

Unit I: Geography of India **Credits 04**

1. Tectonic and stratigraphic provinces, physiographic divisions
2. Climate, soil and vegetation: Characteristics and classification
3. Population: Distribution, growth, structure and policy
4. Distribution of population by race, caste, religion, language, tribes and their correlates
5. Agricultural regions. Green revolution and its consequences
6. Mineral and power resources distribution and utilisation of iron ore, coal, petroleum, gas;
7. Industrial development: Automobile and information technology
8. Regionalisation of India: Physiographic (R. L. Singh), Socio-cultural (Sopher) and Economic (Sengupta)

Unit II: Geography of West Bengal **Credits 02**

1. Physical perspectives: Physiographic divisions, forest and water resources
2. Population: Growth, distribution and human development
3. Resources: Mining, agriculture and industries
4. Regional Problem: Darjeeling Hills, Jangalmahal and Sundarban

Suggested Readings:

- Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.
- Johnson, B. L. C., ed. 2001. Geographical Dictionary of India. Vision Books, New Delhi.
- Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An Intenational Perspective. Vol. 3 – Indian Perspective.
- Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India
- Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
- Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
- Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
- Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
- Tirtha, Ranjit 2002: Geography of India, Rawat Publs., Jaipur & New Delhi.
- Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
- Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
- Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

CC-8: Regional Planning and Development **Credits 06**

C8T:Regional Planning and Development

Unit I: Regional Planning **2 Credits**

1. Concept of regions: Types of regions and their delineation.
2. Types of planning, principles and objectives of regional planning, multi- level planning in India
3. Tools and techniques of regional planning, need for regional planning in India
4. Metropolitan concept: metropolitan areas, and urban agglomerations

Unit I: Regional Development **4 Credits**

1. Development: Meaning, growth versus development
2. Concept and strategies of regional development with reference to India
3. Theories and models for regional development : Growth pole model of perroux; growth centre model in Indian context
4. Theories and models for regional development: Cumulative causation (Myrdal) and core periphery (Hirschman, Rostov and Friedman)
5. Changing concept of development, concept of underdevelopment; efficiency-equity debate
6. Indicators of development: Economic, social and environmental. Human development.
7. Regional development in India, regional inequality, disparity and diversity
8. Need and measures for balanced development in India

Reference Books

- Berry, BJ.L. and Horton, F.F. (1970): Geographic Perspectives on Urban Systems. Prentice Hall, New Jersey.
- Bhat L.S. (1972): Regional Planning In India, Statistical Publishing Society
- Blij H. J. De, 1971: Geography: Regions and Concepts, John Wiley and Sons.
- Chand ,M and Puri V.K. (1983) : Regional planning In India , allied publishers , New Delhi
- Claval P.l, 1998: An Introduction to Regional Geography, Blackwell Publishers, Oxford and Massachusetts.
- Dickinson, R.E. (1964): City and Region, Rutledge, London.
- Friedmann J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications, MIT Press, Massachusetts.
- Gore C. G., 1984: Regions in Question: Space, Development Theory and Regional Policy, Methuen, London.
- Gore C. G., Köhler G., Reich U-P. and Ziesemer T., 1996: Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention, Metropolis- Verlag, Marburg.
- Hall, P. (1992): Urban and Regional Planning, Routledge, London.
- Haynes J., 2008: Development Studies, Polity Short Introduction Series.
- Johnson E. A. J., 1970: The Organization of Space in Developing Countries, MIT Press, Massachusetts.
- Kulshetra ,S.K,(2012) : Urban and Regional Planning in India : A hand book for Professional Practioners , Sage Publication , New Delhi
- Kundu, A. (1992): Urban Development Urban Research in India, Khanna Publ. New Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Misra , R.P, Sundaram K.V, PrakashRao , VLS(1974): Regional Development Planning in India , Vikas Publication , New Delhi
- Misra, R.P (1992): Regional Planning: Concepts , techniques , Policies and Case Studies , Concept , New Delhi
- Peet R., 1999: Theories of Development, The Guilford Press, New York.
- UNDP 2001-04: Human Development Report, Oxford University Press.
- World Bank 2001-05: World Development Report, Oxford University Press, New Delhi

CC-9: Economic Geography **Credits 06**

C9T: Economic Geography

Unit I: Concepts **2 Credits**

1. Meaning and approaches to Economic Geography, new Economic Geography
2. Concepts in Economic Geography: Goods and services, production, exchange and consumption
3. Concept of economic man, theories of choices
4. Economic distance and transport costs

Unit II: Economic Activities **4 Credits**

1. Concept and classification of economic activities
2. Factors affecting location of economic activity with special reference to agriculture (Von Thunen), and industry (Weber).
3. Primary activities: Subsistence and commercial agriculture, forestry, fishing and mining
4. Secondary activities: Manufacturing (cotton textile, iron and steel), concept of manufacturing regions, special economic zones and technology parks
5. Tertiary activities: transport, trade and services
6. Agricultural systems: Case studies of tea plantation in India and mixed farming in Europe
7. Transnational sea-routes, railways and highways with reference to India
8. International agreements and trade blocs: GATT and OPEC

Reference Books

- Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley-Blackwell.
- Hodder B. W. and Lee Roger, 1974: Economic Geography, Taylor and Francis.
- Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press.
- Wheeler J. O., 1998: Economic Geography, Wiley..
- Durand L., 1961: Economic Geography, Crowell.
- Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, Present and Future, Taylor and Francis.
- Willington D. E., 2008: Economic Geography, Husband Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford

CC-10: Environmental Geography **Credits 06**

C10T: Environmental Geography **Credits 04**

1. Geographers' approach to environmental studies
2. Perception of environment in different stages of civilization
3. Concept of holistic environment and system approach
4. Ecosystem: Concept, structure and functions
5. Environmental pollution and degradation: Land, water and air
6. Space–time hierarchy of environmental problems: Local, regional and global
7. Urban environmental issues with special reference to waste management
8. Environmental programmes and policies – Global, national and local levels

Reference Books

- Chandna R. C., 2002: Environmental Geography, Kalyani, Ludhiana.
- Cunninghum W. P. and Cunninghum M. A., 2004: Principals of EnvironmentalScience: Inquiry and Applications, Tata Macgraw Hill, New Delhi.
- Goudie A., 2001: The Nature of the Environment, Blackwell, Oxford.
- Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
- Miller G. T., 2004: Environmental Science: Working with the Earth, Thomson BrooksCole, Singapore.
- MoEF, 2006: National Environmental Policy-2006, Ministry of Environment andForests, Government of India.
- Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer
- Odum, E. P. et al, 2005: Fundamentals of Ecology, Ceneage Learning India.
- Singh S., 1997: Environmental Geography, Prayag Pustak Bhawan. Allahabad.
- UNEP, 2007: Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme.
- Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
- Singh, R.B. (1998) Ecological Techniques and Approaches to Vulnerable Environment, New Delhi, Oxford & IBH Pub.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

C10 : Environment Geography Lab **Credits 02**

Environment Geography

A Project File, comprising one exercise each is to be submitted

1. Preparation of questionnaire for perception survey on environmental problems
2. Preparation of check-list for Environmental Impact Assessment of an urban / industrial project
3. Quality assessment of soil using field kit: pH and NPK
4. Interpretation of air quality using CPCB / WBPCB data

Reference Books

- Gilpin.A (1994) Environmental Impact Assessment: Cutting Edge for the 21st Century (Eia : Cutting Edge for the Twenty-First Century, Cambridge University Press,

CC-11: Field Work and Research Methodology **Credits 06**

C11T: Field Work and Research Methodology **Credits 04**

Research Methodology and Field Work

Unit I: Research Methodology **2 Credits**

1. Research in Geography: Meaning, types and significance
2. Literature review and formulation of research design
3. Defining research problem, objectives and hypothesis. Research materials and methods
4. Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract and keywords

Unit II: Fieldwork **2 Credits**

1. Fieldwork in Geographical studies – Role and significance. Selection of study area and objectives. Pre-field preparations. Ethics of fieldwork
2. Field techniques and tools: Observation (participant, non participant), questionnaires (open, closed, structured, non-structured). Interview with special reverence to focused group discussions.
3. Field techniques and tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording.
4. Positioning and collection of samples. Preparation of inventory from field data. Post-field tasks.

Reference Books

- Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
- Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Evans M., 1988: “Participant Observation: The Researcher as Research Tool” in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
- Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
- Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
- Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001).
- Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
- Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA

C11P: Research Methodology and Field Work Lab **Credits 02**

Practical Record

1. Each student will prepare an individual report based on primary data collected form field survey and secondary data collected from different sources for either a rural area (*mouza*) or an urban area (municipal ward) based on cadastral or municipal maps to study specific problems.
2. The duration of the field work shall not exceed 10 days
3. The report should be hand written in English on A4 size paper in candidate’s own words within 5,000 to 8,000 words excluding figures , tables , photographs , maps , references and appendices
4. A copy of the bound report, duly signed by the concerned teacher, should be submitted

Reference Books

- Monkhouse, F.J. and Williamson, R.H. (1963): Maps and Diagrams: Their Compilation and Construction, Methuen, London
- Saha, P.K. and Basu, P. (2009): Advanced Practical Geography, Books and Allied (P) Ltd., Kolkata
- Sarkar, A. (2008): Practical Geography: A Systematic Approach, Orient Black Swan, KolkataNarasinha Murthy , R.L. (2014) Research Methodology in Geography , Concept , New Delhi
- Saha, P.K. and Basu, P. (2009): Advanced Practical Geography, Books and Allied (P) Ltd., Kolkata
- Sarkar, A. (2008): Practical Geography: A Systematic Approach, Orient BlackSwan, Kolkata
- Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

CC-12: Remote Sensing and GIS **Credits 06**

C12T: Remote Sensing and GIS **Credits 04**

Remote Sensing and GIS

Unit I: Remote Sensing **2 Credits**

1. Principles of Remote Sensing (RS): Types of RS satellites and sensors
2. Sensor resolutions and their applications with reference to IRS and Landsat missions, image referencing schemes and data acquisition.
3. Preparation of False Colour Composites from IRS LISS-3 and Landsat TM and OLI data.
4. Principles of image interpretation. Preparation of inventories of landuse land cover (LULC) features from satellite images.

Unit II: Geographical Information Systems and Global Navigation Satellite System **2 Credits**

1. GIS data structures: types (spatial and non-spatial), raster and vector
2. Principles of preparing attribute tables, data manipulation and overlay analysis
3. Principles of GNSS positioning and waypoint collection
4. Transferring of waypoints to GIS. Area and length calculations from GNSS data.

Reference Books

- Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press.
- Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
- Joseph, G. 2005: Fundamentals of Remote Sensing, United Press India.
- Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
- Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
- Rees W. G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
- Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.
- Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw- Hill.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

C12 P: Remote Sensing and GIS Lab **Credits 02**

Remote Sensing and GIS

2 Credits

A Project File, comprising one exercise each is to be submitted

1. Georeferencing of maps and images
2. Image enhancement. Preparation of reflectance libraries of LULC features across different image bands of IRS L3 or Landsat OLI data
3. Image classification, post-classification analysis and class editing
4. Digitisation of features. Data attachment, overlay and preparation of thematic map

CC-13: Evolution of Geographical Thought **Credits 06**

C13T: Evolution of Geographical Thought

Unit I: Nature of Pre Modern Geography

1. Development of Geography and contributions of Greek, Chinese, and Indian geographers.
2. Impact of 'Dark Age' on Geography and Arab contributions
3. Geography during the Age of 'Discovery' and 'Exploration' (Contributions of Portuguese Voyages, Columbus, Vasco da Gama, Magellan, Thomas Cook)
4. Transition from Cosmography to Scientific Geography (Contributions of Bernard Varenius and Immanuel Kant); Dualism and Dichotomies (General vs. Particular, Physical vs. Human, Regional vs. Systematic, Determinism vs. Possibilism, Ideographic vs. Nomeothetic)

Unit II: Foundations of Modern Geography and Recent Trends

1. Evolution of Geographical thoughts in Germany, France, Britain and United States of America.
2. Contributions of Humboldt and Ritter
3. Contributions of Richthofen, Hettner and Ratzel
4. Schools of geographical thought: French, British and American;
5. Trends of Geography in the post World War-II period
6. Evolution of Geography in India: formative periods, establishments and emerging trends
7. Quantitative Revolution and its impact, behaviouralism, systems approach, radicalism, feminism
8. Towards Post Modernism: Changing concept of space in geography. Geography in the 21st Century

Reference Books:

- Arentsen M., Stam R. and Thuijis R., 2000: Post-modern Approaches to Space, ebook.
- Bhat, L.S. (2009) Geography in India (Selected Themes). Pearson
- Bonnett A., 2008: What is Geography? Sage.
- Dikshit R. D., 1997: Geographical Thought: A Contextual History of Ideas, Prentice– Hall India.
- Hartshone R., 1959: Perspectives of Nature of Geography, Rand MacNally and Co.
- Holt-Jensen A., 2011: Geography: History and Its Concepts: A Students Guide, SAGE.
- Johnston R. J., (Ed.): Dictionary of Human Geography, Routledge.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Johnston R. J., 1997: Geography and Geographers, Anglo-American Human Geography since 1945, Arnold, London.
- Kapur A., 2001: Indian Geography Voice of Concern, Concept Publications.
- Martin Geoffrey J., 2005: All Possible Worlds: A History of Geographical Ideas, Oxford.
- Soja, Edward 1989. Post-modern Geographies, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.

CC-14: Disaster Management **Credits 06**

C14T: Disaster Management **Credits 04**

Disaster Management

Unit I: Concepts

(2 Credits)

1. Classification of hazards and disasters.
2. Approaches to hazard study: Risk perception and vulnerability assessment. Hazard paradigms.
3. Responses to hazards: Preparedness, trauma and aftermath. Resilience and capacity building.
4. Hazards mapping: Data and techniques.

Unit II: Disaster Case Studies

(2 Credits)

1. Earthquake: Factors, vulnerability, consequences and management
2. Landslide: Factors, vulnerability, consequences and management
3. Cyclone: Factors, vulnerability, consequences and management
4. Fire: Factors, vulnerability, consequences and management

Reference Books

- Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
- Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
- Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
- Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
- Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
- Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
- Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
- Singh Jagbir (2007) "Disaster Management Future Challenges and Opportunities", 2007. Publisher-

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

C14P: Disaster Management based Project Work **Credits 02**

Disaster Management based Project Work
2 Credits

An individual Project Report based on any one case study among the following disasters incorporating a preparedness plan in the vicinity of the candidate's institution or residence:

1. Thunderstorm
2. Landslide
3. Flood
4. Coastal / riverbank erosion
5. Fire
6. Industrial accident
7. Structural collapse

Reference Books

- Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
- Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
- Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
- Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
- Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
- Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
- Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
- Singh Jagbir (2007) "Disaster Management Future Challenges and Opportunities", 2007. Publisher-
- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Department Specific Electives (DSE)

DSE-1: Hydrology and Oceanography **Credits 06**

DSE3T: Hydrology and Oceanography

Hydrology
(2 Credits)

1. Systems approach in hydrology. Global hydrological cycle: Its physical and biological role
2. Run off: controlling factors. Infiltration and evapotranspiration. Run off cycle
3. Drainage basin as a hydrological unit. Principles of water harvesting and watershed management
4. Groundwater: Occurrence and storage. Factors controlling recharge, discharge and movement.

Oceanography
(4 Credits)

1. Major relief features of the ocean floor: characteristics and origin according to plate tectonics.
2. Physical and chemical properties of ocean water
3. Water mass, T–S diagram
4. Air-Sea interactions, ocean circulation, wave and tide.
5. Ocean temperature and salinity : Distribution and determinants.
6. Coral reefs: Formation, classification and threats.
7. Marine resources: Classification and sustainable utilisation
8. Sea level change: Types and causes

Reference Books

- Andrew. D. Ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
- Karanth, K.R., 1988: Ground Water: Exploration, Assessment and Development, Tata- McGraw Hill, New Delhi.
- Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective. Indian National Science Academy, New Delhi.
- Rao, K.L., 1982: India's Water Wealth 2nd edition, Orient Longman, Delhi,
- Singh, Vijay P. (1995): Environmental Hydrology. Kluwer Academic Publications, the Netherlands.
- Anikouchine W. A. and Sternberg R. W., 1973: The World Oceans: An Introduction to Oceanography, Prentice-Hall.
- Garrison T., 1998: Oceanography, Wordsworth Company, Belmont.
- Kershaw S., 2000: Oceanography: An Earth Science Perspective, Stanley Thornes, And UK.
- Pinet P. R., 2008: Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
- Sverdrup K. A. and Armrest, E. V., 2008: An Introduction to the World Ocean, McGraw Hill, Boston.
- Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Landscape ecology and water management. Proceedings of IGU Rohtak Conference, Volume 2. Advances in Geographical and Environmental Studies, Springer

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Or

DSE-1: Geography of Health and Wellbeing **Credits 06**

DSE1T: Geography of Health and Wellbeing

Geography of Health and Wellbeing

1. Definition, scope and trends of Geography of Health in relation to allied disciplines
2. Linkages of health with environment and development
3. Geographical perspective of health in developed and developing countries
4. Factors influencing health and wellbeing
5. Parameters of health and wellbeing
6. Health in relation to population dynamics and urbanization
7. Health in relation to inequality, malnutrition and poverty
8. Exposure and Health Risks: Air pollution; household wastes; water; housing; workplace.
9. Health and disease pattern in Environmental Context with special reference to India
10. Types of Diseases and their regional pattern (Communicable and Lifestyle related diseases).
11. Climate change and morbidity. Biological agents of disease
12. WHO programmes of health and wellbeing

Reference Books

- Akhtar Rais (Ed.), 1990: Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
- Avon Joan L. and Jonathan A Patzed.2001: Ecosystem Changes and Public Health, Baltimin, John Hopling Unit Press(Ed).
- Bradley, D., 1977: Water, Wastes and Health in Hot Climates, John Wiley Chichesten.
- Christaler George and Hristopoles Dionissios, 1998: Spatio Temporal Environment Health Modelling, Boston Kluwer Academic Press.
- Cliff, A.D. and Peter, H., 1988: Atlas of Disease Distributions, Blackwell Publishers, Oxford.
- Gatrell, A., and Loytonen, 1998: GIS and Health, Taylor and Francis Ltd, London.
- Hardham T. and Tannav M., (Eds): Urban Health in Developing Countries; Progress, Projects, Earthgoan, London.
- Murray C. and A. Lopez, 1996: The Global Burden of Disease, Harvard University Press.
- Moeller Dade wed., 1993: Environmental Health, Cambridge, Harward Univ. Press.
- Phillips, D.and Verhasselt, Y., 1994: Health and Development, Routledge, London.
- Tromp, S., 1980: Biometeorology: The Impact of Weather and Climate on Humans and their Environment, Heydon and Son.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Or

DSE-1: Cultural and Settlement Geography **Credits 06**

DSE1T: Cultural and Settlement Geography

Unit I: Cultural Geography
(3 Credits)

1. Definition, scope and content of Cultural Geography
2. Development of cultural geography in relation to allied disciplines
3. Cultural Hearth and Realm; Cultural diffusion, diffusion of major world religions and languages
4. Cultural segregation and cultural diversity, Culture, technology and development.
5. Races and racial groups of the world
6. Cultural regions of India

Unit I: Settlement Geography
(3 Credits)

1. Rural Settlement: Definition, nature and characteristics of rural settlements
2. Morphology of rural settlements: site and situation, layout-internal and external
3. Rural house types with reference to India, Social segregation in rural areas; Census categories of rural settlements.
4. Urban Settlements :Census definition (Temporal) and categories in India
5. Urban morphology: Classical models-Burgess, Homer Hoyt, Harris and Ullman Metropolitan concept.
6. City-region and Conurbation , Functional classification of cities: Harris, Nelson and McKenzie

Reference Books

- Banerjee Guha, S. ed (2004) Space, Society & Geography, Rawat Publication, Delhi
- Bardhan, P., 2003, Poverty, Age Structure & Political Economy in India, Oxford University Press
- Biswas, A.K., Jortajada, C., 2006, Appraising Sustainable Development, Oxford University
- Dhanagare, D.N., 2004, Themes and Perspectives in Indian Sociology, Rawat Publication, Delhi
- Dohrs, I., Sommers,L., 1967, Cultural Geography. Thomas Crowell Company
- Fellmann, J.D.,Getis, A., Getis, J., 2000, Human Geography- Landscape of Human Activity, McGraw Hill
- Fern, R.L., 2002, Nature, God and Humanity, Cambridge university Press
- Gadhil, M., Guha,R.,2000, The Use and Abuse of Nature, Oxford University Press
- Gregory, D.,Urry, J.,1985, Social Relation and Spatial Structure, MacMillan
- Herbert, D.T., Johnston, R.J.,1982, Geography and Urban Environment. John Wiley& Sons
- Hussain, M.,2007, Models in Geography, Rawat Publication
- Jordan,T., Rowntree, L.,1990, Human Mosaic, Harper Collins Publishers
- Knox, P., Pinch,S., 2000, Urban Social Geography, Pearson Education
- Mitchell, D. 2000, Cultural Geography-A Critical Introduction, Black Well.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

DSE-2: Resource Geography **Credits 06**
DSE2T: Resource Geography

Resource Geography
Unit I
(3 Credits)

1. Natural Resources: Concept and classification
2. Approaches to Resource Utilization: Utilitarian, Conservational, Community based adaptive
3. Significance of Resources: Backbone of Economic growth and development
4. Pressure on resources. Appraisal and Conservation of Natural Resources
5. Problems of resource depletion—global scenario (forest, water, fossil fuels).
6. Sustainable Resource Development

Unit II
(3 Credits)

1. Distribution, Utilisation, Problems and Management of Metallic Mineral Resources: Iron ore, Bauxite, copper
2. Distribution, Utilisation, Problems and Management of Non-Metallic Mineral Resources: Limestone, Mica, Gypsum
3. Distribution, Utilisation, Problems and Management of Energy Resources: Conventional and Non-Conventional
4. Contemporary Energy Crisis and Future Scenario
5. Politics of Power resources
6. Limits to Growth and Sustainable Use of Resources; Concept of Resource sharing

Reference Books

- Cutter S. N., Renwich H. L. and Renwick W., 1991: Exploitation, Conservation, And Preservation: A Geographical Perspective on Natural Resources Use, John Wiley and Sons, New York.
- Gadgil M. and Guha R., 2005: The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press. USA.
- Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
- Jones G. and Hollier G., 1997: Resources, Society and Environmental Management, Paul Chapman, London.
- Klee G., 1991: Conservation of Natural Resources, Prentice Hall, Englewood.
- Mather A. S. and Chapman K., 1995: Environmental Resources, John Wiley and Sons, New York.
- Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.
- Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.
- Rees J., 1990: Natural Resources: Allocation, Economics and Policy, Routledge. London

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Or

DSE-2: Fluvial Geomorphology **Credits 06**

DSE2T: Fluvial Geomorphology

1. Scope and components of Fluvial Geomorphology. Rivers as hydro systems. Geographers approach to study of the rivers
2. Run off: components and controlling factors. Run off cycle
3. Models of channel initiation and network development
4. Drainage basin and its significance as a hydrological unit
5. Linear, areal and altitudinal properties of drainage basin. Horton's stream laws. Hypsometric curve and integer.
6. Fundamentals of Rosgen stream classification system
7. Fluvial morphodynamics: Adjustment of channel forms to tectonic, climatic, sea level and land use changes
8. Large rivers of the tropics: Characteristics and significance
9. Fluvial landforms: Terraces, alluvial fans, badlands and accretion topography
10. Human intervention on fluvial systems : Types and consequences
11. Riverbank erosion and river degeneration: Processes, management and impact on land use
12. Integrated watershed management: Principles and significance

Reference Books

- Bloom, A. L. 1998: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, 3rd Ed, Prentice Hall, Upper Saddle River, New Jersey
- Bridges, E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
- Charlton, R. 2016: Fundamentals of Fluvial Geomorphology, 2nd Ed., Routledge, London
- Chorley, R., Schumm, S. and Sugden, D.E. 1994: Geomorphology, Methuen, London
- Chorley, R.J. and Kennedy, B.A. 1971: Physical Geography: A Systems Approach, Prentice Hall, Upper Saddle River, New Jersey
- Faniran, A. and Jeje, L.K. 1983: Humid Tropical Geomorphology, Longman, London
- Goudie, A.S. (ed) 2004: Encyclopaedia of Geomorphology, vol. 1 & 2, Routledge, London
- Gupta, A. 2011: Tropical Geomorphology, Cambridge University Press, Cambridge
- Gupta, A. (ed) 2008: Large Rivers, Wiley, New York
- Huggett, R.J. 2011: Fundamentals of Geomorphology, Routledge, New York
- Kale V.S. and Gupta A. 2001. Introduction to Geomorphology, Orient Longman, Hyderabad

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Knighton, D. 1998: Fluvial Forms and Processes: A New Perspective, Arnold, London
- Morisawa, M. 1985: Rivers, Longman, London
- Petts, G.E. and Amoros, C (eds). 1996: Fluvial Hydrosystems, Chapman and Hall, London
- Selby, M.J. 1985: Earth's Changing Surface, Oxford University Press, London

Or

DSE-2: Social Geography **Credits 06**

DSE2T: Social Geography

Unit I

1. Social Geography: Concept, Origin, Nature and Scope
2. Concept of Space, Social differentiation and stratification; social processes
3. Social Categories: Caste, Class, Religion, Race and Gender and their Spatial distribution
4. Basis of Social region formation; Evolution of social-cultural regions of India
5. Peopling Process of India: Technology and Occupational Change; Migration.
6. Social groups, social behaviour and contemporary social environmental issues with special reference to India

Unit II

1. Concept of Social Well-being, Quality of Life, Gender and Social Well-being
2. Measures of Social Well-being: Healthcare, Education, Housing, Gender Disparity
3. Social Geographies of Inclusion and Exclusion, Slums, Gated Communities, Communal Conflicts and Crime.
4. Social Planning during the Five Year Plans in India
5. Social Policies in India: Education and Health
6. Social Impact Assessment (SIA): Concept and importance

Reference Books

- Ahmed A., 1999: Social Geography, Rawat Publications.
- Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.
- Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
- Holt L., 2011: Geographies of Children, Youth and Families: An International Perspective, Taylor & Francis.
- Panelli R., 2004: Social Geographies: From Difference to Action, Sage.
- Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.
- Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, and London.
- Smith D. M., 1994: Geography and Social Justice, Blackwell, Oxford.
- Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa
- Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.

DSE-3: Population Geography **Credits 06**

DSE3T: Population Geography

Unit I
(2 Credits)

1. Development of Population Geography as a field of specialization. Relation between population geography and demography. Sources of population data, their level of reliability and problems of mapping.
2. Population distribution: density and growth. Classical and modern theories in population distribution and growth, Demographic transition model.
3. World patterns determinants of population distribution and growth. Concept of optimum population.
4. Population distribution, density and growth profile in India.

Unit II
(4 Credits)

1. Population Composition and Characteristics– Age-Sex Composition; Rural and Urban Composition; Literacy.
2. Measurements of fertility and mortality. Concept of cohort and life table
3. Population composition of India. Urbanisation, Occupational structure.
4. Migration: Causes and types
5. National and international patterns of migration with reference to India.
6. Population and development: population-resource regions. Concept of human development index and its components.
7. Population policies in developed and less development countries. India's population policies, population and environment, implication for the future.
8. Contemporary Issues – Ageing of Population; Declining Sex Ratio; Population and environment dichotomy, HIV/AIDS.

Reference Books

- Barrett H. R., 1995: Population Geography, Oliver and Boyd.
- Bhende A. and Kanitkar T., 2000: Principles of Population Studies, Himalaya Publishing House.
- Chandna R. C. and Sidhu M. S., 1980: An Introduction to Population Geography, Kalyani Publishers.
- Clarke J. I., 1965: Population Geography, Pergamon Press, Oxford.
- Jones, H. R., 2000: Population Geography, 3rd ed. Paul Chapman, London.
- Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan
- Newbold K. B., 2009: Population Geography: Tools and Issues, Rowman and Littlefield Publishers.
- Pacione M., 1986: Population Geography: Progress and Prospect, Taylor and Francis.
- Wilson M. G. A., 1968: Population Geography, Nelson.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Or

DSE-3: Political Geography **Credits 06**

DSE3T: Political Geography

1. Nature and scope Political Geography
2. Concept State, Nation and Nation State
3. Attributes of State – Frontiers, Boundaries, Exclave and exclave, Shape, Size, Territory and Sovereignty,
4. Geopolitics and geopolitical theories: Heartland and Rimland
5. Electoral Geography – Geography of Voting, Geographic Influences on voting pattern,
6. Geography of Representation, Gerrymandering.
7. Political Geography of Conflicts of resource– Oil, water and emission of green house gases
8. Inter-state dispute on water resources of India.
9. The Indian context of conflicts over forest rights.
10. Geographical basis of Indian federalism; Emergence of new states
11. Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams and Special Economic Zones of India
12. Territorial politics: Case studies of Jammu and Kashmir, Assam and GTA

Reference Books

- Agnew J., 2002: Making Political Geography, Arnold.
- Agnew J., Mitchell K. and Toal G., 2003: A Companion to Political Geography, Blackwell.
- Cox K. R., Low M. and Robinson J., 2008: The Sage Handbook of Political Geography, Sage Publications.
- Cox K., 2002: Political Geography: Territory, State and Society, Wiley-Blackwell
- Gallaher C., et al, 2009: Key Concepts in Political Geography, Sage Publications.
- Glassner M., 1993: Political Geography, Wiley.
- Jones M., 2004: An Introduction to Political Geography: Space, Place and Politics, Routledg.
- Mathur H M and M Cernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi
- Painter J. and Jeffrey A., 2009: Political Geography, Sage Publications.
- Taylor P. and Flint C., 2000: Political Geography, Pearson Education.
- Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi
- Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), Land Locked States of Africa and Asia (vo.2), Frank Cass

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Or

DSE-3: Soil and Biogeography **Credits 06**

DSE3T: Soil and Biogeography

1. Factors or soil formation. Man as an active agent of soil transformation.
2. Soil profile. Origin and profile characteristics of Lateritic, Podzol and Chernozem soils
3. Definition and significance of soil properties: Texture, structure and moisture,
4. Definition and significance of soil properties: p^H, organic matter and NPK
5. Soil erosion and degradation: Factors, processes and mitigation measures
6. Principles of soil classification: Genetic and USDA. Concept of land capability and its classification.
7. Concepts of biosphere, ecosystem, biome, ecotone, community and ecology
8. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems
9. Geographical extent and characteristic features of: Tropical rain forest, Taiga and Grassland biomes
10. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen
11. Deforestation: Causes, consequences and management
12. Bio-diversity: Definition, types, threats and conservation measures

Reference Books

- Biswas, T.D. and Mukherjee, S.K. 1997: Textbook of Soil Science, TataMcGraw Hill,
- Brady, N.C. and Weil, R.R. 1996. The Nature and Properties of Soil, 11th edition, Longman, London :
- Floth, H.D. 1990. Fundamentals of Soil science, 8th edition, John Wiley and Sons, New York.
- Morgan, R.P.C. 1995 Soil Erosion and Conservation, 2nd edition, Longman, London
- Schwab, G.O., Fangmer, D.D. and Elliot, W.J. 1996. Soil and Water Management Systems, 4th edition, John Eiley and sons Inc., New York
- Young, A. 2000. Land Resource: Now and Future, Cambridge University Press, Cambridge: 332p. Chapman J.L. and Rens, M.J. 1993. Ecology: Principle and Applications, Cambridge University Press, Cambridge:
- Chairas, D.D. Reganold , J.P. and Owen, O.S. 2002. National Resource Conservation and management for a Sustainable Future, 8th edition, Prentice Hall, Lo—glewood Cliffs
- Dash, M.C., 2001. Fundamental of Ecology, 2nd edition, Tata McGrawHill, New Delhi
- Huggett, R. 1998. Fundamentals of Biogeography, Routledge, London:
- Kormondy, E.J. 1996. Concept of Ecology, 4th edition, Prentice- Hall, India, New Delhi
- Myers, A. A. and Giller, P.S. (editors) 1988. Analytical Biogeography: an Integrated Approach to the Study of Animal and Plant Distribution. Chapman and Hall, London

DSE-4: Agricultural Geography **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

DSE4T: Agricultural Geography

Unit I
2 Credits

1. Progress of Agricultural Geography with reference to allied disciplines. Approaches to study of Agricultural Geography.
2. Origin and dispersal of agriculture; Role of agriculture on human society.
3. Factors affecting agriculture. Classification of world agricultural systems.
4. Location and characteristics of major agricultural types: Intensive subsistence, extensive commercial and plantation agriculture.

Unit II
4 Credits

1. Concept of cropping pattern, crop combination, gross and net cropped area, crop rotation.
2. A critical review and contemporary perspective of Von Thunen' model
3. Definition and factors affecting yield. Measures of agricultural productivity
4. Role of irrigation in Indian agriculture
5. Problems of agriculture with special reference to South Asian countries.
6. World patterns of agricultural production and food security
7. Land use survey and land classification (USDA)
8. Globalization and agriculture with special reference to India

Reference Books

- Basu, D.N., and Guha, G.S., 1996: Agro-Climatic Regional Planning in India, Vol.I & II, Concept Publication, New Delhi.
- Bryant, C.R., Johnston, T.R, 1992: Agriculture in the City Countryside, Belhaven Press, London.
- Burger, A., 1994: Agriculture of the World, Aldershot, Avebury.
- Grigg, D.B., 1984: Introduction to Agricultural Geography, Hutchinson, London.
- Ilbery B. W., 1985: Agricultural Geography: A Social and Economic Analysis, Oxford University Press.
- Mohammad, N., 1992: New Dimension in Agriculture Geography, Vol. I to VIII, Concept Pub., New Delhi.
- Roling, N.G., and Wageruters, M.A.E.,(ed.) 1998: Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.
- Shafi, M., 2006: Agricultural Geography, Doring Kindersley India Pvt. Ltd., New Delhi
- Singh, J., and Dhillon, S.S., 1984: Agricultural Geography, Tata McGraw Hill, New Delhi.
- Tarrant J. R., 1973: Agricultural Geography, David and Charles, Devon.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Or

DSE-4: Urban Geography **Credits 06**

DSE4T: Urban Geography

Unit I

3 Credits

1. Urban Geography: nature and scope, different approaches and recent trends in urban geography
2. Origin of urban places in Ancient, Medieval, Modern and Post-Modern periods-factors, stages, and characteristics.
3. Theories of Urban Evolution and Growth: Hydraulic Theory, Economic Theory
4. Aspects of urban places: Location, site and situation, Size and Spacing of Cities: The Rank Size Rule, The Law of the Primate City
5. Urban Hierarchies : Central Place Theory; August Loch's theory of Market Centres
6. Patterns of urbanisation in developed and developing countries

Unit II

3 Credits

1. Ecological processes of urban growth; Urban fringe; City- Region
2. Theories of city structure-concentric zone theory, sector theory, multiple nuclei theory
3. Urban Issues: problems of housing, slums, civic amenities (water and transport)
4. Patterns and trends of urbanization in India
5. Policies on urbanization. Urban change/landscape in post-liberalized period in India
6. Case studies of Delhi, Kolkata, and Chandigarh with reference to land use

Reference Books

- Fyfe N. R. and Kenny J. T., 2005: The Urban Geography Reader, Routledge.
- Graham S. and Marvin S., 2001: Splintering Urbanism: Networked Infrastructures, Technological Mobility and the Urban Condition, Routledge.
- Hall T., 2006: Urban Geography, Taylor and Francis.
- Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: Urban Geography, John Wiley.
- Knox P. L. and McCarthy L., 2005: Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.
- Knox P. L. and Pinch S., 2006: Urban Social Geography: An Introduction, Prentice-Hall.
- Pacione M., 2009: Urban Geography: A Global Perspective, Taylor and Francis.
- Sassen S., 2001: The Global City: New York, London and Tokyo, Princeton University Press.
- Ramachandran R (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi
- Ramachandran, R., 1992: The Study of Urbanisation, Oxford University Press, Delhi
- Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Singh, R.B. (Ed.) (2015) Urban development, challenges, risks and resilience in Asian megacities. Advances in Geographical and Environmental Studies, Springer

Or
DSE-4 : Project Work

Skill Enhancement Course(SEC)

SEC-1: Coastal Management **Credits 02**

SEC-1T: Coastal Management

Coastal Management

1. Components of a coastal zone. Coastal morphodynamic variables and their role in evolution of coastal forms.
2. Environmental impacts and management of mining, oil exploration, salt manufacturing, land reclamation and tourism.
3. Coastal hazards and their management using structural and non-structural measures: Erosion, flood, sand encroachment, dune degeneration, estuarine sedimentation and pollution
4. Principles of Coastal Zone Management. Exclusive Economic Zone and Coastal Regulation Zones with reference to India.

Suggested Readings:

- Carter, R.W.G (1988): Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines, Academic Press, London
- Dayer K.R. (1979): Estuary Hydrography, and Sedimentation, Cambridge Univ. Press, Cambridge.
- Devis R.A. (ed) (1978): Coastal Sedimentary Environmental; Springer-Verlag, New York.
- Harikawa , K. (1978): Coastal Engineering, Univ Of Tokyo Press, Tokyo.
- Inman, D.L. (1960): Shore Processes, Encyclopedia of Science & Technology, Mc Graw Hill, New York.
- Knight, B. and Philip, A. (1979): Estuarine and coastal Land reclamation and water storage, Saxon House.
- Laussn, E and Lato, I.(ed): Chemistry and Biochemistry of estuaries, Wiley, New York.
- Pethick, J. (2000): An Introduction to coastal Geomorphology, Arnold, London.
- Stanley, D.J. and Suist D.J.P.(ed)(1976): Marine Sediment Transport and environmental management;Wiley, NewYork.
- Wagret,P. (1968): Polderlands, Methuen, London

Or
SEC-1: Computer Basics and Computer Applications **Credits 02**
SEC1T: Computer Basics and Computer Applications

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

1. Representation of data; Numbering Systems; Binary Arithmetic; Basic Logic Gates; Boolean Logic and Reduction Techniques.
2. Computation, Storing and Formatting Spreadsheets: Computation of Rank, Mean, Median, Mode, Standard Deviation, Moving Averages, Sample Variation; Derivation of Correlation, Covariance and regression; Selection of technique and interpretation.
3. Preparation of Annoted Diagrams: Scatter diagram and Histogram; selection of technique and interpretation of diagrams
4. Internet Surfing: generation and extraction of information. Cloud computing and drive sharing.

Reference Books

- Bartee, Thomas C. (1977): Digital Computer Fundamental; McGraw Hill.
- Chauhan, S.; Chauhan, A. and Gupta, K. (2006): Fundamental of Computer; Firewall Media.
- Flake, L.J.; McClintock, C.E. and Turner, S. (1989): Fundamental of Computer Education; Wordsworth Pub. Co.
- Leon, A .and Leon,M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
- Malvino, A.P. and Leach, D.P. (1981): Digital Principles and Appications; Tata McGraw Hill.
- Mano, Moris M. and Kime, Charles R. (2004): Logic and Computer Design Fundamental; Prentice Hall.
- Rajaraman, V. (2003): Fundamentals of Computer, Prentice Hall Publisher
- Sarkar, A. and Gupta, S.K (2002) Elements of computer Science, S Chand and Company, New Delhi
- Blissmer (1996): Working with MS Word; Houghton Mifflin Co.
- Johnson, Steve (2007): Microsoft Power Point 2007; Pearson Paravia Bruno.
- Leon, A .and Leon,M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
- Leon, A. and Leon, M.(1999): A beginners Guide to Computers, Vikas
- Rajaraman, V. (2008): Computer Primer; Prentice Hall of India Pvt. Ltd.
- Sarkar, A. and Gupta, S.K (2002) Elements of computer Science, S Chand and Company, New Delhi
- Shepard, Aaron (2007): Perfect Pages; Shepard Publications.
- Tyson, Herbert L. (2007): Microsoft Word 2007 bible; John Wiley.
- Walkenbach, John (2007): Excel 2007 Bible; John Wiley.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

SEC-2: Research Methods **Credits 02**

SEC2T: Research Methods

1. Geographic Enquiry: Definition and Ethics; Literature Review; Framing Research Questions, Objectives and Hypothesis; Preparing Sample Questionnaires and inventories
2. Data Collection: Type and Sources of Data; Methods of data Collection; Data Input and Editing
3. Data Analysis: Qualitative and Quantitative Analysis; Techniques Data Representation
4. Structure of a Research Report: Preliminaries; Text; Citation, Notes, References, Bibliography and Abstract and Key words.

Reference Books

- Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
- Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
- Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
- Misra, R.P. (2002) Research Methodology, Concept Publications, New Delhi.
- Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
- Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
- Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
- Special Issue on "Doing Fieldwork" The Geographical Review 91:1-2 (2001).
- Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
- Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.

Yadav, H. (2013) Shodh Pravidhi Evam Matratamak Bhugol, Raja Publications, Delhi

Or

SEC-2: Advanced Spatial Statistical Techniques **Credits 02**

SEC2T: Advanced Spatial Statistical Techniques

1. Probability theory, probability density functions with respect to Normal, Binomial and Poisson distributions and their geographical applications.
2. Sampling: Sampling plans for spatial and non-spatial data, sampling distributions. Sampling estimates for large and small samples tests involving means and proportions.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

3. Correlation and Regression Analysis: Rank order correlation and product moment correlation; linear regression, residuals from regression, and simple curvilinear regression. Introduction to multi-variate analysis.
4. Time Series Analysis: Time Series processes; Smoothing time series; Time series components.

Any statistical Software Package (e.g., SPSS, MS Excel, R, etc.) may be used for practice. A project file consisting of four exercises on the above themes is to be submitted

Reference Books

- Bart James E and Gerld M.Barber, 1996: Elementary Statistics for Geographers, The Guieford Press, London.
- Eldon, D., 1983: Statistics in Geography: A Practical Approach, Blackwell, London.
- Cressie, N.A.C., 1991: Statistics for Spatial Analysis, Wiley, New York.
- Gregory, S., 1978: Statistical Methods and the Geographer (4th Edition), Longman, London.
- Haining, R.P., 1990: Spatial Data Analysis in the Social and Environmental Science, Cambridge University Press, Cambridge.
- Mc Grew, Jr. and Cahrles, B. M., 1993: An Introduction to Statistical Problem Solving in Geography,
- W.C. Brocan Publishers, New Jersey.
- Mathews, J.A., 1987: Quantitative and Statistical Approaches to Geography: A Practical Manual Pergamon, Oxford.
- S.K., 1998: Statistics for Geoscientists : Techniques and Applications, Concept Publishing Company, New Delhi.
- Wei, W.S.,1990: Time Series Analysis: Variate and Multivariate Methods , Addison Wesley Publishing.
- Yeates, Mauris, 1974: An Introduction to Quantitative Analysis in Human Geography, Mc Grawhill, New York

Generic Elective(GE)

[Interdisciplinary for other department]

GE-1: Disaster Management **Credits 06**

GE1T: Disaster Management

1. Definition and Concepts of Hazards and Disasters; Risk and Vulnerability; Classification of hazards
2. Causes and consequences of hazards: Physical, economic and cultural
3. Role of National and International organizations in disaster management.
4. Causes, Impact, Distribution and Mapping of: Earthquake and Tsunami, Landslides
5. Causes, Impact, Distribution and Mapping of: Flood and drought
6. Causes, Impact, Distribution and Mapping: Soil erosion, accidental release of toxic chemicals,
7. Response and Mitigation to Disasters: Institutional set up, NDMA and NIDM

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

8. Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters,
9. Emerging approaches to Disaster management: (a) Pre-disaster stage Preparedness-hazard zonation maps-predictability and forecasting warning, land use zoning, Information, Education & Communication (IEC) Disaster resistance house construction, Population reduction in vulnerable area and awareness. (b) Emergency Stage- Rescue training for search and operation at national and regional level, ground management plan preparation, immediate relief, Assessment surveys. (c) Post disaster stage rehabilitation – Political administrative aspects, social aspect, economic aspect, cultural aspect and environmental aspects.
10. Regional perspectives of hazards in India with reference to dimension, causes, consequences and remedial measures: (a) Hills/ coasts, (b) Terrorism
11. National and international policies for disaster management.
12. Role of geospatial technology (RS, GNSS and GIS) in disaster management

Reference Books

- Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
- Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
- Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
- Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
- Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
- Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
- Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
- Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

GE-2 : Geospatial Technology **Credits 06**

GE2 T : Geospatial Technology

Geospatial Technology

1. Components, scope and historical development of geospatial technology
2. Concepts of spheroid, ellipsoid and projection systems. Significance of WGS 84 and UTM
3. Data types and structures in spatial technology.
4. Principles of land-based surveying with reference to auto level and total station
5. Classification of Remote Sensing platforms, sensors and resolution. IRS (Resourcesat and Cartosat) and Landsat systems.
6. Principles of georeferencing of maps and images
7. Image enhancement, band combination and rationing. Vegetation indices.
8. Image classification and preparation of thematic maps. Raster to vector conversion.
9. Sources, preparation and manipulation of GIS data. Spatial modelling and overlay analysis.
10. GNSS: Principles of satellite positioning and navigation. Collection of waypoints and exporting to GIS
11. Principles of preparing DEMs from optical and RADAR sensors with reference to CartoDEM and SRTM data
12. Integration of different components of spatial technology. Development of web-based spatial platforms with reference to Bhuvan and Google Earth / Google Map

Reference Books

C. Esperança and H. Samet, An overview of the SAND spatial database system, to appear in Communications of the ACM, 1997. http://www.cs.umd.edu/~hjs/pubs/sandprog.ps.gz

- G. Hjaltason and H. Samet, Ranking in Spatial Databases in Advances in Spatial Databases —4th Symposium, SSD'95, M. J. Egenhofer and J. R. Herring, Eds., Lecture Notes in Computer Science 951, Springer-Verlag, Berlin, 1995, 83-95. http://www.cs.umd.edu/~hjs/pubs/incnear.ps
- H. Samet, Spatial Data Structures in Modern Database Systems: The Object Model, Interoperability, and Beyond, W. Kim, Ed., Addison-Wesley/ACM Press, 1995, 361-385. http://www.cs.umd.edu/~hjs/pubs/kim.ps
- H. Samet, Applications of Spatial Data Structures: Computer Graphics, Image Processing, and GIS, Addison-Wesley, Reading, MA, 1990. ISBN 0-201- 50300-0.
- H. Samet, the Design and Analysis of Spatial Data Structures, Addison-Wesley, Reading, MA, 1990. ISBN 0-201-50255-0.
- H. Samet and W. G. Aref, Spatial Data Models and Query Processing in Modern Database Systems: The Object Model, Interoperability, and Beyond, W. Kim, Ed., Addison-Wesley/ACM Press, 1995, 338-360. http://www.cs.umd.edu/~hjs/pubs/kim2.ps
- C. D. Tomlin, Geographic Information Systems and Cartographic Modeling, Prentice-Hall, Englewood Cliffs, NJ, 1990. ISBN 0-13-350927-3

GE3: Geography of Tourism **Credits 06**

GE3T: Geography of Tourism

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

1. Scope and Nature: Concepts and Issues, Tourism, Recreation and Leisure Inter-Relations; Geographical Parameters of Tourism by Robinson.
2. Types of Tourism: Ecotourism, Cultural Tourism, Adventure Tourism, Medical Tourism, Pilgrimage, International, National
3. Factors influencing tourism: historical, natural, socio-cultural and economic; motivating factors for pilgrimages
4. Spatial pattern of tourism: Spatial affinity; areal and locational dimensions comprising physical, cultural, historical and economic; International travel destinations- cultural and historical
5. Impact of tourism: physical, economic and social and perceptive positive and negative impacts;
6. Environmental laws and tourism - current trends, spatial patterns and recent changes;
7. Role of foreign capital and impact of globalization on tourism
8. Recent Trends of Tourism: International and Regional; Domestic (India); Sustainable Tourism, Meeting Incentives Conventions and Exhibitions (MICE)
9. Tourism in India: Tourism Infrastructure; Regional dimensions of tourist attraction; Case Studies of Dal lake, Goa, Garhwal Himalaya, Desert and Coastal Areas
10. Promotion of Tourism - National Tourism Policy
11. Infrastructure and support system - accommodation and supplementary accommodation; other facilities and amenities
12. Tourism circuits-short and longer detraction - Agencies and intermediaries - Indian hotel industry.

Suggested Readings:

1. Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi.
2. Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London.
3. Kamra, K. K. and Chand, M. (2007) Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune.
4. Page, S. J. (2011) Tourism Management: An Introduction, Butterworth-Heinemann- USA. Chapter 2.
5. Raj, R. and Nigel, D. (2007) Morpeth Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA, www.cabi.org.
6. Tourism Recreation and Research Journal, Centre for Tourism Research & Development, Lucknow
7. Singh Jagbir (2014) "Eco-Tourism" Published by - I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Or

GE-3: Rural Development **Credits 06**

GE3T: Rural Development

Rural Development

1. Defining Development: Inter-Dependence of Urban and Rural Sectors of the Economy
2. Paradigms of Rural Development: Lewis Model of Economic Development, 'Big Push' theory
   of Development, Myrdal's thesis of 'Spread and Backwash Effects'
3. Need for Rural Development, Gandhian Approach to Rural Development
4. Rural Economic Base: Agriculture and Allied Sectors, Seasonality and Need for expanding Non-Farm Activities,
5. Rural Co-operatives and agricultural marketing
6. Area Based Approach to Rural Development: Drought Prone Area Programmes, PMGSY
7. Target Group Approach to Rural Development: SJSY, MNREGA, Jan DhanYojana
8. Provision of Services – Physical and Socio-Economic Access to Elementary Education and Primary Health Care and Micro credit; Concept of PURA
9. Rural Governance: Panchayati Raj System
10. Rural Development Policies and Programmes in India
11. Rural Infrastructural Development programmes relating to: Rural Electrification, Transport, Housing, and Connectivity
12. Rural Development Programmes for Women and children: Janani SurakshaYojana , National Nutrition Mission, Drinking water and sanitation programmes, NRHM, Sarva Sikha Mission

Reference Books

- Gilg A. W., 1985: An Introduction to Rural Geography, Edwin Arnold, London.
- Krishnamurthy, J. 2000: Rural Development - Problems and Prospects, Rawat Publs., Jaipur
- Lee D. A. and Chaudhri D. P. (eds.), 1983: Rural Development and State, Methuen, London.
- Misra R. P. and Sundaram, K. V. (eds.), 1979: Rural Area Development: Perspectives and Approaches, Sterling, New Delhi.
- Misra, R. P. (ed.), 1985: Rural Development: Capitalist and Socialist Paths, Vol. 1, Concept, New Delhi.
- Palione M., 1984: Rural Geography, Harper and Row, London.
- Ramachandran H. and Guimaraes J.P.C., 1991: Integrated Rural Development in Asia – Leaning from Recent Experience, Concept Publishing, New Delhi.
- Robb P. (ed.), 1983: Rural South Asia: Linkages, Change and Development, Curzon Press.
- UNAPDI 1986:Local Level Planning and Rural Development: Alternative Strategies. (United Nations Asian & Pacific Development Institute, Bangkok), Concept Publs. Co., New Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Wanmali S., 1992: Rural Infrastructure Settlement Systems and Development of the Regional Economy in South India, International Food Policy Research Institute, Washington, D.C.
- Yugandhar, B. N. and Mukherjee, Neela (eds.) 1991: Studies in Village India: Issues in Rural Development, Concept Publs. Co., New Delhi.

GE-4: Regional Development **Credits 06**

GE4T: Regional Development

Regional Development

1. Definition of Region; Types and need of regional planning
2. Choice of a region for planning; Characteristics of an Ideal Planning Region; Delineation of Planning Region
3. Regionalization of India for Planning (Agro-ecological zones)
4. Strategies/Models for Regional Planning: Growth Pole Model of Perroux
5. Growth Centre Model in Indian Context; Concept of Village Cluster
6. Problem Regions and Regional Planning; Backward Regions and Regional Plans: Special Area Development Plans in India. DVC- The Success Story and its Failures.
7. Changing concept of development and underdevelopment; Efficiency-equity debate
8. Indicators of development: Economic, social and environmental. Concept of Human development
9. Regional development in India, regional inequality, disparity and diversity
10. Development and Regional Disparities in India since Independence: Disparities in Agricultural Development
11. Development and Regional Disparities in India since Independence: Disparities in Industrial Development
12. Development and Regional Disparities in India since Independence : Disparities in Human Resource Development in terms of education and health

Reference Books

- Adell, Germán (1999) Literature Review: Theories and Models Of The Peri-Urban Interface: A Changing Conceptual Landscape, Peri-urban Research Project Team, Development Planning Unit, University College London at
- Bhatt, L.S. (1976) Micro Level Planning in India. KB Publication, Delhi
- Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.
- Dreze J. and A. Sen, Indian Development: Select Regional Perspectives (Oxford: Oxford University Press, 1996).
- Ses, Amratya (2000) Development as Freedom. Random House, Toronto
- Raza, M., Ed. (1988). Regional Development. Contributions to Indian Geography. New Delhi, Heritage Publishers.
- Rapley, John (2007) Understanding Development: Theory and Practice in the 3rd World. Lynne Rienner, London.
- Schmidt-Kallert, Einhard (2005) A Short Introduction to Micro-Regional Planning, Food and Agriculture Organization of the United Nations (FAO) at

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India

Or

GE-4: Sustainable Development **Credits 06**

GE4T: Sustainable Development

Sustainable Development

1. Sustainable Development: Historical Background, Definition, Components, Limitations
2. The Millennium Development Goals: International goals and National Strategies
3. Sustainable Regional Development: Need and examples from different Ecosystems
4. Inclusive Development: Education and Health
5. Climate change and sustainable development: Policies and global cooperation
6. The role of higher education in sustainable development
7. Poverty and disease; Human right to health; Challenges of Universal Health Coverage
8. Sustainable Development Policies and Programmes: The proposal for SDGs at Rio+20; Illustrative SDGs; Goal-Based Development
9. Sustainable Development: Financial issues
10. Good Governance for sustainable development
11. National Environmental Policy, Clean development mechanism
12. Sustainable regional resource development and livelihood security

Reference Books

- Agyeman, Julian, Robert D. Bullard and Bob Evans (Eds.) (2003) Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.).
- Ayers, Jessica and David Dodman (2010) “Climate change adaptation and development I: the state of the debate”. Progress in Development Studies 10 (2): 161-168.
- Baker, Susan (2006) Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge. (Chapter 2, “The concept of sustainable development”).
- Brosius, Peter (1997) “Endangered forest, endangered people: Environmentalist representations of indigenous knowledge”, Human Ecology 25: 47-69.
- Lohman, Larry (2003) “Re-imagining the population debate”. Corner House Briefing 28.
- Martínez-Alier, Joan et al (2010) “Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm” Ecological Economics 69: 1741-1747.
- Merchant, Carolyn (Ed.) (1994) Ecology. Atlantic Highlands, N.J: Humanities Press. (Introduction, pp 1- 25.)
- Osorio, Leonardo et al (2005) “Debates on sustainable development: towards a holistic view of reality”. Environment, Development and Sustainability 7: 501-518.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

- Robbins, Paul (2004) Political Ecology: A Critical Introduction. Blackwell Publishing.
- Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi

Or

GE-4: Climate Change: Vulnerability and Adaptations **Credits 06**

GE4T:Climate Change: Vulnerability and Adaptations

1. The Science of Climate Change: Origin, scope and trends.
2. Understanding Climate Change with reference to the Geological Time Scale
3. Evidences and factors of climate change: the nature- man dichotomy
4. Green House Gases and Global Warming
5. Electromagnetic spectrum, Atmospheric window, heat balance of the earth
6. Global climatic assessment: IPCC reports
7. Climate change and vulnerability: Physical; economic and social
8. Impact of Climate Change: Agriculture and Water; Flora and Fauna; Human Health and morbidity
9. Global initiatives to climate change mitigation: Kyoto Protocol, Carbon trading, Clean development mechanism, COP, Climate fund
10. Climate change vulnerability assessment and adaptive strategies with particular reference to South Asia
11. National Action Plan (of India) on Climate Change
12. Role of Urban Local Bodies, Panchayats and educational institutions on climate change mitigation: Awareness and action programmes.

Reference Books

- IPCC. (2007) Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.
- IPCC (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- IPCC (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- Palutikof, J. P., van der Linden, P. J. and Hanson, C. E. (eds.), Cambridge University Press, Cambridge, UK.
- OECD. (2008) Climate Change Mitigation: What Do we do? Organisation and Economic Co-operation and Development.
- UNEP. (2007) Global Environment Outlook: GEO4: Environment for Development, United Nations Environment Programme.
- Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

► Sen Roy, S. and Singh, R.B. (2002) Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions, Oxford & IBH Pub., New Delhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:08:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_HONS/Geography_Hons.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year BSc (General)
in

Geography

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Geography

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	Total
		Core-1 (DSC-1A)		Physical Geography	6	5-1-0	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
		Semester - I : Total			**20**				**275**
	II	SEMESTER-II							
		Core-4 (DSC-1B)		Human Geography	6	5-1-0	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
		Semester - 2 : Total			**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	Total
		Core-7 (DSC-1C)		Maps and Diagrams - **Lab**	6	4-0-4	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0/ 0-0-4/ 1-0-2	10	40	50
		Semester - 3 : Total			**20**				**275**
	IV	SEMESTER-IV							
		Core-10 (DSC-1D)		Environmental Geography	6	5-1-0	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0/ 0-0-4/ 1-0-2	10	40	50
		Semester - 4 : Total			**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	Total
		DSE-1A		Discipline-1(Geography)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0/ 0-0-4/ 1-0-2	10	40	50
		Semester - 5 : Total			**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Geography)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0/ 0-0-4/ 1-0-2	10	40	50
		Semester - 6 : Total			**20**				**275**
	Total in all semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA** = Continuous Assessment , **ESE** = End Semester Examination , **TBD** = To be decided , **CT** = Core Theory, **CP**= Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MIL** = Modern Indian Language , **ENVS** = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

List of Core Courses and Electives

Core Course (CC)

DSC-1A: Physical Geography
DSC-1B: Human Geography
DSC-1C: Maps and Diagrams
DSC-1D: Environmental Geography

Discipline Specific Electives (DSE)

DSE- 1: Geography of India
Or
DSE- 1: Disaster Management
Or
DSE- 1: Soil and Biogeography

DSE-2: Economic Geography
Or
DSE-2: Urban Geography
Or
DSE-2: Population Geography

Skill Enhancement Course (SEC)

SEC-1: Remote Sensing
Or
SEC-1: Geographic Information System

SEC-2: Regional Planning and Development
Or
SEC-2: Computer Basics

SEC-3: Remote Sensing and GPS based Project Report

SEC-4: Field Techniques and Survey based Project Report

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

Core Courses (CC)

DSC-1A (CC-1) : Physical Geography **Credits 06**

DSC1AT: Physical Geography

Course Contents:

1. Physical Geography – Definition and Scope, Components of Earth System.
2. Atmosphere – Heat Balance, Global Circulation Pattern, Tropical Cyclones, Monsoon, Climatic Classification (Koppen).
3. Lithosphere – Internal Structure of Earth based on Seismic Evidence, Plate Tectonics and its Associated Features.
4. Fluvial Cycle of Erosion – Davis and Penck.
5. Hydrosphere – Hydrological Cycle, Ocean Bottom Relief Features, Tides and Currents.

Suggested Readings:

- Conserva H. T., 2004: Illustrated Dictionary of Physical Geography, Author House, USA.
- Gabler R. E., Petersen J. F. and Trapasso, L. M., 2007: Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA.
- Garrett N., 2000: Advanced Geography, Oxford University Press.
- Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
- Hamblin, W. K., 1995: Earth's Dynamic System, Prentice Hall, N.J.
- Husain M., 2002: Fundamentals of Physical Geography, Rawat Publications, Jaipur.
- Monkhouse, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.
- Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.

DSC-1B (CC-2): Human Geography **Credits 06**

DSC1BT: Human Geography

Course Contents:

1. Definition, Nature, Major Subfields, Contemporary Relevance.
2. Space and Society: Cultural Regions; Race; Religion and Language
3. Population: Population Growth and Demographic Transition Theory.
4. World Population Distribution and Composition (Age, Gender and Literacy).
5. Settlements: Types and Patterns of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization

Suggested Readings:

- Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
- Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

- Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
- Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
- Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
- Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
- Ghosh, S. (2015) Introduction to settlement geography. Orient Black Swan Private Ltd., Kolkata
- Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur

DSC-1C (CC- 3): Maps and Diagrams **Credits 06**

DSC1CT: Maps and Diagrams **Credits 04**

Course Contents:

Unit-1: Scale and Cartograms

1. Maps – Types, Elements and Uses
2. Map Scale – Types and Application, Reading Distances on a Map.
3. Construction of Linear and Comparative (Unit)
4. Cartograms: Circle, Square and Pie graph
5. Age-Sex Pyramid, Dependency Ratio
6. Population Maps and Diagrams: Population Density by Choropleth, Distribution by Dot and Sphere.
7. Representation of Data – Symbols, Dots, Choropleth, Isopleth and Flow Diagrams, Interpretation of Thematic Maps.

Unit-2: Map Projections

1. Map Projections: Nature and Classification
2. Principles, Theories, Criteria for Choice of Projections; Construction and Properties of select Map Projections: Conical projection with two standard parallel, Cylindrical Equal Area, Polar Zenithal Stereographic, Zenithal Gnomonic Polar Case, Mercator's Projection, Bonne's Projection

Unit-3: Surveying

1. Concepts and Principles: Angles, Bearing and Azimuths, Traversing, Radiation, Intersection
2. Prismatic Compass: Preparation of landuse maps by open and closed traverse; computations of compass traverse- Included Angle, Area of traverse
3. Levelling by Dumpy Level: Profile

Suggested Readings:

- Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.
- Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
- Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, NewDelhi.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

- Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
- Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
- Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

DSC1DP: Cartographic Techniques (Lab) **Credits 02**

List of Practical

A Project File, comprising one exercise each is to be submitted

1. Graphical construction of scales: Plain, comparative
2. Construction of projections: Polar Zenithal Stereographic, Simple conic with one standard parallel and Cylindrical Equal Area
3. Preparation of land use maps by open and closed traverse; computations of compass traverse- Included Angle, Area of traverse
4. Leveling by Dumpy Level: Profile

B. Field Report

Report should be written with the following Tentative Chapter Schemes:
Preface & Acknowledgement
Introduction: Objective, Extent and Space Relations, Data sources and Methodology
Physical Environment: Lithology, Drainage, Slope, Climate, Soil, Vegetation etc.
Socio Economic Environment: Population Characteristics, Occupational Structure, Ethnic and Religions Composition, Per- Capita income, any other aspects.
Problems and Prospects, Bibliography if any
Appendix: Survey Questionnaire(s), Additional Tables, if any
Word Limit: 3000 (Excluding Tables and Appendix).
A copy of the bound report, duly signed by the concerned teacher, should be Submitted.

Suggested Readings:

- Dent B. D., 1999: *Cartography: Thematic Map Design*, (Vol. 1), McGraw Hill.
- Gupta K. K and Tyagi V. C., 1992: *Working with Maps*, Survey of India, DST, New Delhi.
- Mishra R. P. and Ramesh A., 1989: *Fundamentals of Cartography*, Concept Publishing.
- Robinson A., 1953: *Elements of Cartography*, John Wiley.
- Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers.
- Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers
- Singh R. L., 1998: *Prayogic Bhoogol Rooprekha*, Kalyani Publications.
- Steers J. A., 1965: An Introduction to the Study of Map Projections, University of London.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

DSC-1D (CC-4): Environmental Geography **Credits 06**

DSC1DT: Environmental Geography

Course Contents:

1. Environmental Geography: Concepts and Approaches; Ecosystem – Concept and Structure; Ecosystem Functions.
2. Human-Environment Relationship in Equatorial, Desert, Mountain and Coastal Regions.
3. Environmental Problems and Management: Air Pollution; Biodiversity Loss; Solid and Liquid Waste.
4. Environmental Programmes and Policies: Developed Countries; Developing Countries.
5. New Environmental Policy of India; Government Initiatives.

Suggested Readings:

- Casper J.K. (2010) Changing Ecosystems: Effects of Global Warming. Infobase Pub. New York.
- Hudson, T. (2011) Living with Earth: An Introduction to Environmental Geology, PHI Learning Private Limited, New Delhi.
- Miller, G.T. (2007) Living in the Environment: Principles, Connections, and Solutions, Brooks/ Cole Cengage Learning, Belmont.
- Singh, R.B. (1993) Environmental Geography, Heritage Publishers, New Delhi.
- UNEP (2007) Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme. University Press, Cambridge.
- Wright R. T. and Boorse, D. F. (2010) Toward a Sustainable Future, PHI Learning Pvt Ltd, New Delhi.
- Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer

Discipline Specific Elective (DSE)

DSE- 1: Geography of India **Credits 06**

DSE1T: Geography of India

Course Contents:

1. Physical Setting – Location, Structure and Relief, Drainage, Climate.
2. Population – Size and Growth since 1901, Population Distribution, Literacy, Sex Ratio.
3. Settlement System - Rural Settlement Types and Patterns, Urban Pattern.
4. Resource Base – Livestock (cattle and fisheries), Power (coal, and hydroelectricity), Minerals (iron ore and bauxite).
5. Economy – Agriculture (Rice, Wheat, Sugarcane, Groundnut, Cotton); Industries (Cotton Textile, Iron-Steel, Automobile), Transportation Modes (Road and Rail).

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

- Hussain M., 1992: G*eography of India*, Tata McGraw Hill Education.
- Mamoria C. B., 1980: *Economic and Commercial* G*eography of India*, Shiva Lal Agarwala.
- Miller F. P., Vandome A. F. and McBrewster J., 2009: Geography of India: Indo-Gangetic Plain, Thar Desert, Major Rivers of India, Climate of India, Geology of India, Alphascript Publishing.
- Nag P. and Sengupta S., 1992: G*eography of India*, Concept Publishing.
- Pichamuthu C. S., 1967: *Physical Geography of India*, National Book Trust.
- Sharma T. C. and Coutinho O., 1997: *Economic and Commercial* G*eography of India*, Vikas Publishing.
- Singh Gopal, 1976: *A* G*eography of India*, Atma Ram.
- Spate O. H. K. and Learmonth A. T. A., 1967: *India and Pakistan: A General and Regional Geography*, Methuen.
- Rana, Tejbir Singh, 2015, Diversity of India , R.K. Books, Delhi.

Or

DSE- 1: Disaster Management **Credits 06**

DSE1T: Disaster Management

Course Contents:

1. Hazards, Risk, Vulnerability and Disasters: Definition and Concepts.
2. Disasters in India: (a) Causes, Impact, Distribution and Mapping: Flood, Landslide, Drought.
3. Disasters in India: (b) Causes, Impact, Distribution and Mapping: Earthquake, Tsunami and Cyclone.
4. Human induced disasters: Causes, Impact, Distribution and Mapping.
5. Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During Disasters

Suggested Readings:

- Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
- Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
- Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
- Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
- Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
- Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
- Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

- Singh Jagbir (2007) “Disaster Management Future Challenges and Oppurtunities”, 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

Or

DSE-1: Soil and Biogeography **Credits 06**

DSE1T: Soil and Biogeography

Course Contents:

Concepts in Theory

1. Factors or soil formation. Man as an active agent of soil transformation.
2. Soil profile. Origin and profile characteristics of Laterite andPodzol soils
3. Definition and significance of soil properties: Texture and structure
4. Definition and significance of soil properties: pH and organic matter
5. Soil erosion and degradation: Factors, processes and mitigation measures
6. Concepts of biosphere, ecosystem, biome, Eco tone, community and ecology
7. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems
8. Geographical extent and characteristic features of: Tropical rain forest, Taiga and Grassland biomes
9. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen
10. Deforestation: Causes, consequences and management

Suggested Readings:

- Biswas, T.D. and Mukherjee, S.K. 1997: Textbook of Soil Science, TataMcGraw Hill,
- Brady, N.C. and Weil, R.R. 1996. The Nature and Properties of Soil, 11th edition, Longman, London :
- Floth, H.D. 1990. Fundamentals of Soil science, 8th edition, John Wiley and Sons, New York.
- Morgan, R.P.C. 1995 Soil Erosion and Conservation, 2nd edition, Longman, London
- Schwab, G.O., Fangmer, D.D. and Elliot, W.J. 1996. Soil and Water Management
- Systems, 4th edition, John Eiley and sons Inc., New York
- Young, A. 2000. Land Resource: Now and Future, Cambridge University Press, Cambridge: 332p.
- Chapman J.L. and Rens, M.J. 1993. Ecology: Principle and Applications, Cambridge University Press, Cambridge:
- Chairas, D.D. Reganold, J.P. and Owen, O.S. 2002. National ResourceConservation and management for a Sustainable Future, 8th edition, Prentice Hall, Englewood Cliffs
- Dash, M.C., 2001. Fundamental of Ecology, 2nd edition, Tata McGrawHill, New Delhi
- Huggett, R. 1998. Fundamentals of Biogeography, Routledge, London.
- Kormondy, E.J. 1996. Concept of Ecology, 4th edition, Prentice- Hall, India, New Delhi

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

- Myers, A. A. and Giller, P.S. (editors) 1988. Analytical Biogeography: an Integrated Approach to the Study of Animal and Plant Distribution. Chapman and Hall, London

DSE-2: Economic Geography **Credits 06**

DSE2T: Economic Geography

Course Contents:

1. Definition, Approaches and Fundamental Concepts of Economic Geography; Patterns of Development.
2. Locational Theories – Agriculture (Von Thunen) and Industrial (Weber).
3. Primary Activities – Intensive Subsistence Farming, Commercial Grain Farming, Plantation, Commercial Dairy Farming, Commercial Fishing, and Mining (iron ore, coal and petroleum).
4. Secondary Activities – Cotton Textile Industry, Petro-Chemical Industry, Major Manufacturing Regions.
5. Tertiary and Quaternary Activities – Modes of Transportation, Patterns of International Trade, and Information and Communication Technology Industry.

Suggested Readings:

- Alexander J. W., 1963: *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
- Bagchi-Sen S. and Smith H. L., 2006: *Economic Geography: Past, Present and Future*, Taylor and Francis.
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
- Combes P., Mayer T. and Thisse J. F., 2008: *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
- Durand L., 1961: *Economic Geography*, Crowell.
- Hodder B. W. and Lee R., 1974: *Economic Geography*, Taylor and Francis.
- Wheeler J. O., 1998: *Economic Geography*, Wiley.
- Willington D. E., 2008: *Economic Geography*, Husband Press.

Or

DSE- 2: Urban Geography **Credits 06**

DSE2T: Urban Geography

Course Contents:

Unit -1: Basic Concepts

1. Urban Geography: nature and scope, different approaches and recent trends in urban geography
2. Origin of urban places in Ancient, Medieval, Modern and Post-Modern periodsfactors, stages, and characteristics.
3. Aspects of urban places: Location, site and situation, Size and Spacing of Cities: The Rank Size Rule,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

4. Urban Hierarchies : Central Place Theory;

Unit -2: Urban Processes

1. Ecological processes of urban growth; Urban fringe; City- Region
2. Theories of city structure-concentric zone theory, sector theory, multiple nuclei theory
3. Patterns and trends of urbanization in India
4. Patterns of urbanisation in developed and developing countries

Suggested Readings:

- Fyfe N. R. and Kenny J. T., 2005: The Urban Geography Reader, Routledge.
- Graham S. and Marvin S., 2001: Splintering Urbanism: Networked Infrastructures, Technological Mobility and the Urban Condition, Routledge.
- Hall T., 2006: Urban Geography, Taylor and Francis.
- Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: Urban Geography, John Wiley.
- Knox P. L. and McCarthy L., 2005: Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.
- Knox P. L. and Pinch S., 2006: Urban Social Geography: An Introduction, Prentice-Hall.
- Pacione M., 2009: Urban Geography: A Global Perspective, Taylor and Francis.
- Sassen S., 2001: The Global City: New York, London and Tokyo, Princeton University Press.
- Ramachandran R (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi
- Ramachandran, R., 1992: The Study of Urbanisation, Oxford University Press, Delhi
- Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.
- Singh, R.B. (Ed.) (2015) Urban development, challenges, risks and resilience in Asian megacities. Advances in Geographical and Environmental Studies, Springer

Or

DSE-2: Population Geography **Credits 06**

DSE2T: Population Geography

Course Contents:

Unit 1: Basic Concepts

1. Population distribution: density and growth.
2. Demographic transition model.
3. World patterns determinants of population distribution and growth. Concept of overpopulation, under population and optimum population.
4. Population distribution, density and growth profile in India.

Unit 2: Composition and Policies

1. Population Composition and Characteristics– Age-Sex Composition; Rural and Urban Composition; Literacy.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

2. Measurements of fertility and mortality.
3. Population composition of India. Urbanisation, Occupational structure.
4. Migration: Causes and types

Suggested Readings:

- Barrett H. R., 1995: Population Geography, Oliver and Boyd.
- Bhende A. and Kanitkar T., 2000: Principles of Population Studies, Himalaya Publishing House.
- Chandna R. C. and Sidhu M. S., 1980: An Introduction to Population Geography, Kalyani Publishers.
- Clarke J. I., 1965: Population Geography, Pergamon Press, Oxford.
- Jones, H. R., 2000: Population Geography, 3rd ed. Paul Chapman, London.
- Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan
- Newbold K. B., 2009: Population Geography: Tools and Issues, Rowman and Littlefield Publishers.
- Pacione M., 1986: Population Geography: Progress and Prospect, Taylor andFrancis.
- Wilson M. G. A., 1968: Population Geography, Nelson.

Skill Enhancement Course (SEC)

SEC-1: Remote Sensing **Credits 02**

SEC1T: Remote Sensing

Course Contents:

Unit-1: Remote Sensing: Basic Concepts

1. Basic Concepts: Energy Sources, Interactions with Atmosphere, Sensing Systems, Data Products, Resolutions: Spatial, Spectral, Radiometric and Temporal
2. Principles of preparing Standard False Colour Composites
3. Principles of image interpretation and feature extraction. Preparation of inventories of land use land cover (LULC) features from satellite images.

Suggested Readings:

- Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press.
- Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
- Joseph, G. 2005: Fundamentals of Remote Sensing United Press India.
- Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
- Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
- Rees W. G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
- Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

- Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw- Hill.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

Or

SEC-1: Geographic Information System **Credits 02**

SEC1T: Geographic Information System

Course Contents:

1. G.I.S: Basic Concepts, Components,
2. GIS Data structure: Raster and vector.
3. Dereferencing, Digitization
4. Map Composition and Layout

Suggested Readings:

- Jatin Pandey and Darshana Pathak, 2013, Geographic Information System, TERI Publishing House.
- Chor Pang Lo, 2009, Concepts and Techniques of Geographic Information System, Prentice Hall.
- Michael N. Demers, 2012, Fundamentals of Geographic Information Systems, Willy.
- Chairsman, N. 1992. Exploring Geographical Information Systems, John Willey and Sons Inc., New York, 198p

SEC-2: Regional Planning and Development **Credits 02**

SEC2T: Regional Planning and Development

Course Contents:

1. Concept, Need and Types of regional Planning.
2. Characteristics and Delineation of Planning Region.
3. Regionalization of India for Planning (Agro Ecological Zones).
4. Models for Regional Planning: Growth Pole Theory; Core Periphery Model and Growth Foci Concept in Indian Context.
5. Backward Regions and Regional Plans- Special Area Development Plans in India; DVC-The Success Story and the Failures; NITI Aayog.

Suggested Readings:

- Blij H. J. De, 1971: *Geography: Regions and Concepts*, John Wiley and Sons.
- Claval P.l, 1998: *An Introduction to Regional Geography*, Blackwell Publishers, Oxford and Massachusetts.
- Friedmann J. and Alonso W. (1975): *Regional Policy - Readings in Theory and Applications*, MIT Press, Massachusetts.
- Gore C. G., 1984: Regions in Question: Space, Development Theory and Regional Policy, Methuen, London.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

- Gore C. G., Köhler G., Reich U-P. and Ziesemer T., 1996: Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention, Metropolis- Verlag, Marburg.
- Haynes J., 2008: *Development Studies*, Polity Short Introduction Series.
- Johnson E. A. J., 1970: *The Organization of Space in Developing Countries*, MIT Press, Massachusetts.
- Peet R., 1999: *Theories of Development*, The Guilford Press, New York.
- UNDP 2001-04: *Human Development Report*, Oxford University Press.
- World Bank 2001-05: *World Development Report*, Oxford University Press, New

Or

SEC-2: Computer Basics **Credits 02**

SEC2T: Computer Basics

Course Contents:

1. Knowing computer: What is Computer, Basic Applications of Computer Computer Memory, Concepts of Hardware and Software; Operating System; Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders,
2. Understanding Word Processing
3. Using Spread Sheet: Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.
4. Concept of Internet; Applications of Internet; World Wide Web; Email;
5. Making Small Presentation: Microsoft Power point

Suggested Readings:

- Bartee, Thomas C. (1977): Digital Computer Fundamental; McGraw Hill.
- Chauhan, S.; Chauhan, A. and Gupta, K. (2006): Fundamental of Computer; Firewall Media.
- Malvino, A.P. and Leach, D.P. (1981): Digital Principles and Appications; Tata McGraw Hill.
- Rajaraman, V. (2003): Fundamentals of Computer, Prentice Hall Publisher
- Sarkar, A. and Gupta, S.K (2002) Elements of computer Science, S Chand and Company, New Delhi
- Blissmer (1996): Working with MS Word; Houghton Mifflin Co.
- Johnson, Steve (2007): Microsoft Power Point 2007; Pearson Paravia Bruno.
- Leon, A .and Leon,M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
- Leon, A. and Leon, M.(1999): A beginners Guide to Computers, Vikas

SEC- 3: Remote Sensing and GPS based Project Report **Credits 02**

SEC3T: Remote Sensing and GPS based Project Report **Credit 01**

Course Contents:

1. Remote Sensing: Definition, Development, Platforms and Types.
2. Aerial Photography: Principles, Types and Geometry.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

3. Satellite Remote Sensing: Principles, EMR Interaction with Atmosphere and Earth Surface; Satellites (Landsat and IRS) and Sensors.

SEC3P: Practical **Credit 01**

1. Interpretation and Application of Remote Sensing: Land use/ Land Cover.
2. Global Positioning System (GPS) – Principles and Uses

Note: A project file consisting of five exercises will be done from aerial photos, satellite images (scale, orientation and interpretation) and GPS field survey.

Suggested Readings:

- Campbell J. B., 2007: *Introduction to Remote Sensing*, Guildford Press.
- Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
- Joseph, G. 2005: *Fundamentals of Remote Sensing* United Press India.
- Lilles and T. M., Kiefer R. W. and Chapman J. W., 2004: *Remote Sensing and Image Interpretation*, Wiley. (Wiley Student Edition).
- Nag P. and Kudra, M., 1998: *Digital Remote Sensing*, Concept, New Delhi.
- Rees W. G., 2001: *Physical Principles of Remote Sensing*, Cambridge University Press.
- Singh R. B. and Murai S., 1998: *Space-informatics for Sustainable Development*, Oxford and IBH Pub.
- Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw-Hill.

SEC- 4: Field Techniques and Survey based Project Report **Credits 02**

SEC4T. Field Techniques and Survey based Project Report **Credit 01**

Course Contents:

1. Field Work in Geographical Studies – Role, Value and Ethics of Field-Work.
2. Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental.
3. Field Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant).
4. Questionnaires (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a sketch).

SEC4P: Practical **Credit 01**

1. Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.
2. Each student will prepare an individual report based on primary and secondary data collected during field work.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

Suggested Readings:

- Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
- Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hallof India, New Delhi.
- Evans M., 1988: “Participant Observation: The Researcher as Research Tool” in *Qualitative Methods in Human Geography*, eds. J. Eyles and D. Smith, Polity.
- Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
- Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
- Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
- Special Issue on “Doing Fieldwork” *The Geographical Review* 91:1-2 (2001).
- Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
- Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:01:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Geography_General.pdf

Vidyasagar University

Curriculum for Automobile Maintenance (Major)

[Choice Based Credit System]

Semester-I

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC1		**C1T:** Principles of Automobiles	Core Course-1	4	0	0	6	75
		C1P: Principles of Automobiles		0	0	4		
CC2		**C2T:**Constructional details and working of I.C engines	Core Course-2	4	0	0	6	75
		C2P: Constructional details and working of I.C engines		0	0	4		
GE1		**TBD**	Generic Elective-1				4/5	75
							2/1	
AECC		English	AECC (Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC**=Core Course, **TBD =** To be decided, **AECC**=Ability Enhancement Compulsory Course

Generic Elective (GE) (Interdisciplinary) from other Department [Paper will be of 6 credits]. Papers are to be taken from following discipline: Physics/Electronics/Mathematics/Computer Science/Economics

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (**GE1 to GE4**) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (**GE**) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:25:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance(Major).pdf

SEMESTER-I
Core Course (CC)

CC-1: Principles of Automobiles — Credits 06

C1T: Principles of Automobiles — Credits 04

Principles of Automobiles:

Unit-I:
Basic concept of thermodynamics, 1st and 2nd laws, reversible, irreversible process and adiabatic, Isothermal Process. Thermodynamic Cycle: Carnot, Otto, Diesel, Dual cycles and their air standard efficiency, Numerical Problems.

Unit-II:
Classification of I.C Engines, S.I. and C.I Engines, 2 Stroke, 4-Stroke engines and their working Principle.

Unit-III:
Engine specifications-Bore, Stroke-length, MEP, I.H.P, B.H.P, S.F.C, mechanical and thermal efficiencies.

Unit-IV:
Valve timing diagram-2-stroke and 4 stroke engine.

Unit-V:
Fuel used in I.C Engines, Properties of Fuel, Petrol and Diesel, Fuel additives and- fuel rating (Octane and cetane numbers)

Unit-VI:
Combustion Process in I.C engines Auto ignition and chemical reaction, pre-ignition MAN and open combustion chambers, effect of knocking, calorific value of fuels, requirement of oxygen for complete combustion.

Unit-VII:
Stress, strain, their types, Numerical problems on principle of stresses,

C1P: Principles of Automobiles — **Credits 02**

Practical

Unit-I
Engineering drawing:
Scales, projections of solid, surface developments, Isomentric and oblique views, elevations, plans and end views off different objects and design.

Unit-II
2-stroke and 4 stroke (C.I &S.I engine):
Valve, Valve seat, Rocker arm, Push rod, Cam shaft, Crank shaft, Piston, piston ring, Connecting rod, Oil pump, fuel pump, Distributor, Oil filter, Fuel filter, Starter motor, alternator, Dynamo, Solex carburettor, inlet manifold, exhaust manifold, water pump, fly-wheel, vibration damper, spark plug, heater plug, injector, F.I.P pump. Adjustment:- C.B point, piston ring joined, piston ring groove, Cylinder bore, fan belt adjustment, valve tappet.

Unit-III
Cooling system: Radiator cleaning, thermostat valve, testing fan valve adjust, water pump service, pressure cap testing, over hauling viscous fan.

Unit-IV

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:25:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance(Major).pdf

Electrical safety precaution ,Electrical hand tools, Electrical measuring instrument practice(Volt Metre, Ammeter, Ohm metre, AVO Metre), Wire cutting and joint practice (Basic wire joints, soldering, Lug joint), Wire checking, use of terminal block, Magnetic effect of current, Practice using relay.

CC-2: Constructional details and working of I.C engines — Credits 06

C2T: Constructional details and working of I.C engines — Credits 04

Theory:

Constructional details and working of I.C engines:

Unit-I: **Layout of an automobile:** Main Components and assemblies.

Unit-II: Constructional features and functions of 2& 4 wheelers, Cylinder block, Crankcase, Cylinder head, Oil Pump, Gasket, Crank Shaft, Main Bearing, Vibration dampers, Exhaust system, Inlet and exhaust manifolds, fly-whell, Piston, Piston rings, Piston Pin, Connecting rod, Cams and Camshaft, Valve and Valve mechanism.

Unit-III:
S.I Engines: Combustion process, types of fuel feed system, various components of fuel system, fuel tank, fuel filters and screens, fuel losses, fuel gauges, fuel pumps, air cleaners, carburettor and its working its working, trouble shooting, servicing adjustments and M.P.F.I system.

Unit- IV:
C.I engines: Combustion and combustion chambers, fuel injection system, fuel tanks, fuel feed pumps, fuel injectors, nozzles and their types, details of nozzles and fuel injector unit, CRDI system.
Unit-V:
Cooling System: Importance, types, various components and accessories with troubles shooting.

Unit-VI:
Lubrication system: Importance, lubricants and their properties, their selections, lubrication system and their working, filters, lubrications in other parts of an automobiles, trouble shooting.

C2P: Constructional details and working of I.C engines — Credits 02

Practical

Unit-I
Fuel system (Petrol engine):
Over hauling fuel pump, carburettor, fuel fitter and air cleaner, practice in engine tune up in a vehicle.

Unit-II
Lubrication system:
Oil pump over-hauling and refitting, Replacing oil filter, Drawing engine oil, Repairs oil galleries.

Unit-III
Fuel system (Diesel engine):
Fuel feed pump over hauling, F.I.P pump single & multi cylinder over hauling, over hauling injector, testing the injector, Fuel bleeding, cleaning the injector.

Unit-IV
Basic idea and details of fitting shop, First aid, 5S concept, fire, Measuring instruments,
Gauge Measurement, Cutting tool's Operation, Heat Treatment, Drill and Grinding Machine Operation.

Job training or garage practice

*****

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:25:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance(Major).pdf

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:25:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance(Major).pdf

Vidyasagar University

Curriculum for Automobile Maintenance (Major)
[Choice Based Credit System]

Semester-II

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC3		**C3T**: Theory of Machine	Core Course-3	4	0	0	6	75
		C3P: **Practical**		0	0	4		
CC4		**C4T:** Suspension system, Steering system, Ignition system and Auto Air conditioning	Core Course-4	4	0	0	6	75
		C4P:**Practical**		0	0	4		
GE2		**TBD**	Generic Elective-2				4/5	75
							2/1	
AECC		ENVS	AECC (Elective)				4	100
Semester Total							**22**	**325**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC**=Core Course, **TBD** = To be decided, **AECC**=Ability Enhancement Compulsory Course

Generic Elective (GE) (Interdisciplinary) from other Department [Paper will be of 6 credits]. Papers are to be taken from following discipline: **Physics/Electronics/Mathematics/Computer Science/Economics**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (**GE1 to GE4**) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (**GE**) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:25:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance(Major).pdf

SEMESTER-II
Core Course (CC)

CC-3: Theory of Machine — Credits 06

C3T: Theory of Machine — Credits 04

Course Contents:

Theory of Machine:

Unit-I: Friction: Introduction, types of friction, coefficient of friction, limiting friction, laws of solid friction and kinetic friction, screw jack.

Unit-II: Belt, Rope and Chain Drive: Introduction, Belt drive, types of belts, Materials used, Velocity ratio, Slip, Length of belt, Comparison, flat and v-belt, Rope drive & Chain Drive.

Unit-III: Gear and Gear Trains: Fundamental laws of gearing, spur, bevel and worm gears, gear train, Interference, epicyclic gear trains.

Unit-IV: Cam: Types, displacement diagrams.

Unit-V: Flywheels: Turning moment diagrams, fluctuations of energy and speed.

Unit-VI: Governors: Types, Principles, working, Characteristics and performance.

Unit-VII: Torsion and tensional effect, Shear force and bending moment diagram, bending stress.

C3P: Practical — Credits 02

Unit-I
Valve timing: C.I. & S.I. valve timing adjustment of 2-stroke & 4-stroke.

Unit-II
Firing order set (Multi cylinder S.I. & C.I. 4-stroke) petrol- tappet timing, gear timing, chain timing, ignition timing. Diesel- tappet timing, gear timing, fuel timing.

Unit-III
Electronics components checking (Resistor, Capacitor, Diode, Transistor, and I.C), Construction of D.C Generator, Starter motor, Wiper Motor, Alternator, Transformer.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:25:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance(Major).pdf

CC-4: Suspension system, Steering system, Ignition system and Auto Air conditioning

Credits 06

C4T: Suspension system, Steering system, Ignition system and Auto Air conditioning

Credits 04

Course Contents:

Unit-I : Suspension system:- Objectives, principles of working, types of suspension system, independent and rigid axle suspension system, shock absorber and damper, troubles in a suspension system.

Unit-II: Steering system:- Steering geometry, their effect, steering angle, steering mechanism, steering linkages, power steering , trouble shooting.

Unit-III: Ignition System: Battery, electrical, magneto and electronic ignition systems and their troubles.

Unit-IV: Auto Air conditioning: Introduction, Air conditioning system, components, effect of Air conditioning of fuel economy, car Air conditioning system, Truck Air conditioning, trouble shooting.

C4P: Practical **Credits 02**

Unit-I

Suspension system: Replacing shock absorber, servicing shackle, over hauling leaf spring, over hauling coil spring, over hauling front suspension system.

Unit-II

Spark plug cleaning and testing: Spark plug cleaning, spark plug gap setting and spark plug testing.

Unit-III

Use of general hand tools (Vice, Screw driver, Spanner, Pliers etc.), identify of various types (Bolts, Nuts, Washers, Keys, pins, Bearing, Pulley , Gear etc.), Limit, Fit and Tolerance, Transmission of power.

Unit-IV

Practice to Operate the lathe machine tools , Welding(Arc), sheet metal work and Forging.

Job training or Garage practice

*****

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:25:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance(Major).pdf

Vidyasagar University

Curriculum for
Automobile Maintenance (Major)
[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		**C5T:** Transmission system Part -I	Core Course - 5	4	0	0	6	75
		C5P: Lab		0	0	4		
CC-6		**C6T:** Transmission System Part –II	Core Course - 6	4	0	0	6	75
		C6P: Lab		0	0	4		
CC-7		**C7T:**Manufacturing process or Production Engineering - 1	Core Course - 7	4	0	0	6	75
		C7P: Lab		0	0	4		
GE-3		**TBD**	Generic Elective -3				4/5	75
							2/1	
SEC-1		**SEC1T:**Assembling Simple Electronics Circuits	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P**=Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [Paper will be of 6 credits]. Papers are to be taken from following discipline: **Physics/Electronics/Mathematics/Computer Science/Economics**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major__SEM3.pdf

SEMESTER-III

Core Course (CC)

CC-5: Transmission system Part -I **Credits 06**

C5T: Transmission system Part –I **Credits 04**

Course Contents:

Unit-I: General principle, objectives and types (Manual, Semi-automatic, Automatic, Hydraulic transmission)

Unit-II: Gear boxes, resistance to motion of a vehicle, power required for propulsion

Unit-III: acceleration and hill climbing, necessity of gear box, function and types of gears, synchromesh gear box, free wheel drive, gear lubrication, transmission troubles.

C5P: Practical **Credits 02**

1. Over hauling, sliding mesh, constant mesh and synchromesh gear box and other gear box.
2. Moulds – Describe of Mould materials, Types of sand, Sand moulding, Pit moulding, machine moulding.

3. Melting practice. Types of furnaces with specific application Cupola furnace, Electric arc furnace.

4. Special casting processes die casting, centrifugal casting, investment casting, Shell moulding

5. Casting defects & its remedies. Green sand mould making process

6. Patterns - Material used, types, Patterns allowances, Cores, Core allowances. Core Prints.

CC-6: Transmission System Part –II **Credits 06**

C6T: Transmission System Part -II **Credits 04**

Course Contents:

Unit-I Clutch System: Function, types, clutch linkage, clutch facing &friction material, common faults.

Unit-II: Propeller Shaft: Types, fluid drives, Hotchkiss drive, universal & slip joint, Torque convertors.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major__SEM3.pdf

Unit-III: Final drive and rear axle: Types of final drives, differential gears and its principles of operation, rear axle and its types.

Unit- IV: Front Axle: Types and their components, swivelling mechanism, front form of motor cycle.

C6P: Practical **Credits 02**

1. Clutch: Over hauling single plate, multi plate, diaphragm clutch and other clutch.
2. Steering System and power steering: Overhauling steering linkage, steering gear box adjustment, power steering overhauling.
3. Servicing tyre: Repairing tube and tyre puncture.

CC-7: Manufacturing process or Production Engineering - 1 **Credits 06**

C7T: Manufacturing process or Production Engineering - 1 **Credits 04**

Course Contents:

Unit-I:
Mechanical properties of metals, ferrous and non ferrous metals used in engineering practice, Influence of carbon on iron and steel. Heat treatment of metals-different process-heat treatment equipments and materials.

Unit-II:
Hand tools used in different shops, bench work and fitting shop, Hand tools used in fitting shops, chipping, filing, scraping, measuring tools and gauges, limit, fit, allowance and clearance, jug stand and fixtures.

Unit-III:
Definition and concept of different mechanical process like rolling, drawing, spinning, firging, casting, welding, brazing, and soldering.

Unit-IV: Machine shops- Elementary ideas about different machines like Lathe, Shaper, Grinder, Drill & Milling.

C7P: Practical **Credits 02**

1. Forgeable material and forgeability, forging temperature, Grain flow in forged parts**,** Types of Presses and hammers.
2. Forging Processes – Drop forging, Upset forging, Die forging or press forging. Hot working & Cold working.
3. Types of dies - Open Die, Closed Die (Single Impression and Multi impression) Closed Die forging operations - Fullering, Edging, Bending, Blocking, Finishing.
4. Types of rolling mills: 2 Hi, 3 Hi & 4 Hi mills. Different rolled sections.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major__SEM3.pdf

SEC-1: Assembling Simple Electronics Circuits **Credits 02**

SEC1T: Assembling Simple Electronics Circuits

Course Contents:

Unit- 1: Semiconductor and Diode

P-type and N-type semiconductor, Junction of P-type & N type i.e. PN junction, Barrier voltage , depletion region ,Junction Capacitance, Forward biased & reversed biased junction, Diode symbol ,circuit diagram for characteristics (forward & reversed),Characteristics of PN junction diode, Specifications:-Forward voltage drop , Reversed saturation current, maximum forward current , power dissipation, Package view of diodes of different power ratings (to be shown during practical hours) Zener diode: Construction, Symbol, Circuit diagram for characteristics of zener diode (Forward & Reverse),Zener & Avalanche Breakdown,
Zener diode specifications – zener voltage, power dissipation, break over current, dynamic resistance & maximum reverse current.

Unit- 2: Rectifiers, Filters and Power Supply

Need of rectifier , definition ,Types of rectifier – Half wave rectifier, Full wave rectifier,(Bridge & centre tapped) Circuit operation Input/output waveforms for voltage & current, Average (dc) value of current & voltage (no derivation), Ripple , ripple factor , ripple frequency , PIV of diode used , efficiency of rectifier.(no derivation only definition), Comparison of three types of rectifier, Need of filters, Types of filters- A] shunt capacitor, B] Series inductor, C] LC filter , D] - filter --- only circuit operation (no mathematical derivation),limitations & advantages 2.5 Voltage regulator- Simple voltage regulator circuit using zener, familirisation with IC regulator circuit (like 78XX , 79XX series etc.), IC 723 adjustable power supply, concept of Switch mode power supply (SMPS) block diagram only.

Unit-3: Transistors, Switching and Optoelectronics Devices

Bipolar Junction Transistor (BJT): Symbol of NPN & PNP types, Construction, Different types of package, Operation of NPN and PNP transistor – current flow, relation between different currents ,Transistor configurations – CB, CE, CC circuit diagram for input & output characteristics of each configuration, Input & output characteristics, Comparison between three configuration, Transistor parameters – input & output resistance and relation between them. Transistor specification – VCE Sat, IC Max, VCEO, ICEO, VCE Breakdown, Power dissipation. Field effect Transistor (FET): Symbol, Construction of JFET, Working principle and V-I characteristics of JFET, pinch- off voltage, drain résistance, trans conductance, amplification factor and their relationship, Enhancement and depletion type MOSFET. TRIAC, DIAC, Silicon control rectifier (SCR):-Symbol, working, application (elementary ideas only) Comparison

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major__SEM3.pdf

between Transistor and SCR. Elementary ideas of LED, LCD, photodiode, phototransistor and solar cell and their applications only.

Unit- 4: Transistor Biasing

Need of biasing, concept of DC load line and AC load line, selection of Q point and Stabilization, Types of biasing circuits (no mathematical derivation) – a) Fixed biased circuit, b) Collector-to-base biased circuit, c) Voltage divider bias circuit

Unit – 5: Small Signal Transistor Amplifiers

Concept of amplification----Small signal amplifier using BJT, Determination of current, voltage & power gain, Input & output resistance. Single stage CE amplifier with voltage divider bias. Its explanation. Frequency response of single stage CE Amplifier, Bel and Decibel unit. Bandwidth & its significance. Cascade Amplifiers (Multistage Amplifier), Need of Multistage Amplifiers, Gain of amplifier. Types of amplifier coupling – RC, transformer & direct coupling. Two stage amplifier circuit diagram, working (briefly), frequency response, merits & demerits & applications of each.

Unit- 6: Oscillator

Oscillator – Requirement of oscillator circuit, Barkhauson's criteria of oscillator, circuit diagram and its application only -.Phase shift oscillator, Hartley oscillator, Colpitts oscillator, Crystal oscillator

Unit – 7: Op-Amp

OP-Amp Block diagram and use of op amp as - Inverting, non inverting, summing amplifier, differentiator, integrator, buffer, comparator, Schmitt's trigger.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:28:38; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major__SEM3.pdf

Vidyasagar University

Curriculum for
Automobile Maintenance (Major)
[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-8		**C8T:** Chassis, Frame &Body, Brake & Braking System, Wheel &Tyres.	Core Course - 8	4	0	0	6	75
		C8P: Lab		0	0	4		
CC-9		**C9T:** Engine Servicing And Tuning, Garage & Service Station, Electrical System and Motor Vehicles Act.	Core Course - 9	4	0	0	6	75
		C9P: Lab		0	0	4		
CC-10		**C10T:** Manufacturing Process and Machine Tools-ll	Core Course - 10	4	0	0	6	75
		C10P: Lab		0	0	4		
GE-4		**TBD**	Generic Elective - 4				4/5	75
							2/1	
SEC-2		**SEC2T:** Electro Magnetism and Digital Electronics	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T**= Tutorial, **P**=Practical, **CC** = Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD** = to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [Paper will be of 6 credits]. Papers are to be taken from following discipline: **Physics/Electronics/Mathematics/Computer Science/Economics**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM4.pdf

SEMESTER-IV

Core Course (CC)

CC-8: Chassis, Frame &Body, Brake & Braking System, Wheel &Tyres.

Credits 06

C8T: Chassis, Frame &Body, Brake & Braking System, Wheel &Tyres.

Credits 04

Course Contents:

Unit-I: Chassis, Frame and Body:

Chassis layout and its main components, design features, types of chassis and frames, materials and dimensions for auto body work, method of manufacturing and space requirements.

Unit-II: Brake and braking system:

Principles of brakes, braking mechanisms, classifications, bleeding in hydraulic system, brake troubles.

Unit-III: Wheels and tyres:

Types of tyres and their specification, tubeless tyres, radial tyres, friction due to pavement and earth in relation to wear, care and maintenance of tyres and tubes, repair and retreading of tyres.

C8P: Practical Credits 02

1: Wheel alignment and wheel balancing: toe-in, toe-out, caster angle, camber angle, king pin, inclination, adjustment and setting and wheel balance.

2: Brake system: Over hauling master cylinder, wheel cylinder, front and rear brake, air servo unit, unloaded valve, release valve, hand brake, vacuum 2uffer, single brake chamber,

3: Brake bleeding, Relining, brake shoes, servicing air tank, servicing brake valve and disc brake, demonstration of working of ABS system, sensors.

CC-9: Engine Servicing And Tuning, Garage & Service Station, Electrical System and Motor Vehicles Act.

Credits 06

C9T: Engine Servicing And Tuning, Garage & Service Station, Electrical System and Motor Vehicles Act. **Credits 04**

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM4.pdf

Unit-I: **Engine servicing and tuning:**

Basic requirements of automobiles engine servicing types and procedures.

Unit-II: **Garage and service station:**

Location and layout, equipment required in a service station, types of service.

Unit-III: **Servicing of Motor vehicles:**

Signification of servicing and its types, engine tuning and various instruments used, decarbonizing of engine parts, servicing of batteries,

Unit-IV: Electrical systems, servicing of fuel injection and ignition system, lubrication system, cooling system, braking system and other accessories.

Unit-V : Inspection and Testing of motor vehicles, types of inspection , inspection card , inspection and repair accident inspection , diagnosis of faults , Laboratory road testing of motor vehicles.

Unit-VI: Concept of Motor vehicles Act, different rules of Motor vehicles Act, Motor vehicle Act with special reference to pollution control and measure required to safe drive, Effect of pollutant.

C9P: Practical Credits 02

1. Specifications of drilling machine. Types of drills and reamers
2. Basic parts and their functions – Pillar drilling machine & Radial drilling machine.
3. drilling, boring, reaming, Counter boring, countersinking, chamfering, Spot facing, Trepanning
4. Arc Welding – working Principle, component, working Applications
5. Principle & Application of Shielded metal arc welding, Submerged arc welding. TIG / MIG welding
6. Principle & Application of process Resistance welding.(Principle & Application) - Spot welding, Seam welding, Projection welding
7. Types of Brazing and soldering application process**,** Inspection of Welding defects.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM4.pdf

CC-10: Manufacturing Process and Machine Tools-ll Credits 06

C10T: Manufacturing Process and Machine Tools-ll Credits 04

Course Contents:

Unit-I: Casting process, Permanent mould casting, semi permanent mould casting, die casting ,centrifugal casting , investment casting, continuous casting , defect in casting ,inspection of casting ,cleaning of casting.

Unit-II: Definition and concept of smithy and forging, sheet metal work, rivets and screws,

Unit-lll ; Machine Shops:- Elementary ideas about different machines like Slotting machine ,planning machine , boring machine , broaching machine , press machine.

Unit- lV: Elementary ideas about different non-traditional machine like Ultrasonic machining (USM) , Electro chemical machining (ECM) , Electrical discharge machining (EDM) , Laser beam machining (LBM)

Unit-V : Definition and concept of N.C Machine tools and C.N.C Machine tools.

C10P: Practical Credits 02

1. Transmission system: Over hauling universal joint, differential, remove and refitting propeller shaft over hauling slip joint.

2. Cutting tool nomenclature & tool signature of single point cutting tool.Orthogonal & oblique cutting, chip formation & type of chips
3. Types of lathes – Centre lathe, Capstan & Turret Lathe, CNC Lathe Specification of Centre lathe. Basic parts and their functions of centre lathe.

4. Operations and tools Centering, facing, Turning, parting off, undercutting, grooving, Knurling, boring, thread cutting

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM4.pdf

Skill Enhancement Course (SEC)

SEC-2: Electro Magnetism and Digital Electronics Credits 02

SEC2T: Electro Magnetism and Digital Electronics

Course Contents:

Unit-1: Steady electric current: Current density, equation of continuity, condition for the steady current, Kirchhoff's laws and analysis of multi loop circuits.
Unit-2: Magneto statics: Force on a moving charge, Lorentz force and definition of B, force on a straight current carrying conductor in a uniform magnetic field, torque on a current loop. Biot-Savart law, Ampere's circuital law, determination of magnetic fields (B) due to a straight current carrying conductor, a circular coil, a solenoid, magnetic field due to a small current loop, concept of magnetic dipole as a tiny current loop.

Unit-3: Magnetic fields in matter- magnetization (M), relation between B, H, and M, magnetic susceptibility and permeability, diamagnetic, paramagnetic and ferromagnetic materials, Curie's law, hysteresis in ferromagnetic material.

Unit-4: Electromagnetic induction and Maxwell's Equations: Faraday's law (both the integral and the differential forms), self and mutual inductances, transformers, energy stored in a coil of self inductance L, displacement current, Maxwell's equations.

Unit-5: Transients in DC: Growth and decay of current in LR circuit, charging and discharging of capacitor in CR circuit, time constants.

Unit-6: Alternating current: LR and CR circuits, complex number and their applications in AC circuits, impedance and reactance, series and parallel resonances, Q– factor, power dissipation in AC circuit, power factor.

Unit-7: Digital Electronics - binary number system, conversion from decimal to binary and vice versa. Logic gates- OR, AND, NOT gates, truth tables, de Morgan's theorem, NOR and NAND universal gates.
Combinational logic - Half adder, full adder, digital comparator, decoder, encoder (ROM), digital to analog conversion, analog to digital conversion, multiplexer.
Sequential logic - Flip - Flops - RS, D, JK, JKMS, edge triggering and locked operation, shift registers, ripple counter (binary and decade).

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM4.pdf

Vidyasagar University

Curriculum for Automobile Maintenance (Major)

[Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type / Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 11		**C11T:** Electrical System Lab	Core Course-11	4 0	0 0	0 4	6	75
CC- 12		**C12T:** Estimating, Costing and Machine Design	Core Course-12	5	1	0	6	75
DSE-1		TBD	Discipline Specific Elective - 1	4 0	0 0	0 4	6	75
DSE-2		TBD	Discipline Specific Elective - 2	4 0	0 0	0 4	6	75
		Semester Total					**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

SEMESTER- V

List of Core Course (CC)

CC-11: Electrical System

CC-12: Estimating, Costing and Machine Design

Discipline Specific Electives (DSE)

DSE-1: Computer Integrated Manufacturing
Or
DSE-1: Alternate Fuels and Energy Systems

DSE-2: Motor Vehicle Act & Pollution Control
Or
DSE-2: Urban Transportation Requirement and Planning

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

Core Course (CC)

CC-11: Electrical System **Credits 06**

C11T : Electrical System **Credits 04**

Course Contents:

Unit-I : Generator, Alternator and Batteries, Maintenance

Various electrical Instruments in an automobile, Automobile batteries and its maintenance and function of generator, alternator, battery charging system, voltage and current regulator, self-starter and bendix drive, ignition system and its components, ignition timing, setting of contact breaker gap, spark plug, firing order, checking electrical system.

Unit – II: Lighting System

Concept of Wring system, wring diagram, colour coding with diagram.

Unit-III: Accessories and control

Horn and its type, wind screens, wiper, direction indicators and flashing units, signalling system, lamps and their types, starter switch, Speedo meter , Antitheft devices, fuel gauge, oil pressure gauge, Temperature gauge.

C11P: Electrical System (Practical) **Credits 02**

Practical

01. Disassemble the engine component:
Overhauling cylinder head rockenarm piston, connecting rod, crankshaft pulley, timing geals-chain, fly wheel, crank shaft, of multi-cylinder engine. Injector testing with bench tester Fresing and calibration of diesel engine

02. Electrical system
Battery, battery testing, ignition circuit , lighting circuit, battery charging circuit, dynamo circuit, alternator circuit, Overhauling starter motor, dynamo alternator, Wiper motors, horn operation

03. M.P.F.I system
Fuel pump overhauling, common rail service, injector testing and service, M.P.F.I Total Sensor System, Fuel line service. . Bleed air from the fuel lines

04. ECU
Carryout Identification of Electronic control Unit, Perform Set up for testing, Testing of Electronic Control Circuit. Perform Identification of various sensors installed in engine & it's

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

mounting. Check instruments & Gauges on dash board & replace defective gauges. Test Temperature sensor, Pressure senor, potentiometer, magnetic induction sensor, cam shaft sensor, crankshaft position sensor and all sensor

05. Turbocharger & super charger

Overhauling turbo charger & supercharger unit, impalas shaft inspect and impeller service.

06. Total light circuit

Trace the light circuit - test bulbs, align head lamps, aiming headlights. Changing a headlight bulb, checking of a head light switch and to replace if faulty Check the all wiring wire with MultiMate, service head light, fog light, indicator light, parking light, break light tell light , check ignition switch

CC- 12: Estimating, Costing and Machine Design — Credits 06

C12T: Estimating, Costing and Machine Design — Credits 06

Course Contents:

Unit-I: Estimating and Costing

Definition of estimating and costing, elements of costing, Determination of weight of various parts such as block, cylinder, nuts, bolts, rivets, Estimate of machining price of several parts.

Unit-II: Machine Design

Concept and definition of machine Design, Types of stress, strain such as tension, compression, shear, bearing pressure.

Unit-III: Design of simple machine parts

Design of Rivets joint such as single rivet lap joint, Double rivet lap joint, single rivet butt joint, Double rivet butt joint. Flange coupling, universal coupling, Gears.

Suggested Books/ Reading:

- Auto Electrical Technology-A.K.Babu, Tom Delton
- Industrial Management- Bhadra & Roy
- Machine Design- J.K Gupta, V.B Bhandari, R.B Gupta

Discipline Specific Electives (DSE)

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

DSE-1: Computer Integrated Manufacturing Credits 06

DSE1T: Computer Integrated Manufacturing Credits 04

Course Contents:

Unit-I: Concept of Computer Integrated Manufacturing (CIM)

Basic components of CIM, Distributed database system, distributed communication system, computer networks for manufacturing; future automated factory.

Unit-II: Computer Aided Design (CAD)

CAD hardware and software, product modeling, automatic drafting, engineering analysis, FEM design review and evaluation.

Unit-III: Computer Aided Manufacturing (CAM)

Computer assisted NC part programming; Computer assisted robot programming, computer aided process planning (CAPP), computer aided material requirements planning (MRP), computer aided production scheduling, computer aided inspection planning, computer aided inventory planning, flexible manufacturing system (FMS), concept of flexible manufacturing, Integrating
NC machines, robots, AGVs, and other NC equipment, Computer aided quality control, business functions, computer aided forecasting.

DSE-1P: Computer Integrated Manufacturing (practical) Credits 02

1. Designing practical using CAD software.
2. Practical on CAM - examples.
3. Project work

Suggested Books/ Readings

1. CAD, CAM, CIM by P.Radhakrishnan and S.Subramanyan, New Age International Publishers.
2. Computer Integrated Manufacturing by Paul G. Rankey, Prentice Hall.
3. Computer Integrated Manufacturing by Harrington J. Jr., Industrial Press, Inc., New York.
4. Computer Integrated Manufacturing by K.Rathmill and P.Macconal, IFS Publications.
5. Automation, Production Systems and Computer Integrated Manufacturing by M. P. Groover, Prentice Hall.

Or

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

DSE-1: Alternate Fuels and Energy Systems Credits 06

DSE1T: Alternate Fuels and Energy Systems Credits 04

Course Contents:

Unit-I: Introduction to alternate fuels and energy systems:

Estimation of petroleum reserve; Need for alternate fuel; Availability and properties of alternate fuels; general use of alcohols, LPG, Hydrogen, Ammonia, CNG, and LNG; Vegetable oils and Biogas; Merits and demerits of various alternate fuels.

Unit-II: Alcohols:

Properties as engine fuels; alchohols and gasoline blends; Combustion characteristics in engines; emission characteristics.

Unit-III: Natural Gas, LPG, Hydrogen and Biogas

Availability of CNG, properties modification required to use in engines-performance and emission characteristics of CNG using LPG in SI & CI engines. Performance and emission for LPG, Hydrogen; Storage and handling, performance and safety aspects; Vegetable Oils - Various vegetable oils for engines, esterification, performance and emission characteristics

Unit-IV: Electrical and Solar Powered Vehicles:

Layout of an electric vehicle, Advantage and limitations, Specifications-System component, Electronic control system-High energy and power density batteries, Hybrid vehicle, Solar powered vehicles

DSE-1P: Alternate Fuels and Energy Systems (practical) Credits 02

1. Physical demonstration of engines powered with alternative fuels/ energies
2. Perform Checking of petroleum and alternate fuel engine
3. Training on Solar/ Electrical powered vehicle.
4. Laboratory note book and Viva Voce: Students will be required to maintain records of all works done in connection with the topic taught in this paper.
5. Visit to industry / Project work

Suggested Books/ Readings

1. Maheswar Dayal, Energy today & tomorrow, I & B Horishr India,1982
2. Nagpal, Power Plant Engineering, Khanna Publishers,1991.
3. Alchohols and Motor fuels progress in technology, Series No.19,SAEPublicartion USA 1980.
4. SAE paper Nos.840367, 841156,841333,841334.
5. The properties and performance of modern alternate fuels SAE paper No 841210.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

6. Bechtold.R.L. Alternative Fuels Guide Book, SAE, 1997.

DSE- 2: Motor Vehicle Act & Pollution Control Credits 06

DSE2T: Motor Vehicle Act & Pollution Control Credits 04

Course Contents:

Unit I: Motor vehicle act
Various section of the motor vehicle act, Licensing of drivers of motor vehicles, Registration of motor vehicles, Control of transport vehicles, Control of traffic, Insurance of motor vehicles, Offence - Penalties and Procedure, Mandatory sings, Accident claims, Accident claims tribunals.

Unit II: Introduction
Vehicle population assessment in metropolitan cities and contribution to pollution, effects on human health and environment, global warming, types of emission, transient operational effects on pollution.

Unit III: Pollutant Formation in SI Engines
Pollutant formation in SI Engines, mechanism of HC and CO formation in four stroke and two stroke SI engines, NOx formation in SI engines, effects of design and operating variables on emission formation, control of evaporative emission. Two stroke engine pollution.

Unit IV: Pollutant Formation in CI Engines
Pollutant formation in CI engines, smoke and particulate emissions in CI engines, effects of design and operating variables on CI engine emissions, Nox formation and control. Noise pollution from automobiles, measurement and standards

Unit V: Measurement Techniques Emission Standards and Test Procedure
NDIR, FID, Chemiluminescent analyzers, Gas Chromatograph, smoke meters, emission standards, driving cycles - USA, Japan, Euro and India. Test procedures - ECE, FTP Tests. SHED Test - chassis dynamometers, dilution tunnels

DSE2P: Motor Vehicle Act & Pollution Control (Practical) Credits 02

List of Practical

1. Identification of Informatory, Warning and Mandatory Road Signs.
2. Knowing various traffic signals.
3. Familiarising with layout and identifying various items and parts of various emission controlling system e.g :-EGR system, Cat Con , PCV System and Fuel vapour Purge Control System.
4. Laboratory note book and Viva Voce.

Or

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

DSE-2: Urban Transportation Requirement & Planning Credits 06

DSE2T: Urban Transportation Requirement & Planning Credits 04

Course Contents:

Unit 1: Urban Transportation System Planning

- Role of transportation in urban development
- Transportation problems in urban areas
- Purpose of transportation planning
- Transportation planning process and factors affecting it
- Travel demand and actors affecting it
- Urban transport forecasting

Unit 2: Transportation Surveys

- Study area and zoning
- Survey Types: Home interview surveys, Commercial vehicle surveys, Taxi surveys, Road side interview surveys, Post card questionnaire surveys, Registration number surveys, Tag surveys, Public transport surveys, Telephone surveys.
- Inventory of existing transport Facilities

Unit 3: Trip Generation and Distribution

- Trip generation: Trip purpose, Problems of trip generation
- Factors governing trip generation and attraction rates
- Trip distribution
- Methods of trip distribution: Uniform factor, Average factor, Detroit, Fratar, Furness and Time factor method
- Problems based on trip distribution

Unit 4: Transportation Plan Preparation

- Definitions: corridor, corridor traffic forecasting, corridor traffic study, count, segment, point, segment capacity, screen line
- Corridor identification
- Mass transit system
- Urban mass rapid transit system
- Rail based transit – Metro, Light rail transit system (LRT), Mono rail, Sky rail
- Road based transit – Bus rapid transit system (BRTS), Electric trolley bus, commuter Bus / City

DSE2P: Urban Transportation Requirement & Planning (Practical) Credits 02

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

List of Practical:

- Identifying problems like parking, delay at intersection - students will make a brief report regarding problems.
- Make any two transport survey and prepare a report of outcome.
- Prepare write up on transportation planning process.
- Model project on Urban mass rapid transit system.

Suggested Books/ Readings

1. Kadiyali, L. R., Traffic Engineering and Transportation Planning, Khanna Publishers, New Delhi
2. Hutchison, B. G., Introduction to Transportation Engg and Planning, McGraw-Hill Book Co.
3. Morlok, Edward K., Introduction to Transportation Engg. and Planning. McGraw-Hill Book Co.
4. Vuchic, Vukan R, Urban Public Transit System and Technology, PHI Learning, New Delhi
5. The properties and performance of modern alternate fuels SAE paper No 841210.
6. Dickey, John W. Metropolitan Transportation Planning, McGraw-Hill Book Co.

******

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:29:43; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM5.pdf

Vidyasagar University

Curriculum for Automobile Maintenance (Major)

[Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 13		**C13T:** Automotive Air Conditioning	Core Course-13	4	0	0	6	75
		C13P : Lab		0	0	4		
CC- 14		**C14T:** Vehicle Performance and Testing	Core Course-14	4	0	0	6	75
		C41P : Lab		0	0	4		
DSE-3		**TBD**	Discipline Specific Elective - 3	4	0	0	6	75
				0	0	4		
DSE-4		**TBD**	Discipline Specific Elective - 4	4	0	0	6	75
				0	0	4		
Semester Total							**24**	**300**

L= Lecture, **T**= Tutorial, **P** = Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

SEMESTER- VI

List of Core Course (CC)

CC-13: Automotive Air Conditioning

CC-14: Vehicle Performance and Testing

Discipline Specific Electives (DSE)

DSE-3: Automotive Safety
Or
DSE-3: Two and Three Wheelers

DSE-4: Industrial Managements
Or
DSE-4: Industrial Training

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

Core Course (CC)

CC-13: Automotive Air Conditioning — Credits 06

C13T : Automotive Air Conditioning — Credits 04

Course Contents:

Unit-I : Air-conditioning Fundamentals

Basic air conditioning system - location of air conditioning components in a car, schematic layout of a refrigeration system, compressor components, condenser and high pressure service ports, thermostatic expansion valve, expansion valve calibration, controlling evaporator temperature, evaporator pressure regulator, evaporator temperature regulator.

Unit – II: Air Conditioner - Heating System

Automotive heaters, manually controlled air conditioner, heater system, automatically controlled air conditioner and heater systems, automatic temperature control, air conditioning protection, engine protection.

Refrigerant: Containers handling refrigerants, tapping into the refrigerant container, refrigeration system diagnosis, diagnostic procedure, ambient conditions affecting system pressures.

Unit-III: Air Routing and Temperature Control

Objectives, evaporator airflow through the recirculating unit, automatic temperature control, duct system, controlling flow, vacuum reserve, testing the air control and handling systems.

Unit-IV: Air Conditioning Service

Air conditioner maintenance and service, servicing heater system removing and replacing components, trouble shooting of air controlling system, compressor service.

C-13P: Automotive Air Conditioning (practical) — Credits 02

1. Layout of car AC system
2. Construction and operation of condenser and evaporator.
3. Construction and operation of heating system.
4. Case study of AC system.
5. Controlling system of AC.
6. Servicing of AC system.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

Suggested Books/ Reading:

1. William H. Crouse and Donald I. Anglin “Automotive Air conditioning” McGraw Hill
2. Mitchell information Services, Inc “Mitchell Automatic Heating and Air Conditioning Systems” - Prentice Hall.
3. Paul Weiser “Automotive Air Conditioning” Reston Publishing Co.
4. MacDonald, K. I. , “Automotive Air Conditioning”, Theodore Audel series
5. Goings L. F. “Automotive Air Conditioning” American Technical services
6. Boyce H. Dwiggins “Automotive Air Conditioning”, Delmar

CC- 14: Vehicle Performance and Testing — Credits 06

C14T: Vehicle Performance and Testing — Credits 04

Course Contents:

Unit-I: Vehicle Performance Parameters

Vehicle Performance parameters, Fuel economy, acceleration, deceleration, grad ability, top speed, handling, comfort, life durability, EGR systems, and Vehicular systems: Suspension steering, Brakes & carriage unit testing, test procedure. Test procedure for gear box noise and shifting force.

Unit-II: Vehicle Testing

Vehicle Testing - Road test, Free acceleration test, Coast down test, Passer by noise test, Wheel alignment and balancing test, Test tracks û proving ground testing, high speed track, pavement track, corrugated track, mud track, steering pad, gradient track, deep wading through shallow water, Laboratory testing û testing on chassis dynamometer transition testing- Euro III onwards, accelerated testing, Virtual testing, Evaporative emission testing, Oil consumption testing.

Unit-III: Collisions and Crash Testing

Crash testing: Human testing, Dummies, crashworthiness, pole crash testing, rear crash testing, vehicle to vehicle impact, side impact testing, crash test sensors, sensor mounting, crash test data acquisition, Braking distance test.

Unit-IV: Noise Vibration

Noise & vibration: Mechanism of noise generation, engine noise & vibration, causes and remedies, road shocks wind noise & measurement, vehicle measurement testing. Instrumentation for functional tests, Battery testing, endurance test.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

C-14P: Vehicle Performance and Testing (practical) **Credits 02**

1. Engine / vehicle performance, P.V. diagram, mechanical efficiency, volumetric efficiency and losses of fuel economy.
2. Construction and working principle of EGR and catalytic convertor. Testing procedure of suspension, brake and steering system.
3. Exhaust emission testing, oil consumption testing and road test.
4. Construction and operation of automatic clutch epicyclic transmission ad troque converter. Testing of clutch, gear box, final drive and differential
5. Safety of driver and occupants like seat belt, air bags, GPS, ESP, functions and operations.

Suggested Books/ Reading:

1. SAE Transaction Papers 831814/820346/820367/820371/820375
2. SAE handbook vol 2 & 3
3. Automobile Engineering by Ramlingam
4. Automobile engineering by Kripal Singh
5. Automotive Mechanics by Josepf Heitner
6. ARAI vehicle emission test manual
7. Automobile Engineering by Rangawala

Discipline Specific Electives (DSE)

DSE-3: Automotive Safety **Credits 06**

DSE3T: Automotive Safety **Credits 04**

Course Contents:

Unit-I: Safety Concepts

Active safety, driving safety, conditional safety, perceptibility safety, operating safety- passive safety: exterior safety, interior safety, deformation behaviour of vehicle body, and speed and acceleration characteristics of passenger compartment on impact.

Unit-II: Safety Equipments

Seat belt, regulations, automatic seat belt tightener system, collapsible steering column, tiltable steering wheel, air bags, electronic system for activating air bags, bumper design for safety.

Unit-III: Collision Warning and Avoidance

Collision warning system, causes of rear end collision, frontal object detection, rear vehicle

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

object detection system, object detection system with braking system interactions.

Unit-IV: Comfort and Convenience System

Steering and mirror adjustment, central locking system, Garage door opening system, tyre pressure control system, rain sensor system, environment information system.

DSE-3P: Automotive Safety (practical) **Credits 02**

1. Aerodynamic body shape advantages
2. Use of seat belt, automatic seat belt adjustment system
3. Collapsible steering column servicing, Adjustment of steering wheel
4. Operation of front and rear vehicle object detection system
5. Rear view mirror adjustment
6. Operation of central locking system tyre pressure control system, Dicky opening system and rain sensor system
7. Servicing of door hinged and door lock.

Suggested Books/ Readings

- Bosch - "Automotive Handbook" - 5th edition - SAE publication - 2000.
- J. Powloski - "Vehicle Body Engineering" - Business books limited, London
- Ronald. K. Jurgen - "Automotive Electronics Handbook" - Second edition- McGraw-Hill

Or

DSE-3: Two and Three Wheelers Credits 06

DSE3T: Two and Three Wheelers **Credits 04**

Course Contents:

Unit-I: Power system:

Two stroke SI engine, four stroke SI engine; merits and demerits, Symmetrical and unsymmetrical port timing diagrams, Types of scavenging processes, merits and demerits, scavenging pumps, Rotary valve engine; Fuel system, Lubrication system. Magneto coil and battery coil spark ignition system, electronic ignition system; Starting system, Kick starter system.

Unit-II: Chassis Systems:

Mainframe and its types. Chassis and shaft drive, Single, multiple plates and centrifugal clutches. Gear box and gear controls. Front and rear suspension systems; Shock absorbers; Panel meters and controls on handle bar.

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

Unit-III: Brakes, Wheels and Tyres

Drum brakes, disc brakes, front and rear brake links, layouts, Spoked wheel, cast wheel, disc Wheel, disc types; Tyres and tubes.

Unit-IV: Case studies:

Two Wheelers: Case study of major Indian models of motorcycles, scooters and mopeds, TVS mopeds and motorcycles, Hero Honda motorcycles, Bajaj scooters and motorcycles, Yamaha, Enfield motorcycles; Servicing and maintenance.
Three Wheelers: Case study of Indian models, Auto rickshaws, pickup van, delivery van and trailer, Maintenance: daily, weekly, monthly, Fault tracing.

DSE-3P: Two and Three Wheelers (practical) **Credits 02**

1. Construction and operation of 4stroke SI engine.
2. Construction and operation of 2stroke petrol.
3. Fuel supply circuit of 2 wheeler and 3 wheeler.
4. Operation of lubricating system.
5. Operation of Magneto coil and Magneto coil ignition.
6. Operation electronic ignition.
7. Starting system and operation.
8. Construction and working of clutching system.
9. Construction and operation of Transmission Gear box.
10. Construction and operation of suspension system.
11. Construction and operation of Braking system.
12. Fitment and operation of wheels, tyre and tube.
13. Case study of motor cycles and scooter.

Suggested Books/ Readings

- Irving. P. E. - Motor Cycle Engineering - Temple Press Book, London
- The Cycle Motor Manual - Temple Press Limited, London
- Encyclopedia of Motorcycling - 20 volume Marshall, Cavensih, UK
- Brayant R. V, Vespa - Maintenance and Repair Series - S. Chand & Co. , New Delhi
- Raymond Broad Lambretta - A Practical Guide to maintenance and repair - S. Chand & Co., New Delhi

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

DSE- 4: Industrial Managements Credits 06

DSE4T: Industrial Managements Credits 04

Course Contents:

Unit-I : Organisation Management

Concept of organisation, Structure, Types, function of organisation, Concept of stock.

Unit – II: Human Resource Management (HRM)

Introduction and Definition of human resource management (HRM), Scope and function of HRM, Planning of HRM, Selection process, Recruitment and selection, Training and Development.

Unit-III: Financial management

Object and function of financial of financial management, Capital generation and management, Type of taxes.

Unit-IV: Materials management

Importance of material managements, function of material managements, organisation structure of materials managements, function of store department.

Unit-V: Safety Managements

Types and causes of industrial accidents, Elements of safety program, Steps for preventing industrial accidents, Safety program, Safety committee.

DSE4P: Practical Credits 02

List of Practical

1. Two week training at Automotive/ ancillary industry for Management Practices
2. Case studies
3. PPT presentation on recent HR practices
4. Viva Voce

Suggested Books/ Readings

- Industrial Management, S.C. Sharma, Khanna Publishing House

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

Or

DSE-4: Industrial Training — Credits 06

DSE4P: Industrial Training — Credits 06

1. Industrial Training of 4 (four) weeks
2. Training may be done from industries/Skill knowledge providers (SKPs)/Sector Skill Councils (SSCs)/Training centers/Institutes dealing with automotive
3. Trainings are to be carried out during summer vacations or Semester break
4. Training Report submission
5. Viva - Voce.

Evaluation- Cumulative performance will be evaluated in Semester VI.

******

Downloaded from Vidyasagar University by 103.77.136.110 on 26 July 2023 : 14:31:36; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/MAJOR/Automobile_Maintenance_Major_SEM6.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Chemistry [Choice Based Credit System]

Semester-I

Sl.No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C1	**C1T:** Organic Chemistry-I	Core Course-1		4	0	0	6	75
	C1P: Organic Chemistry-I Lab	Core Course1 [Practical]		0	0	4		
C2	**C2T:** Physical Chemistry-I	Core Course-2		4	0	0	6	75
	C2P: Physical Chemistry-I Lab	Core Course-2 [Practical]		0	0	4		
GE-1	GE-1	GE					4/5	75
	GE-1	GE					2/1	
AECC	English	AECC					2	50
				Total Credits = 20				

L=Lecture, T=Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: English /Modern Indian Language .

Interdisciplinary/Generic Elective (GE) from other Department

[**Four papers are to be taken and each paper will be of 6 credits**]:

[Papers are to be taken from any of the following discipline (**GE-1 from Mathematics**)]: **Mathematics/ Physics /Computer Sc/Statistics/Geology/Electronics/ zoology/Botany/Microbiology /Physiology /Biotechnology/Nutrition**

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Semester-1

Core Course

CC-1 :ORGANIC CHEMISTRY-I Credits 06

(Credits: Theory-04, Practicals-02)

C1T1 : ORGANIC CHEMISTRY-I Credits 04

Theory: 60 Lectures

Basics of Organic Chemistry

Bonding and Physical Properties (25 Lectures)

Valence Bond Theory: concept of hybridisation, shapes of molecules, resonance (including hyperconjugation); calculation of formal charges and double bond equivalent (DBE); orbital pictures of bonding (sp^3, sp^2, sp: C-C, C-N & C-O systems and *s-cis* and *s-trans* geometry for suitable cases).

Electronic displacements: inductive effect, field effect, mesomeric effect, resonance energy; bond polarization and bond polarizability; electromeric effect; steric effect, steric inhibition of resonance.

MO theory: qualitative idea about molecular orbitals, bonding and antibonding interactions, idea about σ, σ^*, π, π^*, n – MOs; basic idea about Frontier MOs (FMO); concept of HOMO, LUMO and SOMO; interpretation of chemical reactivity in terms of FMO interactions; sketch and energy levels of π MOs of i) acyclic p orbital system (C=C, conjugated diene, triene, allyl and pentadienyl systems) ii) cyclic p orbital system (neutral systems: [4], [6]-annulenes; charged systems: 3-,4-,5-membered ring systems); Hückel's rules for aromaticity up to [10]-annulene (including mononuclear heterocyclic compounds up to 6-membered ring); concept of antiaromaticity and homoaromaticity; non-aromatic molecules; Frost diagram; elementary idea about α and β; measurement of delocalization energies in terms of β for buta-1,3-diene, cyclobutadiene, hexa-1,3,5-triene and benzene.

Physical properties: influence of hybridization on bond properties: bond dissociation energy (BDE) and bond energy; bond distances, bond angles; concept of bond angle strain (Baeyer's strain theory); melting point/boiling point and solubility of common organic compounds in terms of covalent & non-covalent intermolecular forces; polarity of molecules and dipole moments; relative stabilities of isomeric hydrocarbons in terms of heat of hydrogenation, heat of combustion and heat of formation.

General Treatment of Reaction Mechanism I (10 Lectures)

Mechanistic classification: ionic, radical and pericyclic (definition and example);

reaction type: addition, elimination and substitution reactions (definition and example); nature of bond cleavage and bond formation: homolytic and heterolytic bond fission, homogenic and

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

heterogenic bond formation; curly arrow rules in representation of mechanistic steps; reagent type: electrophiles and nucleophiles (elementary idea); electrophilicity and nucleophilicity in terms of FMO approach.

Reactive intermediates: carbocations (carbenium and carbonium ions), carbanions, carbon radicals, carbenes: generation and stability, structure using orbital picture and electrophilic/nucleophilic behavior of reactive intermediates (elementary idea).

Stereochemistry I **(25 Lectures)**

Bonding geometries of carbon compounds and representation of molecules: tetrahedral nature of carbon and concept of asymmetry; Fischer, sawhorse, flying-wedge and Newman projection formulae and their inter translations.

Concept of chirality and symmetry: symmetry elements and point groups ($C_{\infty v}$, C_{nh}, C_{nv}, C_n, $D_{\infty h}$, D_{nh}, D_{nd}, D_n, S_n (C_s, C_i); molecular chirality and centre of chirality; asymmetric and dissymmetric molecules; enantiomers and diastereomers; concept of epimers; concept of stereogenicity, chirotopicity and pseudoasymmetry; chiral centres and number of stereoisomerism: systems involving 1/2/3-chiral centre(s) (AA, AB, ABA and ABC types).

Relative and absolute configuration: D/L and *R/S* descriptors; *erythro/threo* and *meso* nomenclature of compounds; *syn/anti* nomenclatures for aldols; *E*/*Z* descriptors for C=C, conjugated diene, triene, C=N and N=N systems; combination of *R/S*- and *E/ Z*- isomerisms.

Optical activity of chiral compounds: optical rotation, specific rotation and molar rotation; racemic compounds, racemisation (through cationic, anionic, radical intermediates and through reversible formation of stable achiral intermediates); resolution of acids, bases and alcohols via diastereomeric salt formation; optical purity and enantiomeric excess; invertomerism of chiral trialkylamines.

Reference Books

1. Clayden, J., Greeves, N. & Warren, S. *Organic Chemistry,* Second edition, Oxford University Press, 2012.
2. Keeler, J., Wothers, P. *Chemical Structure and Reactivity – An Integrated approach*, Oxford University Press.
3. Sykes, P. *A guidebook to Mechanism in Organic Chemistry,* Pearson Education, 2003.
4. Smith, J. G. *Organic Chemistry*, Tata McGraw-Hill Publishing Company Limited.
5. Carey, F. A., Guiliano, R. M. *Organic Chemistry*, Eighth edition, McGraw Hill Education, 2012.
6. Eliel, E. L. & Wilen, S. H. *Stereochemistry of Organic Compounds*, Wiley: London, 1994.
7. Nasipuri, D. *Stereochemistry of Organic Compounds,* Wiley Eastern Limited.
8. Morrison, R. N. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
9. Finar, I. L. *Organic Chemistry (Volume 1)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
10. Fleming, I. *Molecular Orbitals and Organic Chemical Reactions*, Reference/Student Edition, Wiley, 2009.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

11. James, J., Peach, J. M. *Stereochemistry at a Glance*, Blackwell Publishing, 2003.

12. Robinson, M. J. T., *Stereochemistry*, Oxford Chemistry Primer, Oxford University Press, 2005.

CC1P1 - CHEMISTRY LAB- I Credits 02

(60 Lectures)

1. Separation, based upon solubility, by using common laboratory reagents like water (cold, hot), dil. HCl, dil. NaOH, dil. $NaHCO_3$, *etc*., of components of a binary solid mixture; purification of **any one** of the separated components by crystallization and determination of its melting point. The composition of the mixture may be of the following types: Benzoic acid/*p*-Toluidine; *p*-Nitrobenzoic acid/*p*-Aminobenzoic acid; *p*-Nitrotolune/*p*-Anisidine; *etc*.

2. **Determination of boiling point** of common organic liquid compounds e.g., ethanol, cyclohexane, chloroform, ethyl methyl ketone, cyclohexanone, acetylacetone, anisole, crotonaldehyde, mesityl oxide, *etc*. [Boiling point of the chosen organic compounds should preferably be less than 160 °C]

3. **Identification of a Pure Organic Compound**

Solid compounds: oxalic acid, tartaric acid, citric acid, succinic acid, resorcinol, urea, glucose, cane sugar, benzoic acid and salicylic acid

Liquid Compounds: formic acid, acetic acid, methyl alcohol, ethyl alcohol, acetone, aniline, dimethylaniline, benzaldehyde, chloroform and nitrobenzene

Reference Books

1. Bhattacharyya, R. C, *A Manual of Practical Chemistry.*

2. Vogel, A. I. *Elementary Practical Organic Chemistry,* Part 2: *Qualitative Organic Analysis,* CBS Publishers and Distributors.

3. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry,* Pearson Education (2009).

4. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Chemistry,5th Ed.,* Pearson (2012).

5. Dutta, S, *B. Sc. Honours Practical Chemistry*, Bharati Book Stall.

CC-2: PHYSICAL CHEMISTRY-I Credits 06

(Credits: Theory-04, Practicals-02)

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

C2 T2 : PHYSICAL CHEMISTRY-I Credits 04

(Theory: 60 Lectures)

Kinetic Theory and Gaseous state (20 Lectures)

Kinetic Theory of gases: Concept of pressure and temperature; Collision of gas molecules; Collision diameter; Collision number and mean free path; Frequency of binary collisions (similar and different molecules); Wall collision and rate of effusion

Maxwell's distribution of speed and energy: Nature of distribution of velocities, Maxwell's distribution of speeds in one, two and three dimensions; Kinetic energy distribution in one, two and three dimensions, calculations of average, root mean square and most probable values in each case; Calculation of number of molecules having energy ≥ ε, Principle of equipartition of energy and its application to calculate the classical limit of molar heat capacity of gases

Real gas and virial equation: Deviation of gases from ideal behavior; compressibility factor; Boyle temperature; Andrew's and Amagat's plots; van der Waals equation and its features; its derivation and application in explaining real gas behaviour, other equations of state (Berthelot, Dietrici); Existence of critical state, Critical constants in terms of van der Waals constants; Law of corresponding states; virial equation of state; van der Waals equation expressed in virial form and significance of second virial coefficient; Intermolecular forces (Debye, Keesom and London interactions; Lennard-Jones potential - elementary idea)

Chemical Thermodynamics (25 Lectures)

Zeroth and 1st law of Thermodynamics: Intensive and extensive variables; state and path functions; isolated, closed and open systems; zeroth law of thermodynamics; Concept of heat, work, internal energy and statement of first law; enthalpy, *H*; relation between heat capacities, calculations of *q*, *w*, *U* and *H* for reversible, irreversible and free expansion of gases (ideal and van der Waals) under isothermal and adiabatic conditions; Joule's experiment and its consequence.

Thermochemistry: Standard states; Heats of reaction; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; Laws of thermochemistry; bond energy, bond dissociation energy and resonance energy from thermochemical data, Kirchhoff's equations and effect of pressure on enthalpy of reactions; Adiabatic flame temperature; explosion temperature

Second Law: Need for a Second law; statement of the second law of thermodynamics; Concept of heat reservoirs and heat engines; Carnot cycle; Physical concept of Entropy; Carnot engine and refrigerator; Kelvin – Planck and Clausius statements and equivalence of the two statements with entropic formulation; Carnot's theorem; Values of §dQ/T and Clausius inequality; Entropy change of systems and surroundings for various processes and transformations; Entropy and unavailable work; Auxiliary state functions (G and A) and their variation with T, P and V. Criteria for spontaneity and equilibrium.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Thermodynamic relations: Maxwell's relations; Gibbs- Helmholtz equation, Joule-Thomson experiment and its consequences; inversion temperature; Joule-Thomson coefficient for a van der Waals gas; General heat capacity relations

c) Chemical kinetics (15 Lectures)

Rate law, order and molecularity: Introduction of rate law, Extent of reaction; rate constants, order; Forms of rates of First, second and nth order reactions; Pseudo first order reactions (example using acid catalyzed hydrolysis of methyl acetate); Determination of order of a reaction by half-life and differential method; Opposing reactions, consecutive reactions and parallel reactions (with explanation of kinetic and thermodynamic control of products; all steps first order)

Role of T and theories of reaction rate: Temperature dependence of rate constant; Arrhenius equation, energy of activation; Rate-determining step and steady-state approximation – explanation with suitable examples; Collision theory; Lindemann theory of unimolecular reaction; outline of Transition State theory (classical treatment)

Homogeneous catalysis: Homogeneous catalysis with reference to acid-base catalysis; Primary kinetic salt effect; Enzyme catalysis; Michaelis-Menten equation, Lineweaver-Burk plot, turn-over number

Autocatalysis; periodic reactions

Reference Books:

1. Atkins, P. W. & Paula, J. de *Atkins' Physical Chemistry*, Oxford University Press
2. Castellan, G. W. *Physical Chemistry*, Narosa
3. McQuarrie, D. A. & Simons, J. D. *Physical Chemistry: A Molecular Approach*, Viva Press
4. Engel, T. & Reid, P. *Physical Chemistry*, Pearson
5. Levine, I. N. *Physical Chemistry*, Tata McGraw-Hill
6. Maron, S. & Prutton *Physical Chemistry*
7. Ball, D. W. *Physical Chemistry*, Thomson Press
8. Mortimer, R. G. *Physical Chemistry*, Elsevier
9. Laidler, K. J. *Chemical Kinetics*, Pearson
10. Glasstone, S. & Lewis, G.N. *Elements of Physical Chemistry*
11. Rakshit, P.C., *Physical Chemistry* Sarat Book House
12. Zemansky, M. W. & Dittman, R.H. *Heat and Thermodynamics*, Tata-McGraw-Hill
13. Rastogi, R. P. & Misra, R.R. *An Introduction to Chemical Thermodynamics*, Vikas
14. Clauze & Rosenberg, *Chemical Thermodynamics*

C 2P2 : CHEMISTRY LAB-II Credits 04

(60 Lectures)

Experiment 1: Determination of pH of unknown solution (buffer), by color matching method

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Experiment 2: Determination of heat of neutralization of a strong acid by a strong base

Experiment 3: Study of kinetics of acid-catalyzed hydrolysis of methyl acetate

Experiment 4: Study of kinetics of decomposition of H_2O_2

Experiment 5: Determination of heat of solution of oxalic acid from solubility measurement

Reference Books

1. Viswanathan, B., Raghavan, P.S. *Practical Physical Chemistry* Viva Books (2009)
2. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson
3. Harris, D. C. *Quantitative Chemical Analysis*. 6th Ed., Freeman (2007)
4. Palit, S.R., De, S. K. *Practical Physical Chemistry* Science Book Agency
5. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N., University of Calcutta
6. Levitt, B. P. edited *Findlay's Practical Physical Chemistry* Longman Group Ltd.
7. Gurtu, J. N., Kapoor, R., *Advanced Experimental Chemistry* S. Chand & Co. Ltd.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Generic Elective Syllabus

GE-1 [Interdisciplinary for other department]

GE-1 : ATOMIC STRUCTURE, CHEMICAL PERIODICITY, ACIDS AND BASES, REDOX REACTIONS, GENERAL ORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS. Credits 06

GE1 T1 : ATOMIC STRUCTURE, CHEMICAL PERIODICITY, ACIDS AND BASES, REDOX REACTIONS, GENERAL ORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS. Credits 04
Theory: 60 Lectures

Section A: Inorganic Chemistry-I (30 Lectures)

Atomic Structure (10 Lectures)

Bohr's theory for hydrogen atom (simple mathematical treatment), atomic spectra of hydrogen and Bohr's model, Sommerfeld's model, quantum numbers and their significance, Pauli's exclusion principle, Hund's rule, electronic configuration of many-electron atoms, *Aufbau* principle and its limitations.

Chemical Periodicity (05 Lectures)
Classification of elements on the basis of electronic configuration: general characteristics of s-, p-, d- and f-block elements. Positions of hydrogen and noble gases. Atomic and ionic radii, ionization potential, electron affinity, and electronegativity; periodic and group-wise variation of above properties in respect of s- and p- block elements.

Acids and bases (10 Lectures)
Brönsted–Lowry concept, conjugate acids and bases, relative strengths of acids and bases, effects of substituent and solvent, differentiating and levelling solvents. Lewis acid-base concept, classification of Lewis acids and bases, Lux-Flood concept and solvent system concept. Hard and soft acids and bases (HSAB concept), applications of HSAB process.

Redox reactions (05 Lectures)
Balancing of equations by oxidation number and ion-electron method oxidimetry and reductimetry.

***Section B: Organic Chemistry-I* (30 Lectures)**

Fundamentals of Organic Chemistry (5 Lectures)
Electronic displacements: inductive effect, resonance and hyperconjugation; cleavage of bonds: homolytic and heterolytic; structure of organic molecules on the basis of VBT; nucleophiles electrophiles; reactive intermediates: carbocations, carbanions and free radicals.

Stereochemistry (8 Lectures)
Different types of isomerism; geometrical and optical isomerism; concept of chirality and optical activity (up to two carbon atoms); asymmetric carbon atom; elements of symmetry (plane and centre); interconversion of Fischer and Newman representations; enantiomerism and diastereomerism, *meso* compounds; *threo* and *erythro,* D and L, *cis* and *trans* nomenclature; CIP Rules: *R/S* (upto 2 chiral carbon atoms) and *E/Z* nomenclature.

Nucleophilic Substitution and Elimination Reactions (5 Lectures)

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Nucleophilic substitutions: S_N1 and S_N2 reactions; eliminations: E1 and E2 reactions (elementary mechanistic aspects); Saytzeff and Hofmann eliminations; elimination *vs* substitution.

Aliphatic Hydrocarbons **(12 Lectures)**

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structures.

Alkanes: (up to 5 Carbons). *Preparation:* catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis, from Grignard reagent. *Reactions:* mechanism for free radical substitution: halogenation.

Alkenes: (up to 5 Carbons). *Preparation:* elimination reactions: dehydration of alcohols and dehydrohalogenation of alkyl halides; *cis* alkenes (partial catalytic hydrogenation) and *trans* alkenes (Birch reduction). *Reactions: cis*-addition (alkaline $KMnO_4$) and *trans*-addition (bromine) with mechanism, addition of HX [Markownikoff's (with mechanism) and anti-Markownikoff's addition], hydration, ozonolysis, oxymercuration-demercuration and hydroboration-oxidation reaction.

Alkynes: (up to 5 Carbons). *Preparation:* acetylene from CaC_2 and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal dihalides.

Reactions: formation of metal acetylides, addition of bromine and alkaline $KMnO_4$, ozonolysis and oxidation with hot alkaline $KMnO_4$.

Reference Books:

1. Lee, J.D. *Concise Inorganic Chemistry* ELBS, 1991.
2. Cotton, F.A., Wilkinson, G. & Gaus, P.L. *Basic Inorganic Chemistry*, 3rd ed., Wiley.
3. Douglas, B.E., McDaniel, D.H. & Alexander, J.J. *Concepts and Models in Inorganic Chemistry*, John Wiley & Sons.
4. Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. *Inorganic Chemistry: Principles of Structure and Reactivity*, Pearson Education India, 2006.
5. Sethi, A. *Conceptual Organic Chemistry;* New Age International Publisher.
6. Parmar, V. S. *A Text Book of Organic Chemistry*, S. Chand & Sons.
7. Madan, R. L. *Organic Chemistry*, S. Chand & Sons.
8. Wade, L. G., Singh, M. S., *Organic Chemistry.*
9. Finar, I. L. *Organic Chemistry* (*Volume 1*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
10. Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
11. Eliel, E. L. & Wilen, S. H. *Stereochemistry of Organic Compounds*, Wiley: London, 1994.
12. Sen Gupta, Subrata. *Basic Stereochemistry of Organic molecules.*
13. Kalsi, P. S. *Stereochemistry Conformation and Mechanism*, Eighth edition, New Age International, 2014.
14. Bahl, A. & Bahl, B.S. *Advanced Organic Chemistry,* S. Chand, 2010.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

GE1 P1: LAB: ATOMIC STRUCTURE, CHEMICAL PERIODICITY, ACIDS AND BASES, REDOX REACTIONS, GENERAL ORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS

Credits 02

60 Lectures

Section A: Inorganic Chemistry –LAB (30 Lectures)

1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
2. Estimation of oxalic acid by titrating it with $KMnO_4$.
3. Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$.
4. Estimation of Fe (II) ions by titrating it with $K_2Cr_2O_7$ using internal indicator.
5. Estimation of Cu (II) ions iodometrically using $Na_2S_2O_3$.

Section B: Organic Chemistry- LAB (30 Lectures)

Qualitative Analysis of Single Solid Organic Compound(s)
Experiment A: Detection of special elements (N, Cl, and S) in organic compounds.

Experiment B: Solubility and Classification (solvents: H2O, dil. HCl, dil. NaOH)

Experiment C: Detection of functional groups: Aromatic-NO2, Aromatic -NH2, - COOH, carbonyl (no distinction of –CHO and >C=O needed), -OH (phenolic) in solid organic compounds.

Experiments A - C with unknown (at least 6) solid samples containing not more than two of the above type of functional groups should be done.

Reference Books:

1. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N., University of Calcutta, 2003.
2. Das, S. C., Chakraborty, S. B., *Practical Chemistry.*
3. Mukherjee, K. S. *Text book on Practical Chemistry*, New Oriental Book Agency.
4. Ghosal, Mahapatra & Nad, *An Advanced course in practical Chemistry,* New Central Book Agency.
5. Vogel, A. I. *Elementary Practical Organic Chemistry,* Part 2: *Qualitative Organic Analysis,* CBS Publishers and Distributors.
6. Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.
7. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Chemistry [Choice Based Credit System]

Semester-II

Sl. No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C3	**C3T:** Inorganic Chemistry-I	Core Course-3		4	0	0	6	75
	C3P: Inorganic Chemistry-I Lab	Core Course-3 [Practical]		0	0	4		
C4	**C4T:** Organic Chemistry-II	Core Course-4		4	0	0	6	75
	C4P: Organic Chemistry-II Lab	Core Course-4 [Practical]		0	0	4		
GE-2	GE-2	GE					4/5	75
	GE-2	GE					2/1	
AEC C-2	Environmental Studies	AECC					4	100
				Total Credits = 22				

L=Lecture, T=Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: Environmental Studies.
Interdisciplinary/Generic Elective (GE) from other Department
[**Four papers are to be taken and each paper will be of 6 credits**]:
[Papers are to be taken from any of the following discipline (**GE-2 from Mathematics**)]:
Mathematics/Physics /Computer Sc/Statistics/Geology/Electronics/ zoology/Botany /Microbiology /Physiology/Biotechnology/Nutrition

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Semester-II
Core Course

Core-3

CC-3: INORGANIC CHEMISTRY-I **Credits 06**
(Credits: Theory-04, Practicals-02)

C3T: INORGANIC CHEMISTRY-I **Credits 04**
Theory: 60 Lectures

Extra nuclear Structure of atom (18 Lectures)

Bohr's theory, its limitations and atomic spectrum of hydrogen atom; Sommerfeld's Theory. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation, significance of ψ and ψ^2. Quantum numbers and their significance. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of *s*, *p*, *d* and *f* orbitals. Pauli's Exclusion Principle, Hund's rules and multiplicity, Exchange energy, Aufbau principle and its limitations, Ground state Term symbols of atoms and ions for atomic number upto 30.

Chemical periodicity (8 Lectures)

Modern IUPAC Periodic table, Effective nuclear charge, screening effects and penetration, Slater's rules, atomic radii, ionic radii (Pauling's univalent), covalent radii, lanthanide contraction. Ionization potential, electron affinity and electronegativity (Pauling's, Mulliken's and Allred-Rochow's scales) and factors influencing these properties, group electronegativities. Group trends and periodic trends in these properties in respect of s-, p- and d-block elements. Secondary periodicity, Relativistic Effect, Inert pair effect.

Acid-Base reactions (16 Lectures)

Acid-Base concept: Arrhenius concept, theory of solvent system (in H_2O, NH_3, SO_2 and HF), Bronsted-Lowry's concept, relative strength of acids, Pauling's rules. Lux-Flood concept, Lewis concept, group characteristics of Lewis acids, solvent levelling and differentiating effects. Thermodynamic acidity parameters, Drago-Wayland equation. Superacids, Gas phase acidity and proton affinity; HSAB principle. Acid-base equilibria in aqueous solution (Proton transfer equilibria in water), pH, buffer. Acid-base neutralisation curves; indicator, choice of indicators.

Redox Reactions and precipitation reactions (18 Lectures)

Ion-electron method of balancing equation of redox reaction. Elementary idea on standard redox potentials with sign conventions, Nernst equation (without derivation). Influence of complex formation, precipitation and change of pH on redox potentials; formal potential. Feasibility of a redox titration, redox potential at the equivalence point, redox indicators. Redox potential diagram (Latimer and Frost diagrams) of common elements and their applications. Disproportionation and comproportionation reactions (typical examples)

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Solubility product principle, common ion effect and their applications to the precipitation and separation of common metallic ions as hydroxides, sulfides, phosphates, carbonates, sulfates and halides.

Reference Books

1. Lee, J. D. *Concise Inorganic Chemistry*,5th Ed., Wiley India Pvt. Ltd., 2008.
2. Douglas, B.E. and McDaniel, D.H. *Concepts & Models of Inorganic Chemistry* Oxford, 1970.
3. Day, M.C. and Selbin, J. *Theoretical Inorganic Chemistry*, ACS Publications, 1962.
4. Atkin, P. *Shriver & Atkins' Inorganic Chemistry*, 5th Ed., Oxford University Press (2010).
5. Cotton, F.A., Wilkinson, G. and Gaus, P.L., *Basic Inorganic Chemistry 3rd Ed.;* Wiley India.
6. Sharpe, A.G., *Inorganic Chemistry*, 4th Indian Reprint (Pearson Education) 2005.
7. Huheey, J. E.; Keiter, E.A. & Keiter, R.L. *Inorganic Chemistry, Principles of Structure and Reactivity 4th Ed.*, Harper Collins 1993, Pearson,2006.
8. Atkins, P.W. & Paula, J. *Physical Chemistry*, Oxford Press, 2006.
9. Mingos, D.M.P., *Essential trends in inorganic chemistry*. Oxford University Press (1998).
10. Winter, M. J., The Orbitron, http://winter.group.shef.ac.uk/orbitron/ (2002). An illustrated gallery of atomic and molecular orbitals.
11. Burgess, J., *Ions in solution: basic principles of chemical interactions.* Ellis Horwood (1999).

C3P: CHEMISTRY (LAB) Credits 02

60 Lectures

Acid and Base Titrations:

1. Estimation of carbonate and hydroxide present together in mixture
2. Estimation of carbonate and bicarbonate present together in a mixture.
3. Estimation of free alkali present in different soaps/detergents.

Oxidation-Reduction Titrimetric

1. Estimation of Fe(II) using standardized $KMnO_4$ solution
2. Estimation of oxalic acid and sodium oxalate in a given mixture
3. Estimation of Fe(II) and Fe(III) in a given mixture using $K_2Cr_2O_7$ solution.
4. Estimation of Fe(III) and Mn(II) in a mixture using standardized $KMnO_4$ solution
5. Estimation of Fe(III) and Cu(II) in a mixture using $K_2Cr_2O_7$.
6. Estimation of Fe(III) and Cr(III) in a mixture using $K_2Cr_2O_7$.

Reference Books

Mendham, J., *A. I. Vogel's Quantitative Chemical Analysis* 6th Ed., Pearson, 2009.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Core-4

CC-4: ORGANIC CHEMISTRY-II **Credits 06**

(Credits: Theory-04, Practicals-02)

C4T ORGANIC CHEMISTRY-II **Credits 02**
Theory: 60 Lectures

Stereochemistry II **(20 Lectures)**

Chirality arising out of stereoaxis: stereoisomerism of substituted cumulenes with even and odd number of double bonds; chiral axis in allenes, spiro compounds, alkylidenecycloalkanes and biphenyls; related configurational descriptors (R_a/S_a and *P/M*); atropisomerism; racemisation of chiral biphenyls; *buttressing* effect.

Concept of prostereoisomerism: prostereogenic centre; concept of (*pro*)^n-*chirality*: topicity of ligands and faces (elementary idea); *pro-R/pro-S*, *pro-E/pro-Z* and *Re/Si* descriptors; *pro-r* and *pro-s* descriptors of ligands on propseudoasymmetric centre.

Conformation: conformational nomenclature: eclipsed, staggered, *gauche*, *syn* and *anti*; dihedral angle, torsion angle; Klyne-Prelog terminology; *P/M* descriptors; energy barrier of rotation, concept of torsional and steric strains; relative stability of conformers on the basis of steric effect, dipole-dipole interaction and H-bonding; *butane gauche* interaction; conformational analysis of ethane, propane, *n*-butane, 2-methylbutane and 2,3-dimethylbutane; haloalkane, 1,2-dihaloalkanes and 1,2-diols (up to four carbons); 1,2-halohydrin; conformation of conjugated systems (*s-cis* and *s-trans*).

General Treatment of Reaction Mechanism II **(22 Lectures)**

Reaction thermodynamics: free energy and equilibrium, enthalpy and entropy factor, calculation of enthalpy change via BDE, intermolecular & intramolecular reactions.

Concept of organic acids and bases: effect of structure, substituent and solvent on acidity and basicity; proton sponge; gas-phase acidity and basicity; comparison between nucleophlicity and basicity; HSAB principle; application of thermodynamic principles in acid-base equilibria.

Tautomerism: prototropy (keto-enol, nitro - *aci*-nitro, nitroso-oximino, diazo-amino and enamine-imine systems); valence tautomerism and ring-chain tautomerism; composition of the equilibrium in different systems (simple carbonyl; 1,2- and 1,3-dicarbonyl systems, phenols and related systems), factors affecting keto-enol tautomerism; application of thermodynamic principles in tautomeric equilibria.

Reaction kinetics: rate constant and free energy of activation; concept of order and molecularity; free energy profiles for one-step, two-step and three-step reactions; catalyzed reactions: electrophilic and nucleophilic catalysis; kinetic control and thermodynamic control of reactions; isotope effect: primary and secondary kinetic isotopic effect (k_H /k_D); principle of microscopic reversibility; Hammond's postulate.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Substitution and Elimination Reactions **(18 Lectures)**

Free-radical substitution reaction: halogentaion of alkanes, mechanism (with evidence) and stereochemical features; reactivity-selectivity principle in the light of Hammond's postulate. *Nucleophilic substitution reactions:* substitution at sp^3 centre: mechanisms (with evidence), relative rates & stereochemical features: S_N1, S_N2, S_N2', S_N1' (allylic rearrangement) and S_Ni; effects of solvent, substrate structure, leaving group and nucleophiles (including ambident nucleophiles, cyanide & nitrite); substitutions involving NGP; role of crown ethers and phase transfer catalysts; [systems: alkyl halides, allyl halides, benzyl halides, alcohols, ethers, epoxides].

Elimination reactions: E1, E2, E1cB and Ei (pyrolytic *syn* eliminations); formation of alkenes and alkynes; mechanisms (with evidence), reactivity, regioselectivity (Saytzeff/Hofmann) and stereoselectivity; comparison between substitution and elimination; importance of Bredt's rule relating to the formation of C=C.

Reference Books

1. Clayden, J., Greeves, N., Warren, S. *Organic Chemistry*, Second edition, Oxford University Press 2012.
2. Sykes, P. *A guidebook to Mechanism in Organic Chemistry*, Pearson Education, 2003.
3. Smith, J. G. *Organic Chemistry*, Tata McGraw-Hill Publishing Company Limited.
4. Carey, F. A. & Guiliano, R. M. *Organic Chemistry*, Eighth edition, McGraw Hill Education, 2012.
5. Loudon, G. M. *Organic Chemistry*, Fourth edition, Oxford University Press, 2008.
6. Eliel, E. L. & Wilen, S. H. *Stereochemistry of Organic Compounds*, Wiley: London, 1994.
7. Nasipuri, D. *Stereochemistry of Organic Compounds*, Wiley Eastern Limited.
8. Morrison, R. N. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
9. Finar, I. L. *Organic Chemistry (Volume 1)* Pearson Education.
10. Graham Solomons, T.W., Fryhle, C. B. *Organic Chemistry*, John Wiley & Sons, Inc.
11. James, J., Peach, J. M. *Stereochemistry at a Glance*, Blackwell Publishing, 2003.
12. Robinson, M. J. T., *Stereochemistry*, Oxford Chemistry Primer, Oxford University Press, 2005.
13. Maskill, H., *Mechanisms of Organic Reactions*, Oxford Chemistry Primer, Oxford University Press.

C4P: CHEMISTRY (LAB) **Credits 02**

(60 Lectures)

Organic Preparations

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

A. The following reactions are to be performed, noting the yield of the crude product:

1. Nitration of aromatic compounds
2. Condensation reactions
3. Hydrolysis of amides/imides/esters
4. Acetylation of phenols/aromatic amines
5. Benzoylation of phenols/aromatic amines
6. Side chain oxidation of aromatic compounds
7. Diazo coupling reactions of aromatic amines
8. Bromination of anilides using green approach (Bromate-Bromide method)
9. Redox reaction including solid-phase method
10. Green 'multi-component-coupling' reaction
11. Selective reduction of *m*-dinitrobenzene to *m*-nitroaniline

Students must also calculate percentage yield, based upon isolated yield (crude) and theoretical yield.

B. Purification of the crude product is to be made by crystallisation from water/alcohol, crystallization after charcoal treatment, or sublimation, whichever is applicable.

C. Melting point of the purified product is to be noted.

Reference Books

1. Vogel, A. I. *Elementary Practical Organic Chemistry*, Part 1: *Small scale Preparations*, CBS Publishers and Distributors.
2. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N. University of Calcutta, 2003.
3. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry*, Pearson Education (2009).
4. Furniss, B.S., Hannaford, A.J., Smith, P.W.G. & Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.* Pearson (2012).
5. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis*, University Press (2000).
6. *Practical Workbook Chemistry (Honours), UGBS, Chemistry*, University of Calcutta, 2015.

Generic Elective Syllabus

GE-2 [Interdisciplinary for other department]

GE-2 : STATES OF MATTER & CHEMICAL KINETICS, CHEMICAL BONDING & MOLECULAR STRUCTUR, p-BLOCK ELEMENTS **Credits 06**

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

(Credits: Theory-04, Practicals-02)

GE2 T : STATES OF MATTER & CHEMICAL KINETICS, CHEMICAL BONDING & MOLECULAR STRUCTUR, p-BLOCK ELEMENTS Credits 04
Theory: 60 Lectures

Section A: Physical Chemistry-I **(30 Lectures)**

Kinetic Theory of Gases and Real gases (10 Lectures)

Concept of pressure and temperature; Collision of gas molecules; Collision diameter; Collision number and mean free path; Frequency of binary collisions (similar and different molecules); Rate of effusion

Nature of distribution of velocities, Maxwell's distribution of speed and kinetic energy; Average velocity, root mean square velocity and most probable velocity; Principle of equipartition of energy and its application to calculate the classical limit of molar heat capacity of gases

Deviation of gases from ideal behavior; compressibility factor; Boyle temperature; Andrew's and Amagat's plots; van der Waals equation and its features; its derivation and application in explaining real gas behaviour; Existence of critical state, Critical constants in terms of van der Waals constants; Law of corresponding states

Viscosity of gases and effect of temperature and pressure on coefficient of viscosity (qualitative treatment only)

Liquids (06 Lectures)

Definition of Surface tension, its dimension and principle of its determination using stalagmometer; Viscosity of a liquid and principle of determination of coefficient of viscosity using Ostwald viscometer; Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only)

Solids (06 Lectures)

Forms of solids, crystal systems, unit cells, Bravais lattice types, Symmetry elements; Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices; Miller indices of different planes and interplanar distance, Bragg's law; Structures of NaCl, KCl and CsCl (qualitative treatment only); Defects in crystals; Glasses and liquid crystals.

Chemical Kinetics (08 Lectures)

Introduction of rate law, Order and molecularity; Extent of reaction; rate constants; Rates of First, second and nth order reactions and their Differential and integrated forms (with derivation); Pseudo first order reactions; Determination of order of a reaction by half-life and differential method; Opposing reactions, consecutive reactions and parallel reactions Temperature dependence of rate constant; Arrhenius equation, energy of activation; Collision

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

theory; Lindemann theory of unimolecular reaction; outline of Transition State theory (classical treatment)

Reference Books:

1. Barrow, G.M. *Physical Chemistry* Tata McGraw- Hill (2007).
2. Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
3. Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry* Cengage Learning India Pvt. Ltd., New Delhi (2009).
4. Mahan, B.H. *University Chemistry* 3rd Ed. Narosa (1998).
5. Petrucci, R.H. *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).
6. Chugh, K.L., Agnish, S.L. *A Text Book of Physical Chemistry* Kalyani Publishers
7. Bahl, B.S., Bahl, A., Tuli, G.D., *Essentials of Physical Chemistry* S. Chand & Co.ltd.
8. Palit, S. R., *Elementary Physical Chemistry* Book Syndicate Pvt. Ltd.
9. Mandal, A. K. *Degree Physical and General Chemistry* Sarat Book House
10. Pahari, S., *Physical Chemistry* New Central Book Agency
11. Pahari, S., Pahari, D., *Problems in Physical Chemistry* New Central Book Agency

Section B: Inorganic Chemistry-II **(30 Lectures)**

Chemical Bonding and Molecular Structure **(16 Lectures)**

Ionic Bonding: General characteristics of ionic bonding. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rules, ionic character in covalent compounds, bond moment, dipole moment and percentage ionic character.

Covalent bonding: VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements.

Concept of resonance and resonating structures in various inorganic and organic compounds. MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for *s-s*, *s-p* and *p-p* combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods. (including idea of *s- p* mixing) and heteronuclear diatomic molecules such as CO, NO and NO+. Comparison of VB and MO approaches.

Comparative study of p-block elements: **(14 Lectures)**

Group trends in electronic configuration, modification of pure elements, common oxidation states, inert pair effect, and their important compounds in respect of the following groups of elements:

i) B-Al-Ga-In-Tl
ii) C-Si-Ge-Sn-Pb
iii) N-P-As-Sb-Bi
iv) O-S-Se-Te
v) F-Cl-Br-I

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Reference Books:

1. Cotton, F.A. & Wilkinson, G. *Basic Inorganic Chemistry,* Wiley.
2. Shriver, D.F. & Atkins, P.W. *Inorganic Chemistry,* Oxford University Press.
3. Wulfsberg, G. *Inorganic Chemistry,* Viva Books Pvt. Ltd.
4. Rodgers, G.E. *Inorganic & Solid State Chemistry,* Cengage Learning India Ltd., 2008.

GE2 P-LAB: STATES OF MATTER & CHEMICAL KINETICS, CHEMICAL BONDING & MOLECULAR STRUCTUR, p-BLOCK ELEMENTS
(60 Lectures) Credits 02

Section A: Physical Chemistry-LAB **(15x2=30 Lectures)**

(Minimum **five** experiments to complete)
(I) Surface tension measurement (use of organic solvents excluded)
- a) Determination of the surface tension of a liquid or a dilute solution using a Stalagmometer
- b) Study of the variation of surface tension of a detergent solution with concentration

(II) Viscosity measurement (use of organic solvents excluded)
- a) Determination of the relative and absolute viscosity of a liquid or dilute solution using an Ostwald's viscometer
- b) Study of the variation of viscosity of an aqueous solution with concentration of solute

(III) Study the kinetics of the following reactions
- a) Initial rate method: Iodide-persulphate reaction
- b) Integrated rate method:
  - (i) Acid hydrolysis of methyl acetate with hydrochloric acid
  - (ii) Compare the strengths of HCl and H2SO4 by studying kinetics of hydrolysis of methyl acetate

Reference Books:

1. *University Hand Book of Undergraduate Chemistry Experiments,* edited by Mukherjee, G. N., University of Calcutta, 2003.
2. Palit, S.R., *Practical Physical Chemistry* Science Book Agency
3. Mukherjee, N.G., *Selected Experiments in Physical Chemistry* J. N. Ghose & Sons
4. Dutta, S.K., *Physical Chemistry Experiments* Bharati Book Stall

Section B: Inorganic Chemistry-LAB **(30 Lectures)**

Qualitative semimicro analysis of mixtures containing three radicals. Emphasis should be given to the understanding of the chemistry of different reactions.
Acid Radicals: Cl-, Br-, I-, NO2-, NO3-, S2-, SO42-, PO43-, BO33-, H3BO3.
Basic Radicals: Na+, K+, Ca2+, Sr2+, Ba2+, Cr3+, Mn2+, Fe3+, Ni2+, Cu2+, NH4+.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Reference Books:

1. Svehla, G. *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.
2. Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Chemistry

[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		**C5T:** Physical Chemistry-II	Core Course - 5	4	0	0	6	75
		C5P: Physical Chemistry-II		0	0	4		
CC-6		**C6T:** Inorganic Chemistry-II	Core Course - 6	4	0	0	6	75
		C6P: Inorganic Chemistry-II		0	0	4		
CC-7		**C7T:** Organic Chemistry-III	Core Course - 7	4	0	0	6	75
		C7P: Organic Chemistry-III		0	0	4		
GE-3		**TBD**	Generic Elective -3				6	75
SEC-1		**SEC1T:** Analytical Clinical Biochemistry SEC1P: Analytical Clinical Biochemistry **Or** **SEC1T:**Pharmaceutical Chemistry **SEC1P:**Pharmaceutical Chemistry	Skill Enhancement Course-1	1	0	2	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P=**Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [**Four papers are to be taken and each paper will be of 6 credits**]:
Papers are to be taken from any of the following discipline: **Mathematics/Physics /Computer Sc/Statistics/Geology/Electronics/zoology/Botany /Microbiology /Physiology/Biotechnology/Nutrition**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

02 courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Semester-III
Core Course (CC)

CC-5: Physical Chemistry-II — Credits 06

C5T: Physical Chemistry-II — **Credits 04**

Theory: 60 Lectures

a) Transport processes (15 Lectures)

Fick's law: Flux, force, phenomenological coefficients & their inter-relationship (general form), different examples of transport properties

Viscosity: General features of fluid flow (streamline flow and turbulent flow); Newton's equation, viscosity coefficient; Poiseuille's equation; principle of determination of viscosity coefficient of liquids by falling sphere method; Temperature variation of viscosity of liquids and comparison with that of gases

Conductance and transport number: Ion conductance; Conductance and measurement of conductance, cell constant, specific conductance and molar conductance; Variation of specific and equivalent conductance with dilution for strong and weak electrolytes; Kohlrausch's law of independent migration of ions; Equivalent and molar conductance at infinite dilution and their determination for strong and weak electrolytes; Debye –Huckel theory of Ion atmosphere (qualitative)-asymmetric effect, relaxation effect and electrophoretic effect; Ostwald's dilution law; Ionic mobility; Application of conductance measurement (determination of solubility product and ionic product of water); Conductometric titrations
Transport number, Principles of Hittorf's and Moving-boundary method; Wien effect, Debye-Falkenhagen effect, Walden's rule

b) Applications of Thermodynamics – I (25 Lectures)

Partial properties and Chemical potential: Chemical potential and activity, partial molar quantities, relation between Chemical potential and Gibb's free energy and other thermodynamic state functions; variation of Chemical potential (μ) with temperature and pressure; Gibbs-Duhem equation; fugacity and fugacity coefficient; Variation of thermodynamic functions for systems with variable composition; Equations of states for these systems, Change in G, S H and V during mixing for binary solutions

Chemical Equilibrium: Thermodynamic conditions for equilibrium, degree of advancement; van't Hoff's reaction isotherm (deduction from chemical potential); Variation of free energy with degree of advancement; Equilibrium constant and standard Gibbs free energy change; Definitions of K_P, K_C and K_X; van't Hoff's reaction isobar and isochore from different standard states; Shifting of equilibrium due to change in external parameters e.g. temperature

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

and pressure; variation of equilibrium constant with addition to inert gas; Le Chatelier's principle and its derivation

Nernst's distribution law; Application- (finding out K_{eq} using Nernst dist law for $KI+I_2 = KI_3$ and dimerization of benzene

Chemical potential and other properties of ideal substances- pure and mixtures: a) Pure ideal gas-its Chemical potential and other thermodynamic functions and their changes during a change of; Thermodynamic parameters of mixing; Chemical potential of an ideal gas in an ideal gas mixture; Concept of standard states and choice of standard states of ideal gases

b) Condensed Phase – Chemical potential of pure solid and pure liquids, Ideal solution – Definition, Raoult's law; Mixing properties of ideal solutions, chemical potential of a component in an ideal solution; Choice of standard states of solids and liquids

c) Foundation of Quantum Mechanics (20 Lectures)

Beginning of Quantum Mechanics: Wave-particle duality, light as particles: photoelectric and Compton effects; electrons as waves and the de Broglie hypothesis; Uncertainty relations (without proof)

Wave function: Schrodinger time-independent equation; nature of the equation, acceptability conditions imposed on the wave functions and probability interpretations of wave function

Concept of Operators: Elementary concepts of operators, eigenfunctions and eigenvalues; Linear operators; Commutation of operators, commutator and uncertainty relation; Expectation value; Hermitian operator; Postulates of Quantum Mechanics

Particle in a box: Setting up of Schrodinger equation for one-dimensional box and its solution; Comparison with free particle eigenfunctions and eigenvalues. Properties of PB wave functions (normalisation, orthogonality, probability distribution); Expectation values of x, x^2, p_x and p_x^2 and their significance in relation to the uncertainty principle; Extension of the problem to two and three dimensions and the concept of degenerate energy levels

Simple Harmonic Oscillator: setting up of the Schrodinger stationary equation, energy expression (without derivation), expression of wave function for n = 0 and n = 1 (without derivation) and their characteristic features

Reference Books:

1. Atkins, P. W. & Paula, J. de *Atkins', Physical Chemistry*, Oxford University Press
2. Castellan, G. W. *Physical Chemistry*, Narosa
3. McQuarrie, D. A. & Simons, J. D. *Physical Chemistry: A Molecular Approach*, Viva Press
4. Levine, I. N. *Physical Chemistry*, Tata McGraw-Hill
5. Rakshit, P.C., *Physical Chemistry*, Sarat Book House
6. Moore, W. J. *Physical Chemistry*, Orient Longman
7. Mortimer, R. G. *Physical Chemistry*, Elsevier
8. Denbigh, K. *The Principles of Chemical Equilibrium* Cambridge University Press

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

9. Engel, T. & Reid, P. *Physical Chemistry*, Pearson
10. Levine, I. N. *Quantum Chemistry*, PHI
11. Atkins, P. W. *Molecular Quantum Mechanics*, Oxford
12. Zemansky, M. W. & Dittman, R.H. *Heat and Thermodynamics*, Tata-McGraw-Hill
13. Rastogi, R. P. & Misra, R.R. *An Introduction to Chemical Thermodynamics*, Vikas
14. Klotz, I.M., Rosenberg, R. M. *Chemical Thermodynamics:Basic Concepts and Methods* Wiley
15. Glasstone, S. *An Introduction to Electrochemistry*, East-West Press

C5P: Physical Chemistry-II Lab **Credits 02**

LAB

(60 Lectures)

Experiment 1: Study of viscosity of unknown liquid (glycerol, sugar) with respect to water

Experiment 2: Determination of partition coefficient for the distribution of I_2 between water and CCl_4

Experiment 3: Determination of K_{eq} for $KI + I_2 = KI_3$, using partition coefficient between water and CCl_4

Experiment 4: Conductometric titration of an acid (strong, weak/ monobasic, dibasic) against base strong

Experiment 5: Study of saponification reaction conductometrically

Experiment 6: Verification of Ostwald's dilution law and determination of K_a of weak acid

Suggested Readings :

1. Viswanathan, B., Raghavan, P.S. *Practical Physical Chemistry* Viva Books (2009)
2. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson
3. Harris, D. C. *Quantitative Chemical Analysis*. 6th Ed., Freeman (2007)
4. Palit, S.R., De, S. K. *Practical Physical Chemistry* Science Book Agency
5. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N., University of Calcutta
6. Levitt, B. P. edited *Findlay's Practical Physical Chemistry* Longman Group Ltd.
7. Gurtu, J. N., Kapoor, R., *Advanced Experimental Chemistry* S. Chand & Co. Ltd.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

CC-6: Inorganic Chemistry-II Credits 06

C6T: Inorganic Chemistry-II Credits 04

Theory: 60 Lectures

Chemical Bonding-I (24 Lectures)

(i) *Ionic bond:* General characteristics, types of ions, size effects, radius ratio rule and its application and limitations. Packing of ions in crystals. Born-Landé equation with derivation and importance of Kapustinskii expression for lattice energy. Madelung constant, Born-Haber cycle and its application, Solvation energy. Defects in solids (elementary idea). Solubility energetics of dissolution process.

(ii) *Covalent bond:* Polarizing power and polarizability, ionic potential, Fazan's rules. Lewis structures, formal charge. Valence Bond Theory. The hydrogen molecule (Heitler-London approach), directional character of covalent bonds, hybridizations, equivalent and non-equivalent hybrid orbitals, Bent's rule, Dipole moments, VSEPR theory, shapes of molecules and ions containing lone pairs and bond pairs (examples from main groups chemistry) and multiple bonding (σ and π bond approach).

Chemical Bonding-II (24 Lectures)

(i) Molecular orbital concept of bonding (The approximations of the theory, Linear combination of atomic orbitals (LCAO)) (elementary pictorial approach): sigma and pi-bonds and delta interaction, multiple bonding. Orbital designations: *gerade, ungerade,* HOMO, LUMO. Orbital mixing,. MO diagrams of H_2, Li_2, Be_2, B_2, C_2, N_2, O_2, F_2, and their ions wherever possible; Heteronuclear molecular orbitals: CO, NO, NO^+, CN^-, HF, BeH_2, CO_2 and H_2O. Bond properties: bond orders, bond lengths.

(ii) *Metallic Bond:* Qualitative idea of valence bond and band theories. Semiconductors and insulators, defects in solids.

(iii) *Weak Chemical Forces:* van der Waals forces, ion-dipole forces, dipole-dipole interactions, induced dipole interactions, Instantaneous dipole-induced dipole interactions. Repulsive forces, Intermolecular forces: Hydrogen bonding (theories of hydrogen bonding, valence bond treatment), receptor-guest interactions, Halogen bonds. Effects of chemical force, melting and boiling points.

Radioactivity (12 Lectures)

Nuclear stability and nuclear binding energy. Nuclear forces: meson exchange theory. Nuclear models (elementary idea): Concept of nuclear quantum number, magic numbers. Nuclear Reactions: Artificial radioactivity, transmutation of elements, fission, fusion and spallation. Nuclear energy and power generation. Separation and uses of isotopes. Radio chemical methods: principles of determination of age of rocks and minerals, radio carbon dating, hazards of radiation and safety measures.

Suggested Readings :

1. Lee, J. D. *Concise Inorganic Chemistry*, *5th Ed.*, Wiley India Pvt. Ltd., 2008.
2. Huheey, J. E.; Keiter, E.A. & Keiter, R.L. *Inorganic Chemistry, Principles of*

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Structure and Reactivity 4th Ed., Harper Collins 1993, Pearson, 2006.
3. Douglas, B.E. and McDaniel, D.H. *Concepts & Models of Inorganic Chemistry* Oxford, 1970.
4. Porterfield, H. W., *Inorganic Chemistry*, Second Edition, Academic Press, 2005.
5. Purecell, K.F. and Kotz, J.C., *An Introduction to Inorganic Chemistry*, Saunders: Philadelphia, 1980.
6. Cotton, F.A., Wilkinson, G., & Gaus, P.L. *Basic Inorganic Chemistry 3rd Ed.;* Wiley India.
7. Gillespie, R. J. and Hargittai, I., The VSEPR Model of Molecular Geometry, Prentice Hall (1992).
8. Albright, T., *Orbital interactions in chemistry*, John Wiley and Sons (2005).
9. Mingos, D.M.P., *Essential trends in inorganic chemistry*. Oxford University Press (1998).
10. Miessler, G. L., Fischer, P. J., Tarr, D. A., *Inorganic Chemistry*, Pearson, 5th Edition.
11. Kaplan, I., *Nuclear Physics*, Addison-Wesley Publishing Company Inc. London, 1964.
12. Friedlander, G., Kennedy, J. W., Macias, E. S. And Miller, J. M., *Nuclear and Radiochemistry*, Wiley, 1981.

C6P: Inorganic Chemistry-II -Lab **Credits 02**

Inorganic Chemistry-II (LAB) **(60 Lectures)**

Iodo-/ Iodimetric Titrations

1. Estimation of Cu(II)
2. Estimation of Vitamin C
3. Estimation of (i) arsenite and (ii) antimony in tartar-emetic iodimetrically
4. Estimation of available chlorine in bleaching powder.

Estimation of metal content in some selective samples

1. Estimation of Cu in brass.
2. Estimation of Cr and Mn in Steel.
3. Estimation of Fe in cement.

Suggested Readings :

1. Mendham, J., *A. I. Vogel's Quantitative Chemical Analysis* 6th Ed., Pearson, 2009.

CC-7: Organic Chemistry-III **Credits 06**

C7T: Organic Chemistry-III **Credits 04**

Theory: 60 Lectures

Chemistry of alkenes and alkynes **(15 Lectures)**

Addition to C=C: mechanism (with evidence wherever applicable), reactivity, regioselectivity (Markownikoff and anti-Markownikoff additions) and stereoselectivity; reactions: hydrogenation, halogenations, iodolactonisation, hydrohalogenation, hydration,

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

oxymercuration-demercuration, hydroboration-oxidation, epoxidation, *syn* and *anti*-hydroxylation, ozonolysis, addition of singlet and triplet carbenes; electrophilic addition to diene (conjugated dienes and allene); radical addition: HBr addition; mechanism of allylic and benzylic bromination in competition with brominations across C=C; use of NBS; Birch reduction of benzenoid aromatics; interconversion of *E* - and *Z* - alkenes; contra-thermodynamic isomerization of internal alkenes.

Addition to C≡C (in comparison to C=C): mechanism, reactivity, regioselectivity (Markownikoff and anti-Markownikoff addition) and stereoselectivity; reactions: hydrogenation, halogenations, hydrohalogenation, hydration, oxymercuration-demercuration, hydroboration-oxidation, dissolving metal reduction of alkynes (Birch); reactions of terminal alkynes by exploring its acidity; interconversion of terminal and non-terminal alkynes.

Aromatic Substitution (10 Lectures)

Electrophilic aromatic substitution: mechanisms and evidences in favour of it; orientation and reactivity; reactions: nitration, nitrosation, sulfonation, halogenation, Friedel-Crafts reaction; one-carbon electrophiles (reactions: chloromethylation, Gatterman-Koch, Gatterman, Houben-Hoesch, Vilsmeier-Haack, Reimer-Tiemann, Kolbe-Schmidt); *Ipso* substitituion.

Nucleophilic aromatic substitution: addition-elimination mechanism and evidences in favour of it; S_N1 mechanism; cine substitution (benzyne mechanism), structure of benzyne.

Carbonyl and Related Compounds (30 Lectures)

Addition to C=O: structure, reactivity and preparation of carbonyl compounds; mechanism (with evidence), reactivity, equilibrium and kinetic control; Burgi-Dunitz trajectory in nucleophilic additions; formation of hydrates, cyano hydrins and bisulphite adduct; nucleophilic addition-elimination reactions with alcohols, thiols and nitrogen- based nucleophiles; reactions: benzoin condensation, Cannizzaro and Tischenko reactions, reactions with ylides: Wittig and Corey-Chaykovsky reaction; Rupe rearrangement, oxidations and reductions: Clemmensen, Wolff-Kishner, $LiAlH_4$, $NaBH_4$, MPV, Oppenauer, Bouveault-Blanc, acyloin condensation; oxidation of alcohols with PDC and PCC; periodic acid and lead tetraacetate oxidation of 1,2-diols.

Exploitation of acidity of α-H of C=O: formation of enols and enolates; kinetic and thermodynamic enolates; reactions (mechanism with evidence): halogenation of carbonyl compounds under acidic and basic conditions, Hell-Volhard-Zelinsky (H. V. Z.) reaction, nitrosation, SeO_2 (Riley) oxidation; condensations (mechanism with evidence): Aldol, Tollens', Knoevenagel, Claisen-Schmidt, Claisen ester including Dieckmann, Stobbe; Mannich reaction, Perkin reaction, Favorskii rearrangement; alkylation of active methylene compounds; preparation and synthetic applications of diethyl malonate and ethyl acetoacetate; specific enol equivalents (lithium enolates, enamines, aza-enolates and silyl enol ethers) in connection with alkylation, acylation and aldol type reaction.

Elementary ideas of Green Chemistry: Twelve (12) principles of green chemistry; planning of green synthesis; common organic reactions and their counterparts: reactions: Aldol, Friedel-Crafts, Michael, Knoevenagel, Cannizzaro, benzoin condensation and Dieckmann condensation.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Nucleophilic addition to α,β-unsaturated carbonyl system: general principle and mechanism (with evidence); direct and conjugate addition, addition of enolates (Michael reaction), Stetter reaction, Robinson annulation.

Substitution at sp^2 carbon (C=O system): mechanism (with evidence): $B_{AC}2$, $A_{AC}2$, $A_{AC}1$, $A_{AL}1$ (in connection to acid and ester); acid derivatives: amides, anhydrides & acyl halides (formation and hydrolysis including comparison).

Organometallics **(5 Lectures)**

Grignard reagent; Organolithiums; Gilman cuprates: preparation and reactions (mechanism with evidence); addition of Grignard and organolithium to carbonyl compounds; substitution on -COX; directed ortho metalation of arenes using organolithiums, conjugate addition by Gilman cuprates; Corey-House synthesis; abnormal behavior of Grignard reagents; comparison of reactivity among Grignard, organolithiums and organocopper reagents; Reformatsky reaction; Blaise reaction; concept of *umpolung* and base-nucleophile dichotomy in case of organometallic reagents.

Suggested Readings:

1. Clayden, J., Greeves, N., Warren, S. *Organic Chemistry*, Second edition, Oxford University Press 2012.
2. Sykes, P. *A guidebook to Mechanism in Organic Chemistry,* Pearson Education, 2003.
3. Smith, J. G. *Organic Chemistry*, Tata McGraw-Hill Publishing Company Limited.
4. Carey, F. A., Guiliano, R. M. *Organic Chemistry*, Eighth edition, McGraw Hill Education, 2012.
5. Loudon, G. M. *Organic Chemistry*, Fourth edition, Oxford University Press, 2008.
6. Norman, R.O. C., Coxon, J. M. *Principles of Organic Synthesis*, Third Edition, Nelson Thornes, 2003.
7. Morrison, R. N. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
8. Finar, I. L. *Organic Chemistry (Volume 1)*, Pearson Education.
9. Graham Solomons, T.W., Fryhle, C. B. *Organic Chemistry*, John Wiley & Sons, Inc.
10. March, J. *Advanced Organic Chemistry*, Fourth edition, Wiley.
11. Jenkins, P. R., *Organometallic Reagents in Synthesis*, Oxford Chemistry Primer, Oxford University Press.
12. Ward, R. S., *Bifunctional Compounds*, Oxford Chemistry Primer, Oxford University Press.
13. Ahluwalia, V. K. *Strategies for Green Organic Synthesis*, ANE Books Pvt. Ltd.

C7P: Organic Chemistry-III –Lab **Credits 02**

LAB (60 Lectures)

Experiment -1: Qualitative Analysis of Single Solid Organic Compounds

a) Detection of special elements (N, S, Cl, Br) by Lassaigne's test
b) Solubility and classification (solvents: H_2O, 5% HCl, 5% NaOH and 5% $NaHCO_3$)

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

c) Detection of the following functional groups by systematic chemical tests: aromatic amino ($-NH_2$), aromatic nitro ($-NO_2$), amido ($-CONH_2$, including imide), phenolic –OH, carboxylic acid (-COOH), carbonyl (-CHO and >C=O); only one test for each functional group is to be reported.
d) Melting point of the given compound
e) Preparation, purification and melting point determination of a crystalline derivative of the given compound
f) Identification of the compound through literature survey.

Each student, during laboratory session, is required to carry out qualitative chemical tests for all the special elements and the functional groups with relevant derivatisation in known and unknown (**at least six)** organic compounds.

Suggested Readings:

1. Vogel, A. I. *Elementary Practical Organic Chemistry,* Part 2: *Qualitative Organic Analysis*, CBS Publishers and Distributors.
2. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N. University of Calcutta, 2003.
3. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry,* Pearson Education (2009).
4. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Chemistry*, 5th Ed.,Pearson (2012).
5. Clarke, H. T., *A Handbook of Organic Analysis (Qualitative and Quantitative)*, Fourth Edition, CBS Publishers and Distributors (2007).
6. *Practical Workbook Chemistry (Honours), UGBS, Chemistry*, University of Calcutta, 2015.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Skill Enhancement Course (SEC)

SEC-1: Analytical Clinical Biochemistry Credits: 02

SEC1T: Analytical Clinical Biochemistry Credits: 01

THEORY: 30 Lectures

Basic understanding of the structures, properties and functions of carbohydrates, lipids and proteins:

Review of concepts studied in the core course:
Carbohydrates: Biological importance of carbohydrates, Metabolism, Cellular currency of energy (ATP), Glycolysis, Alcoholic and Lactic acid fermentations, Krebs cycle.
Isolation and characterization of polysachharides.
Proteins: Classification, biological importance; Primary and secondary and tertiary structures of proteins: α-helix and β- pleated sheets, Isolation, characterization, denaturation of proteins.
Enzymes: Nomenclature, Characteristics (mention of Ribozymes), Classification; Active site, Mechanism of enzyme action, Stereospecificity of enzymes, Coenzymes and cofactors, Enzyme inhibitors, Introduction to Biocatalysis: Importance in "Green Chemistry" and Chemical Industry.
Lipids: Classification. Biological importance of triglycerides and phosphoglycerides and cholesterol; Lipid membrane, Liposomes and their biological functions and underlying applications.Lipoproteins. Properties, functions and biochemical functions of steroid hormones.
Biochemistry of peptide hormones.
Structure of DNA (Watson-Crick model) and RNA, Genetic Code, Biological roles of DNA and RNA: Replication, Transcription and Translation, Introduction to Gene therapy.
Enzymes: Nomenclature, classification, effect of pH, temperature on enzyme activity, enzyme inhibition.

Biochemistry of disease: A diagnostic approach by blood/ urine analysis.
Blood: Composition and functions of blood, blood coagulation. Blood collection and preservation of samples. Anaemia, Regulation, estimation and interpretation of data for blood sugar, urea, creatinine, cholesterol and bilirubin.
Urine: Collection and preservation of samples. 6. Formation of urine. Composition and estimation of constituents of normal and pathological urine.

SEC1P: Analytical Clinical Biochemistry Credits: 01

Practicals:

Identification and estimation of the following:
1. Carbohydrates – qualitative and quantitative.
2. Lipids – qualitative.
3. Determination of the iodine number of oil.
4. Determination of the saponification number of oil.
5. Determination of cholesterol using Liebermann- Burchard reaction.
6. Proteins – qualitative.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

7. Isolation of protein.
8. Determination of protein by the Biuret reaction.
9. Determination of nucleic acids

Reference Books:

- Cooper, T.G. *Tool of Biochemistry*. Wiley-Blackwell (1977).
- Wilson, K. & Walker, J. *Practical Biochemistry.* Cambridge University Press (2009).
- Varley, H., Gowenlock, A.H & Bell, M.: *Practical Clinical Biochemistry*, Heinemann,
- London (1980).
- Devlin, T.M., *Textbook of Biochemistry with Clinical Correlations*, John Wiley &
- Sons, 2010.
- Berg, J.M., Tymoczko, J.L. & Stryer, L. *Biochemistry*, W.H. Freeman, 2002.
- Talwar, G.P. & Srivastava, M. *Textbook of Biochemistry and Human Biology*, 3rd Ed.
- PHI Learning.
- Nelson, D.L. & Cox, M.M. *Lehninger Principles of Biochemistry*, W.H. Freeman,
- 2013.
- O. Mikes, R.A. Chalmers: *Laboratory Handbook of Chromatographic Methods*, D.
- Van Nostrand & Co., 1961.

Or

SEC-1: Pharmaceutical Chemistry — Credits: 02

SEC1T: Pharmaceutical Chemistry — Credits: 01

Theory: 30 Lectures

Drugs & Pharmaceuticals
Drug discovery, design and development; Basic Retrosynthetic approach. Synthesis of the representative drugs of the following classes: analgesics agents, antipyretic agents, antiinflammatoryagents (Aspirin, paracetamol, lbuprofen); antibiotics (Chloramphenicol); antibacterial and antifungal agents (Sulphonamides; Sulphanethoxazol, Sulphacetamide, Trimethoprim); antiviral agents (Acyclovir), Central Nervous System agents (Phenobarbital, Diazepam),Cardiovascular (Glyceryl trinitrate), antilaprosy (Dapsone), HIV-AIDS related drugs (AZT- Zidovudine).

Fermentation
Aerobic and anaerobic fermentation. Production of (i) Ethyl alcohol and citric acid, (ii) Antibiotics; Penicillin, Cephalosporin, Chloromycetin and Streptomycin, (iii) Lysine, Glutamic acid, Vitamin B2, Vitamin B12 and Vitamin C.

SEC1P: Pharmaceutical Chemistry — Credits: 01

Practicals:
1. Preparation of Aspirin and its analysis.
2. Preparation of magnesium bisilicate (Antacid).

Reference Books:

- Patrick, G. L. *Introduction to Medicinal Chemistry, Oxford University* Press, UK,

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

2013.
- Singh, H. & Kapoor, V.K. *Medicinal and Pharmaceutical Chemistry*, Vallabh Prakashan, Pitampura, New Delhi, 2012.
- Foye, W.O., Lemke, T.L. & William, D.A.: *Principles of Medicinal Chemistry*, 4th ed., B.I. Waverly Pvt. Ltd. New Delhi.

Generic Elective Syllabus

GE-3 [Interdisciplinary for other department]

GE3: Chemical Energetics, Equilibria, Organic Chemistry-II

Credits 06

GE3T: Chemical Energetics, Equilibria, Organic Chemistry-II **Credits 04**

Theory: 60 Lectures

Section A: Physical Chemistry-II (30 Lectures)

Chemical Energetics **(14 Lectures)**

Intensive and extensive variables; state and path functions; isolated, closed and open systems; zeroth law of thermodynamics; Concept of heat, work, internal energy and statement of first law; enthalpy, H; relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases Standard states; Heats of reaction; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; Laws of thermochemistry; bond energy, bond dissociation energy and resonance energy from thermochemical data, Kirchhoff's equations and effect of pressure on enthalpy of reactions; Adiabatic flame temperature; explosion temperature Statement of the second law of thermodynamics; Concept of heat reservoirs and heat engines; Carnot cycle; Physical concept of Entropy; Carnot engine, refrigerator and efficiency; Entropy change of systems and surroundings for various processes and transformations; Auxiliary state functions (G and A) and Criteria for spontaneity and equilibrium.

Chemical Equilibrium: **(08 Lectures)**

Thermodynamic conditions for equilibrium, degree of advancement; Variation of free energy with degree of advancement; Equilibrium constant and standard Gibbs free energy change; Definitions of KP, KC and KX and relation among them; van't Hoff's reaction isotherm, isobar and isochore from different standard states; Shifting of equilibrium due to change in external parameters e.g. temperature and pressure; variation of equilibrium constant with addition to inert gas; Le Chatelier's principle

Ionic Equilibria: **(08 Lectures)**

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water; Ionization of weak acids and bases, pH scale, common ion effect; Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts; Buffer solutions; Solubility and solubility product of sparingly soluble salts – applications of solubility product principle

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Suggested Readings :

1. Barrow, G.M. *Physical Chemistry* Tata McGraw Hill (2007).
2. Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
3. Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry* Cengage Learning India Pvt. Ltd., New Delhi (2009).
4. Mahan, B.H. *University Chemistry* 3rd Ed. Narosa (1998).
5. Ekambaram, S. *General Chemistry*, Pearson.
6. Petrucci, R.H. *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).
7. Chugh, K.L., Agnish, S.L. *A Text Book of Physical Chemistry* Kalyani Publishers
8. Bahl, B.S., Bahl, A., Tuli, G.D., *Essentials of Physical Chemistry* S. Chand & Co. ltd.
9. Palit, S. R., *Elementary Physical Chemistry* Book Syndicate Pvt. Ltd.
10. Mandal, A. K. *Degree Physical and General Chemistry* Sarat Book House
11. Pahari, S., *Physical Chemistry* New Central Book Agency
12. Pahari, S., Pahari, D., *Problems in Physical Chemistry* New Central Book Agency

Section-B: Organic Chemistry-II **(30 Lectures)**

Functional group app roach for the following reactions (preparations & reactions) to be studied in context to their structures.

Aromatic Hydrocarbons **06 Lectures**

Benzene: Preparation: from phenol, by decarboxylation, from acetylene, from Benzene sulphonic acid. *Reactions*: electrophilic substitution (general mechanism); nitration (with mechanism), halogenations (chlorination and bromination), sulphonation and Friedel-Craft's reaction (alkylation and acylation) (up to 4 carbons on benzene); side chain oxidation of alkyl benzenes (up to 4 carbons on benzene).

Organometallic Compounds **(2 Lectures)**

Introduction; *Grignard reagents*: *Preparations* (from alkyl and aryl halide); concept of *umpolung;* Reformatsky reaction.

Aryl Halides **(3 Lectures)**

Preparation: (chloro-, bromo- and iodobenzene): from phenol, Sandmeyer reactions. *Reactions (Chlorobenzene):* nucleophilic aromatic substitution (replacement by –OH group) and effect of nitro substituent (activated nucleophilic substitution).

Alcohols, Phenols and Ethers **(11 Lectures)**

Alcohols: (up to 5 Carbons). *Preparation:* 1°-, 2°- and 3°- alcohols: using Grignard reagent, reduction of aldehydes, ketones, carboxylic acid and esters; *Reactions:* With sodium, HX (Lucas test), oxidation (alkaline KMnO4, acidic dichromate, concentrated HNO3); Oppenauer oxidation;

Diols: Preparation (with OsO4); pinacol- pinacolone rearrangement (with mechanism) (*with symmetrical diols* only).

Phenols: Preparation: cumene hydroperoxide method, from diazonium salts; acidic nature of phenols; *Reactions:* electrophilic substitution: nitration and halogenations;

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Reimer -Tiemann reaction, Houben–Hoesch condensation, Schotten –Baumann reaction, Fries rearrangement and Claisen rearrangement.

Ethers: Preparation: Williamson's ether synthesis; *Reaction*: cleavage of ethers with HI.

Carbonyl Compounds (08 Lectures)

Aldehydes and Ketones (aliphatic and aromatic): (Formaldehye, acetaldehyde, acetone and benzaldehyde): *Preparation:* from acid chlorides, from nitriles and from Grignard reagents; general properties of aldehydes and ketones; *Reactions:* with HCN, ROH, NaHSO3, NH2-G derivatives and with Tollens' and Fehling's reagents; iodoform test; aldol condensation (with mechanism); Cannizzaro reaction (with mechanism),Wittig reaction, benzoin condensation; Clemmensen reduction, Wolff- Kishner reduction and Meerwein-Pondorff- Verley (MPV) reduction.

Suggested Readings:

1. Sethi, A. *Conceptual Organic Chemistry;* New Age International Publisher.
2. Parmar, V. S. *A Text Book of Organic Chemistry*, S. Chand & Sons.
3. Madan, R. L. *Organic Chemistry*, S. Chand & Sons.
4. Wade, L. G., Singh, M. S., *Organic Chemistry, Pearson*.
5. Finar, I. L. *Organic Chemistry* (*Volume 1*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
6. Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
7. Bahl, A. & Bahl, B.S. *Advanced Organic Chemistry*, S. Chand, 2010.

GE-3P: LAB: Practicals Credits 02
(60 Lectures)

Practicals:

Section A: Physical Chemistry-LAB (15x2=30 Lectures)

(Minimum **five** experiments to complete)

(I) Thermochemistry (Any **three**)

1. Determination of heat capacity of calorimeter for different volumes
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide
3. Determination of enthalpy of ionization of acetic acid
4. Determination of enthalpy of hydration of copper sulphate

(II) Ionic Equilibria (Any **two**)

a) Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter and compare it with the indicator method

b) Preparation of buffer solutions and find the pH of an unknown buffer solution by colour matching method (using following buffers)

(i) Sodium acetate-acetic acid

(ii) Ammonium chloride-ammonium hydroxide

c) Study of the solubility of benzoic acid in water

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Suggested Readings:

1. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N., University of Calcutta, 2003.
2. Palit, S.R., *Practical Physical Chemistry* Science Book Agency
3. Mukherjee, N.G., *Selected Experiments in Physical Chemistry* J. N. Ghose & Sons
4. Dutta, S.K., *Physical Chemistry Experiments* Bharati Book Stall

Section B: Organic Chemistry-LAB

Identification of a pure organic compound

Solid compounds: oxalic acid, tartaric acid, succinic acid, resorcinol, urea, glucose, benzoic acid and salicylic acid.
Liquid Compounds: methyl alcohol, ethyl alcohol, acetone, aniline, dimethylaniline, benzaldehyde, chloroform and nitrobenzene

Suggested Readings:

1. Bhattacharyya, R. C, *A Manual of Practical Chemistry*.
2. Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.
3. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.

Downloaded from Vidyasagar University by 202.142.119.15 on 29 January 2019 : 13:25:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Chemistry

[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-8		C8T:Physical Chemistry-III	Core Course - 8	4	0	0	6	75
		C8P:Lab		0	0	4		
CC-9		C9T: Inorganic Chemistry - III	Core Course - 9	4	0	0	6	75
		C9P: Lab		0	0	4		
CC-10		C10T: Organic Chemistry -IV	Core Course - 10	4	0	0	6	75
		C10P: Lab		0	0	4		
GE-4		TBD	Generic Elective-4				6	75
SEC-2		**SEC-2** : Basic analytical Chemistry **Or** Chemistry of Cosmetics and Perfumes **Or** Pesticides Chemistry **Or** Fuel Chemistry	Skill Enhancement Course-2	1-1-0/1-0-2			2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P=**Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE) (Interdisciplinary) from other Department : Papers are to be taken from any of the following discipline: **Mathematics/Physics /Computer Sc/Statistics/Geology/ Electronics/zoology/Botany /Microbiology/Physiology/Biotechnology/Nutrition**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

Core Course (CC)

CC-8: PHYSICAL CHEMISTRY-III **Credits 06**

C8T: PHYSICAL CHEMISTRY-III **Credits 04**

Course Contents:

a) Application of Thermodynamics – II

Colligative properties: Vapour pressure of solution; Ideal solutions, ideally diluted solutions and colligative properties; Raoult's law; Thermodynamic derivation using chemical potential to derive relations between the four colligative properties [(i) relative lowering of vapour pressure, (ii) elevation of boiling point, (iii) Depression of freezing point, (iv) Osmotic pressure] and amount of solute. Applications in calculating molar masses of normal, dissociated and associated solutes in solution; Abnormal colligative properties

Phase rule: Definitions of phase, component and degrees of freedom; Phase rule and its derivations; Definition of phase diagram; Phase diagram for water, CO_2, Sulphur

First order phase transition and Clapeyron equation; Clausius-Clapeyron equation - derivation and use; Liquid vapour equilibrium for two component systems; Phenol-water system

Three component systems, water-chloroform-acetic acid system, triangular plots

Binary solutions: Ideal solution at fixed temperature and pressure; Principle of fractional distillation; Duhem-Margules equation; Henry's law; Konowaloff's rule; Positive and negative deviations from ideal behavior; Azeotropic solution; Liquid-liquid phase diagram using phenol-water system; Solid-liquid phase diagram; Eutectic mixture

b) Electrical Properties of molecules

Ionic equilibria: Chemical potential of an ion in solution; Activity and activity coefficients of ions in solution; Debye-Huckel limiting law-brief qualitative description of the postulates involved, qualitative idea of the model, the equation (without derivation) for ion-ion atmosphere interaction potential. Estimation of activity coefficient for electrolytes using Debye-Huckel limiting law; Derivation of mean ionic activity coefficient from the expression of ion-atmosphere interaction potential; Applications of the equation and its limitations

Electromotive Force: Quantitative aspects of Faraday’s laws of electrolysis, rules of oxidation/reduction of ions based on half-cell potentials, applications of electrolysis in metallurgy and industry; Chemical cells, reversible and irreversible cells with examples; Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential and its application to different kinds of half-cells. Application of EMF measurements in determining (i) free energy, enthalpy and entropy of a cell reaction, (ii)

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

equilibrium constants, and (iii) pH values, using hydrogen, quinone-hydroquinone, glass and SbO/Sb_2O_3 electrodes

Concentration cells with and without transference, liquid junction potential; determination ofactivity coefficients and transference numbers; Qualitative discussion of potentiometric titrations (acid-base, redox, precipitation)

Dipole moment and polarizability: Polarizability of atoms and molecules, dielectric constant and polarisation, molar polarisation for polar and non-polar molecules; Clausius-Mosotti equation and Debye equation (both without derivation) and their application; Determination of dipole moments

C) Quantum Chemistry

Angular momentum: Commutation rules, quantization of square of total angular momentum and z-component; Rigid rotator model of rotation of diatomic molecule; Schrödinger equation, transformation to spherical polar coordinates; Separation of variables. Spherical harmonics; Discussion of solution

Qualitative treatment of hydrogen atom and hydrogen-like ions: Setting up of Schrödinger equation in spherical polar coordinates, radial part, quantization of energy (only final energy expression); Average and most probable distances of electron from nucleus; Setting up of Schrödinger equation for many-electron atoms (He, Li)

LCAO and HF-SCF: Covalent bonding, valence bond and molecular orbital approaches, LCAO-MO treatment of H_2^+; Bonding and antibonding orbitals; Qualitative extension to H_2; Comparison of LCAO-MO and VB treatments of H_2 and their limitations; Hartree-Fock method development, SCF and configuration interaction (only basics)
Atkins, P. W. & Paula, J. de Atkin's, Physical Chemistry, Oxford University Press

Suggested Readings:

1. Castellan, G. W. *Physical Chemistry*, Narosa
2. Atkins, P. W. & Paula, J. de *Atkins', Physical Chemistry*, Oxford University Press
3. McQuarrie, D. A. & Simons, J. D. *Physical Chemistry: A Molecular Approach*, Viva Press
4. Levine, I. N. *Physical Chemistry*, Tata McGraw-Hill
5. Moore, W. J. *Physical Chemistry*, Orient Longman
6. Mortimer, R. G. *Physical Chemistry*, Elsevier
7. Engel, T. & Reid, P. *Physical Chemistry*, Pearson
8. Levine, I. N. *Quantum Chemistry*, PHI
9. Atkins, P. W. *Molecular Quantum Mechanics*, Oxford
10. Engel, T. & Reid, P. *Physical Chemistry*, Pearson
11. Maron, S.H., Prutton, C. F., *Principles of Physical Chemistry*, McMillan
12. Klotz, I.M., Rosenberg, R. M. *Chemical Thermodynamics:Basic Concepts and Methods* Wiley

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

13. Rastogi, R. P. & Misra, R.R. An Introduction to Chemical Thermodynamics, Vikas
14. Glasstone, S. An Introduction to Electrochemistry, East-West Press

C8P : Lab **Credits 02**

Practical :

Experiment 1: Determination of solubility of sparingly soluble salt in water, in electrolyte with common ions and in neutral electrolyte (using common indicator)

Experiment 2: Potentiometric titration of Mohr's salt solution against standard $K_2Cr_2O_7$ solution

Experiment 3: Determination of K_{sp} for AgCl by potentiometric titration of $AgNO_3$ solution against standard KCl solution

Experiment 4: Effect of ionic strength on the rate of Persulphate – Iodide reaction

Experiment 5: Study of phenol-water phase diagram

Experiment 6: pH-metric titration of acid (mono- and di-basic) against strong base

Suggested Readings:

1. Viswanathan, B., Raghavan, P.S. *Practical Physical Chemistry* Viva Books (2009)
2. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson
3. Harris, D. C. *Quantitative Chemical Analysis*. 6th Ed., Freeman (2007)
4. Palit, S.R., De, S. K. *Practical Physical Chemistry* Science Book Agency
5. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N., University of Calcutta
6. Levitt, B. P. edited *Findlay's Practical Physical Chemistry* Longman Group Ltd.
7. Gurtu, J. N., Kapoor, R., *Advanced Experimental Chemistry* S. Chand & Co. Ltd.

CC-9: INORGANIC CHEMISTRY-III **Credit 06**

C9T: INORGANIC CHEMISTRY-III **Credit 04**

Course Contents:

General Principles of Metallurgy

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon and carbon monoxide as reducing agent. Electrolytic Reduction, Hydrometallurgy. Methods of purification of metals: Electrolytic Kroll process, Parting process, van Arkel-de Boer process and Mond's process, Zone refining.

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

Chemistry of *s* and *p* Block Elements

Relative stability of different oxidation states, diagonal relationship and anomalous behaviour of first member of each group. Allotropy and catenation. Study of the following compounds with emphasis on structure, bonding, preparation, properties and uses. Beryllium hydrides and halides. Boric acid and borates, boron nitrides, borohydrides (diborane) and graphitic compounds, silanes, Oxides and oxoacids of nitrogen, phosphorus, sulphur and chlorine. Peroxo acids of sulphur, sulphur-nitrogen compounds, interhalogen compounds, polyhalide ions, pseudohalogens, fluorocarbons and basic properties of halogens.

Noble Gases:
Occurrence and uses, rationalization of inertness of noble gases, Clathrates; preparation and properties of XeF_2, XeF_4 and XeF_6; Nature of bonding in noble gas compounds (Valence bond treatment and MO treatment for XeF_2 and XeF_4). Xenon-oxygen compounds. Molecular shapes of noble gas compounds (VSEPR theory).

Inorganic Polymers:
Types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of silicones and siloxanes. Borazines, silicates and phosphazenes.

Coordination Chemistry-I

Coordinate bonding: double and complex salts. Werner's theory of coordination complexes, Classification of ligands, Ambidentate ligands, chelates, Coordination numbers, IUPAC nomenclature of coordination complexes (up to two metal centers), Isomerism in coordination compounds, constitutional and stereo isomerism, Geometrical and optical isomerism in square planar and octahedral complexes.

Suggested Readings:

1. Huheey, J. E.; Keiter, E.A. & Keiter, R.L. *Inorganic Chemistry, Principles of Structure and Reactivity 4th Ed.*, Harper Collins 1993, Pearson,2006.
2. Greenwood, N.N. & Earnshaw A. *Chemistry of the Elements*, Butterworth-Heinemann, 1997.
3. Cotton, F.A., Wilkinson, G., Murrillo, C. A., Bochmann, M., *Advanced Inorganic Chemistry 6th Ed. 1999.*, Wiley.
4. Miessler, G. L. & Donald, A. Tarr. *Inorganic Chemistry* 4th Ed., Pearson, 2010.
5. Purecell, K.F. and Kotz, J.C., *An Introduction to Inorganic Chemistry*, Saunders: Philadelphia, 1980.
6. Mingos, D.M.P., *Essential trends in inorganic chemistry*. Oxford University Press (1998).

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

C9P: LAB **Credits 02**

Practical:

Complexometric titration

1. Zn(II)
2. Zn(II) in a Zn(II) and Cu(II) mixture.
3. Ca(II) and Mg(II) in a mixture.
4. Hardness of water.

Inorganic preparations

1. $[Cu(CH_3CN)_4]PF_6/ClO_4$
2. *Cis* and *trans* $K[Cr(C_2O_4)_2\ (H_2O)_2]$
3. Potassium diaquadioxalatochromate(III)
4. Tetraamminecarbonatocobalt (III) ion
5. Potassium tris(oxalato)ferrate(III)
6. Tris-(ethylenediamine) nickel(II) chloride.
7. $[Mn(acac)_3]$ and $Fe(acac)_3]$ (acac= acetylacetonate)

Suggested Readings:

1. Mendham, J., *A. I. Vogel's Quantitative Chemical Analysis* 6th Ed., Pearson, 2009.
2. *Inorganic Synthesis*, Vol. 1-10.

CC-10: ORGANIC CHEMISTRY-IV **Credits 06**

C10T: ORGANIC CHEMISTRY-IV **Credits 04**

Course Contents:

Nitrogen compounds

Amines: Aliphatic & Aromatic: preparation, separation (Hinsberg's method) and identification of primary, secondary and tertiary amines; reaction (with mechanism): Eschweiler–Clarke methylation, diazo coupling reaction, Mannich reaction; formation and reactions of phenylenediamines, diazomethane and diazoacetic ester.

Nitro compounds (aliphatic and aromatic): preparation and reaction (with mechanism): reduction under different conditions; Nef carbonyl synthesis, Henry reaction and conjugate addition of nitroalkane anion.

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

Alkylnitrile and isonitrile: preparation and reaction (with mechanism): Thorpe nitrile condensation, von Richter reaction.

Diazonium salts and their related compounds: reactions (with mechanism) involving replacement of diazo group; reactions: Gomberg, Meerwein, Japp-Klingermann.

Rearrangements

Mechanism with evidence and stereochemical features for the following
Rearrangement to electron-deficient carbon: Wagner-Meerwein rearrangement, pinacol rearrangement, dienone-phenol; Wolff rearrangement in Arndt-Eistert synthesis, benzil-benzilic acid rearrangement, Demjanov rearrangement, Tiffeneau–Demjanov rearrangement.

Rearrangement to electron-deficient nitrogen: rearrangements: Hofmann, Curtius, Lossen, Schmidt and Beckmann.

Rearrangement to electron-deficient oxygen: Baeyer-Villiger oxidation, cumene hydroperoxide-phenol rearrangement and Dakin reaction.

Aromatic rearrangements: Migration from oxygen to ring carbon: Fries rearrangement and Claisen rearrangement.
Migration from nitrogen to ring carbon: Hofmann-Martius rearrangement**,** Fischer-Hepp rearrangement, *N*-azo to *C*-azo rearrangement, Bamberger rearrangement, Orton rearrangement and benzidine rearrangement.

Rearrangement reactions by green approach: Fries rearrangement, Claisen rearrangement, Beckmann rearrangement, Baeyer-Villiger oxidation.

The Logic of Organic Synthesis

Retrosynthetic analysis: disconnections; synthons, donor and acceptor synthons; natural reactivity and *umpolung*; latent polarity in bifunctional compounds: consonant and dissonant polarity; illogical electrophiles and nucleophiles; synthetic equivalents; functional group interconversion and addition (FGI and FGA); C-C disconnections and synthesis: one-group and two-group (1,2- to 1,5-dioxygenated compounds), reconnection (1,6-dicarbonyl); protection-deprotection strategy (alcohol, amine, carbonyl, acid).

Strategy of ring synthesis: thermodynamic and kinetic factors; synthesis of large rings, application of high dilution technique.

Asymmetric synthesis: stereoselective and stereospecific reactions; diastereoselectivity and enantioselectivity (only definition); enantioselectivity: kinetically controlled MPV reduction; diastereoselectivity: addition of nucleophiles to C=O adjacent to a stereogenic centre: Felkin-Anh and Zimmermann-Traxler models.

Organic Spectroscopy

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

UV Spectroscopy: introduction; types of electronic transitions, end absorption; transition dipole moment and allowed/forbidden transitions; chromophores and auxochromes; Bathochromic and Hypsochromic shifts; intensity of absorptions (Hyper-/Hypochromic effects); application of Woodward's Rules for calculation of λ_{max} for the following systems: conjugated diene, *α,β*-unsaturated aldehydes and ketones (alicyclic, homoannular and heteroannular); extended conjugated systems (dienes, aldehydes and ketones); relative positions of λ_{max} considering conjugative effect, steric effect, solvent effect, effect of pH; effective chromophore concentration: keto-enol systems; benzenoid transitions.

IR Spectroscopy: introduction; modes of molecular vibrations (fundamental and non-fundamental); IR active molecules; application of Hooke's law, force constant; fingerprint region and its significance; effect of deuteration; overtone bands; vibrational coupling in IR; characteristic and diagnostic stretching frequencies of C-H, N-H, O-H, C-O, C-N, C-X, C=C (including skeletal vibrations of aromatic compounds), C=O, C=N, N=O, C≡C, C≡N; characteristic/diagnostic bending vibrations are included; factors affecting stretching frequencies: effect of conjugation, electronic effects, mass effect, bond multiplicity, ring-size, solvent effect, H-bonding on IR absorptions; application in functional group analysis.

NMR Spectroscopy: introduction; nuclear spin; NMR active molecules; basic principles of Proton Magnetic Resonance; equivalent and non-equivalent protons; chemical shift and factors influencing it; ring current effect; significance of the terms: up-/downfield, shielded and deshielded protons; spin coupling and coupling constant (1st order spectra); relative intensities of *first-order* multiplets: Pascal's triangle; chemical and magnetic equivalence in NMR ; elementary idea about *non-first-order* splitting; anisotropic effects in alkene, alkyne, aldehydes and aromatics; NMR peak area, integration; relative peak positions with coupling patterns of common organic compounds (both aliphatic and benzenoid-aromatic); rapid proton exchange; interpretation of NMR spectra of simple compounds.
Applications of IR, UV and NMR spectroscopy for identification of simple organic molecules.

Suggested Readings:

1. Finar, I. L. *Organic Chemistry (Volume 1)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Finar, I. L. *Organic Chemistry* (*Volume 2: Stereochemistry and the Chemistry of Natural Products*), Dorling Kindersley (India) Pvt. Ltd.(Pearson Education).
3. Norman, R.O. C., Coxon, J. M. *Principles of Organic Synthesis*, Third Edition, Nelson Thornes, 2003.
4. Clayden, J., Greeves, N., Warren, S., *Organic Chemistry*, Second edition, Oxford University Press 2012.
5. Silverstein, R. M., Bassler, G. C., Morrill, T. C. *Spectrometric Identification of Organic Compounds*, John Wiley and Sons, INC, Fifth edition.
6. Kemp, W. *Organic Spectroscopy*, Palgrave.
7. Pavia, D. L. *et al. Introduction to Spectroscopy*, 5th Ed. Cengage Learning India Ed. (2015).

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

8. Dyer, J. *Application of Absorption Spectroscopy of Organic Compounds*, PHI Private Limited
9. March, J. *Advanced Organic Chemistry*, Fourth edition, Wiley.
10. Harwood, L. M., *Polar Rearrangements*, Oxford Chemistry Primer, Oxford University Press.
11. Bailey, Morgan, Organonitrogen Chemistry, Oxford Chemistry Primer, Oxford University Press.
12. Ahluwalia, V. K. *Strategies for Green Organic Synthesis*, ANE Books Pvt. Ltd.
13. Warren, S. *Organic Synthesis the Disconnection Approach*, John Wiley and Sons.
14. Warren, S., *Designing Organic Synthesis*, Wiley India, 2009.
15. Carruthers, W. *Modern methods of Organic Synthesis*, Cambridge University Press.
16. Willis, C. A., Wills, M., *Organic Synthesis*, Oxford Chemistry Primer, Oxford University Press.

C10P : LAB **Credits 02**

List of Practical

Quantitative Estimations:

Each student is required to perform all the experiments.

1. Estimation of glycine by Sörensen's formol method
2. Estimation of glucose by titration using Fehling's solution
3. Estimation of sucrose by titration using Fehling's solution
4. Estimation of vitamin-C (reduced)
5. Estimation of aromatic amine (aniline) by bromination (Bromate-Bromide) method
6. Estimation of phenol by bromination (Bromate-Bromide) method
7. Estimation of formaldehyde (Formalin)
8. Estimation of acetic acid in commercial vinegar
9. Estimation of urea (hypobromite method)
10. Estimation of saponification value of oil/fat/ester

Suggested Readings:

1. Arthur, I. V. *Quantitative Organic Analysis*, Pearson
2. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N., University of Calcutta

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

Skill Enhancement Course (SEC)

SEC-2: BASIC ANALYTICAL CHEMISTRY Credits 02

SEC2T: BASIC ANALYTICAL CHEMISTRY Credits 01

Course Contents:

Introduction: Introduction to Analytical Chemistry and its interdisciplinary nature. Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures.

Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators

Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods.

Analysis of food products: Nutritional value of foods, idea about food processing and food preservations and adulteration.

Chromatography: Definition, general introduction on principles of chromatography, paper chromatography, TLC etc.

Ion-exchange: Column, ion-exchange chromatography etc.

Analysis of cosmetics: Major and minor constituents and their function

SEC-2P: Practical Credits 01

A:

1. Determination of pH of soil samples.
2. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration.
3. Determination of pH, acidity and alkalinity of a water sample.
4. Determination of dissolved oxygen (DO) of a water sample.
5. Identification of adulterants in some common food items like coffee powder, asafoetida, chilli powder, turmeric powder, coriander powder and pulses, etc.
6. Analysis of preservatives and colouring matter.
7. Paper chromatographic separation of mixture of metal ion (Fe^{3+} and Al^{3+}).
8. To compare paint samples by TLC method.
9. Determination of ion exchange capacity of anion / cation exchange resin (using batch procedure if use of column is not feasible).
10. Analysis of deodorants and antiperspirants, Al, Zn, boric acid, chloride, sulphate.

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

11. Determination of constituents of talcum powder: Magnesium oxide, Calcium oxide, Zinc oxide and Calcium carbonate by complexometric titration.

B:

Suggested Applications (Any one):

a. To study the use of phenolphthalein in traps cases.
b. To analyze arson accelerants.
c. To carry out analysis of gasoline.

C:

Suggested Instrumental demonstrations:

a. Estimation of macro nutrients: Potassium, Calcium, Magnesium in soil samples by flame photometry.
b. Spectrophotometric determination of Iron in Vitamin / Dietary Tablets.
c. Spectrophotometric Identification and Determination of Caffeine and Benzoic Acid in Soft Drink.

Suggested Readings:

1. Willard, H. H. *Instrumental Methods of Analysis*, CBS Publishers.
2. Skoog & Lerry. *Instrumental Methods of Analysis*, Saunders College Publications, New York.
3. Skoog, D.A.; West, D.M. & Holler, F.J. *Fundamentals of Analytical Chemistry 6th Ed.*, Saunders College Publishing, Fort Worth (1992).
4. Harris, D. C. *Quantitative Chemical Analysis*, W. H. Freeman.
5. Dean, J. A. *Analytical Chemistry Notebook*, McGraw Hill.
6. Day, R. A. & Underwood, A. L. *Quantitative Analysis*, Prentice Hall of India.
7. Freifelder, D. Physical Biochemistry *2nd Ed.*, W.H. Freeman and Co., N.Y. USA (1982).
8. Cooper, T.G. *The Tools of Biochemistry*, John Wiley and Sons, N.Y. USA. 16 (1977).
9. Vogel, A. I. *Vogel's Qualitative Inorganic Analysis 7th Ed.*, Prentice Hall.
10. Vogel, A. I. Vogel's *Quantitative Chemical Analysis 6th Ed.*, Prentice Hall.
11. Robinson, J.W. *Undergraduate Instrumental Analysis 5th Ed.*, Marcel Dekker, Inc., New York (1995).

Or

SEC-2: CHEMISTRY OF COSMETICS & PERFUMES — Credit 02

SEC2T: CHEMISTRY OF COSMETICS & PERFUMES — Credit 01

Course Contents:

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, suntan lotions, face powder, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours. Essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone.

SEC2P: Practicals **Credits 01**

1. Preparation of talcum powder.
2. Preparation of shampoo.
3. Preparation of enamels.
4. Preparation of hair remover.
5. Preparation of face cream.
6. Preparation of nail polish and nail polish remover.

Suggested Readings:

• E. Stocchi: *Industrial Chemistry*, Vol -I, Ellis Horwood Ltd. UK.
• P.C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
• B.K. Sharma: *Industrial Chemistry*, Goel Publishing House, Meerut.

Or

SEC-2: PESTICIDE CHEMISTRY Credit 02

SEC2T: PESTICIDE CHEMISTRY **Credit 01**

Course Contents:

General introduction to pesticides (natural and synthetic), benefits and adverse effects, changing concepts of pesticides, structure activity relationship, synthesis and technical manufacture and uses of representative pesticides in the following classes: Organochlorines (DDT, Gammexene,); Organophosphates (Malathion, Parathion); Carbamates (Carbofuran and carbaryl); Quinones (Chloranil), Anilides (Alachlor and Butachlor).

SEC2P: Practicals **Credit 01**

1. To calculate acidity/alkalinity in given sample of pesticide formulations as per BIS specifications.
2. Preparation of simple organophosphates, phosphonates and thiophosphates

Suggested Readings:

• R. Cremlyn: *Pesticides*, John Wiley.

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

Or

SEC-2: FUEL CHEMISTRY Credits 02

SEC2T: FUEL CHEMISTRY

Course Contents:

Review of energy sources (renewable and non-renewable). Classification of fuels and their calorific value. ***Coal:*** Uses of coal (fuel and nonfuel) in various industries, its composition, carbonization of coal.Coal gas, producer gas and water gas—composition and uses. Fractionation of coal tar, uses of coal tar bases chemicals, requisites of a good metallurgical coke, Coal gasification(Hydro gasification and Catalytic gasification), Coal liquefaction and Solvent Refining. ***Petroleum and Petrochemical Industry:*** Composition of crude petroleum, Refining and different types of petroleum products and their applications. Fractional Distillation (Principle and process), Cracking (Thermal and catalytic cracking), Reforming Petroleum and non-petroleum fuels (LPG, CNG, LNG, bio-gas, fuels derived from biomass), fuel from waste, synthetic fuels (gaseous and liquids), clean fuels. **Petrochemicals:** Vinyl acetate, Propylene oxide, Isoprene, Butadiene, Toluene and its derivatives Xylene. ***Lubricants:*** Classification of lubricants, lubricating oils (conducting and non-conducting) Solid and semisolid lubricants, synthetic lubricants. Properties of lubricants (viscosity index, cloud point, pore point) and their determination.

Suggested Readings:

• E. Stocchi: *Industrial Chemistry*, Vol -I, Ellis Horwood Ltd. UK.
• P.C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
• B.K. Sharma: *Industrial Chemistry*, Goel Publishing House, Meerut.

Generic Elective (GE)
[Interdisciplinary for other department]

GE-4: Solutions, Phase Eequilibria, Conductance, Electrochemistry & Analytical and Enviornmetal Chemistry-I Credits 06

GE4T : Solutions, Phase Eequilibria, Conductance, Electrochemistry & Analytical and Enviornmetal Chemistry-I Credits 04

Course Contents:

Section A: Physical Chemistry-III

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

Solutions

Ideal solutions and Raoult's law, deviations from Raoult's law – non-ideal solutions; Vapour pressure-composition and temperature-composition curves of ideal and non-ideal solutions; Distillation of solutions; Lever rule; Azeotropes Critical solution temperature; effect of impurity on partial miscibility of liquids; Immiscibility of liquids- Principle of steam distillation; Nernst distribution law and its applications, solvent extraction

Phase Equilibria

Phases, components and degrees of freedom of a system, criteria of phase equilibrium; Gibbs Phase Rule and its thermodynamic derivation; Derivation of Clausius – Clapeyron equation and its importance in phase equilibria; Phase diagrams of one-component systems (water and sulphur) and two component systems involving eutectics, congruent and incongruent melting points (lead-silver, $FeCl_3$-H_2O and Na-K only)

Conductance

Conductance, cell constant, specific conductance and molar conductance; Variation of specific and equivalent conductance with dilution for strong and weak electrolytes; Kohlrausch's law of independent migration of ions; Equivalent and molar conductance at infinite dilution and their determination for strong and weak electrolytes; Ostwald's dilution law; Application of conductance measurement (determination of solubility product and ionic product of water); Conductometric titrations (acid-base) Transport Number and principles of Hittorf's and Moving-boundary method

Electromotive force

Faraday's laws of electrolysis, rules of oxidation/reduction of ions based on half-cell potentials, applications of electrolysis in metallurgy and industry; Chemical cells, reversible and irreversible cells with examples; Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential; Electrochemical series; Thermodynamics of a reversible cell, calculation of thermodynamic properties: G, H and S from EMF data Concentration cells with and without transference, liquid junction potential; pH determination using hydrogen electrode and quinhydrone; Qualitative discussion of potentiometric titrations (acid-base, redox, precipitation)

Suggested Readings:

1. Barrow, G.M. *Physical Chemistry* Tata McGraw- Hill (2007).
2. Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
3. Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry* Cengage Learning India Pvt. Ltd., New Delhi (2009).
4. Mahan, B.H. *University Chemistry* 3rd Ed. Narosa (1998).
5. Petrucci, R.H. *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).
6. Chugh, K.L., Agnish, S.L. *A Text Book of Physical Chemistry* Kalyani Publishers
7. Bahl, B.S., Bahl, A., Tuli, G.D., *Essentials of Physical Chemistry* S. Chand & Co. ltd.
8. Palit, S. R., *Elementary Physical Chemistry* Book Syndicate Pvt. Ltd.
9. Pahari, S., *Physical Chemistry* New Central Book Agency
10. Pahari, S., Pahari, D., *Problems in Physical Chemistry* New Central Book Agency

Section B: Analytical and Environmental Chemistry

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

Chemical Analysis

Gravimetric analysis: solubility product and common ion effect; requirements of gravimetry; gravimetric estimation of chloride, sulphate, lead, barium, nickel, copper and zinc.
Volumetric analysis: primary and secondary standard substances; principles of acidbase, oxidation – reduction and complexometric titrations; indicators: acid-base, redox and metal ion; principles of estimation of mixtures: $NaHCO_3$ and Na_2CO_3 (by acidimetry); iron, copper, manganese and chromium (by redox titration); zinc, aluminum, calcium and magnesium (by complexometric EDTA titration).
Chromatography: chromatographic methods of analysis: column chromatography and thin layer chromatography.

Environmental Chemistry

The Atmosphere: composition and structure of the atmosphere; troposphere, stratosphere, mesosphere and thermosphere; ozone layer and its role; major air pollutants: CO, SO_2, NO_x and particulate matters – their origin and harmful effects; problem of ozone layer depletion; green house effect; acid rain and photochemical smog; air pollution episodes: air quality standard; air pollution control measures: cyclone collector, electrostatic precipitator, catalytic converter.
The Hydrosphere: environmental role of water, natural water sources, water treatment for industrial, domestic and laboratory uses; water pollutants; action of soaps and detergents, phosphates, industrial effluents, agricultural runoff, domestic wastes; thermal pollution, radioactive pollution and their effects on animal and plant life; water pollution episodes: water pollution control measures : waste water treatment; chemical treatment and microbial treatment; water quality standards: DO, BOD, COD, TDS and hardness parameters; desalination of sea water : reverse osmosis, electrodialysis.
The Lithosphere: water and air in soil, waste matters and pollutants in soil, waste classification, treatment and disposal; soil pollution and control measures.

Suggested Readings:

1. Banerjee, S. P. *A Text Book of Analytical Chemistry*, The New Book Stall.
2. Gangopadhyay, P. K. *Application Oriented Chemistry*, Book Syndicate.
3. Mondal, A. K & Mondal, S. *Degree Applied Chemistry*, Sreedhar Publications.
4. Banerjee, S. P. *A Text Book of Analytical Chemistry*, The New Book Stall.

GE4T: Practical **Credits 02**

Section A: Physical Chemistry-LAB
(Minimum **six** experiments to complete)

(I) Distribution Law (Any one)
Study of the equilibrium of one of the following reactions by the Distribution method:

$I_2(aq) + I^-(aq) = I_3^-(aq)$ $Cu^{2+}(aq) + xNH_2(aq) = [Cu(NH_3)_x]^{2+}$

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

(II) Phase equilibria (Any one)

a) Construction of the phase diagram of a binary system (simple eutectic) using cooling curves
b) Determination of the critical solution temperature and composition of the phenol water system and study of the effect of impurities on it

(III) Conductance

a) Determination of dissociation constant of a weak acid (cell constant, equivalent conductance are also determined)
b) Perform the following conductometric titrations: (Any one)
(i) Strong acid vs. strong base
(ii) Weak acid vs. strong base

(IV) Potentiometry

Perform the following potentiometric titrations:

(i) Weak acid vs. strong base
(ii) Potassium dichromate vs. Mohr's salt

Suggested Readings:

1. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N., University of Calcutta, 2003.
2. Palit, S.R., *Practical Physical Chemistry* Science Book Agency
3. Mukherjee, N.G., *Selected Experiments in Physical Chemistry* J. N. Ghose & Sons
4. Dutta, S.K., *Physical Chemistry Experiments* Bharati Book Stall

Section B: Analytic and Environmental Chemistry-LAB

1. To find the total hardness of water by EDTA titration.
2. To find the PH of an unknown solution by comparing color of a series of HCl solutions + 1 drop of methyl orange, and a similar series of NaOH solutions + 1 drop of phenolphthalein.
3. To determine the rate constant for the acid catalysed hydrolysis of an ester.
4. Determination of the strength of the H_2O_2 sample.
5. To determine the solubility of a sparingly soluble salt, e.g. KHTa (one bottle)

Suggested Readings:

1. Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
2. Ghosal, Mahapatra & Nad, *An Advanced Course in Practical Chemistry*, New Central Book Agency.
3. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N. University of Calcutta, 2003.
4. Das, S. C., Chakraborty, S. B., *Practical Chemistry*.

Downloaded from Vidyasagar University by 157.43.133.237 on 23 February 2021 : 17:17:19; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons4.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Chemistry [Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 11		**C11T:** Inorganic Chemistry - IV	Core Course-11	4	0	0	6	75
		- Lab		0	0	4		
CC- 12		**C12T**: Organic Chemistry - V	Core Course-12	4	0	0	6	75
		- Lab		0	0	4		
DSE-1		**DSE1T**: Advanced Physical Chemistry	Discipline Specific Electives -1	4	0	0	6	75
		- Lab		0	0	4		
DSE-2		**DSE2T:** Analytical Methods in Chemistry **Or** Instrumental Methods of Chemical Analysis	Discipline Specific Electives -2	4	0	0	6	75
		- Lab		0	0	4		
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

Semester-V

List of Core Course (CC)

CC-11: Inorganic Chemistry - IV

CC-12: Organic Chemistry - V

Discipline Specific Electives (DSE)

DSE-1: Advanced Physical Chemistry

DSE-2: Analytical Methods in Chemistry
Or
DSE-2: Instrumental Methods of Chemical Analysis

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

SEMESTER –V

Core Courses (CC)

CC-11: Inorganic Chemistry - IV **Credits 06**

C11T: Inorganic Chemistry - IV **Credits 04**

Course Contents:

Coordination Chemistry-II

VB description and its limitations. Elementary Crystal Field Theory: splitting of d^n configurations in octahedral, square planar and tetrahedral fields, crystal field stabilization energy (CFSE) in weak and strong fields; pairing energy. Spectrochemical series. Jahn- Teller distortion. Octahedral site stabilization energy (OSSE). Metal-ligand bonding (MO concept, elementary idea), sigma- and pi-bonding in octahedral complexes (qualitative pictorial approach) and their effects on the oxidation states of transitional metals (examples). Magnetism and Colour: Orbital and spin magnetic moments, spin only moments of d^n ions and their correlation with effective magnetic moments, including orbital contribution; quenching of magnetic moment: super exchange and antiferromagnetic interactions (elementary idea with examples only); d-d transitions; L-S coupling; qualitative Orgel diagrams for $3d^1$ to $3d^9$ ions. Racah parameter. Selection rules for electronic spectral transitions; spectrochemical series of ligands; charge transfer spectra (elementary idea).

Chemistry of d- and f- block elements

Transition Elements:

General comparison of 3d, 4d and 5d elements in term of electronic configuration, oxidation states, redox properties, coordination chemistry.

Lanthanoids and Actinoids:

General Comparison on Electronic configuration, oxidation states, colour, spectral and magnetic properties; lanthanide contraction, separation of lanthanides (ion-exchange method only).

Suggested Readings:

1. Huheey, J. E.; Keiter, E.A. & Keiter, R.L. *Inorganic Chemistry, Principles of Structure and Reactivity 4th Ed.*, Harper Collins 1993, Pearson,2006.
2. Greenwood, N.N. & Earnshaw A. *Chemistry of the Elements*, Butterworth-Heinemann. 1997.
3. Cotton, F.A., Wilkinson, G., Murrillo, C. A., Bochmann, M., *Advanced Inorganic Chemistry 6th Ed. 1999.*, Wiley.

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

4. Atkin, P. *Shriver & Atkins' Inorganic Chemistry* 5th Ed. Oxford University Press (2010).
5. Purecell, K.F. and Kotz, J.C., *An Introduction to Inorganic Chemistry*, Saunders: Philadelphia, 1980.
6. Sinha, S. P., Ed., Lanthanide and Actinide Research (Journal, Vol. 1, 1986).
7. Wulfsberg, G., Principles of Descriptive Inorganic Chemistry, Brooks/Cole: Monterey, CA, 1987.

C11P : LAB **Credits 02**

Practicals :

Chromatography of metal ions

Principles involved in chromatographic separations. Paper chromatographic separation of following metal ions:

1. Ni (II) and Co (II)
2. Fe (III) and Al (III)

Gravimetry

1. Estimation of Ni(II) using Dimethylglyoxime (DMG).
2. Estimation of copper as CuSCN.
3. Estimation of Al(III) by precipitating with oxine and weighing as $Al(oxine)_3$ (aluminium oxinate).
4. Estimation of chloride.

Spectrophotometry

1. Measurement of 10Dq by spectrophotometric method.
2. Determination of λ_{max} of $[Mn(acac)_3]$ and $[Fe(acac)_3]$ complexes.

Suggested Readings:

1. Mendham, J., *A. I. Vogel's Quantitative Chemical Analysis* 6th Ed., Pearson, 2009.

CC-12: Organic Chemistry - V **Credits 06**

C12T: Organic Chemistry - V **Credits 04**

Course Contents:

Carbocycles and Heterocycles

Polynuclear hydrocarbons and their derivatives: synthetic methods include Haworth, Bardhan-Sengupta, Bogert-Cook and other useful syntheses (with mechanistic details); fixation of double bonds and Fries rule; reactions (with mechanism) of naphthalene, anthracene, phenanthrene and their derivatives.

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

Heterocyclic compounds: 5- and 6-membered rings with one heteroatom; reactivity, orientation and important reactions (with mechanism) of furan, pyrrole, thiophene and pyridine; synthesis (including retrosynthetic approach and mechanistic details): pyrrole: Knorr synthesis, Paal-Knorr synthesis, Hantzsch; furan: Paal-Knorr synthesis, Feist-Benary synthesis and its variation; thiophenes: Paal-Knorr synthesis, Hinsberg synthesis; pyridine: Hantzsch synthesis; benzo-fused 5- and 6-membered rings with one heteroatom: reactivity, orientation and important reactions (with mechanistic details) of indole, quinoline and isoquinoline; synthesis (including retrosynthetic approach and mechanistic details): indole: Fischer, Madelung and Reissert; quinoline: Skraup, Doebner- Miller, Friedlander; isoquinoline: Bischler-Napieralski synthesis.

Cyclic Stereochemistry

Alicyclic compounds: concept of I-strain; conformational analysis: cyclohexane, mono and disubstituted cyclohexane; symmetry properties and optical activity; topomerisation; ring-size and ease of cyclisation; conformation & reactivity in cyclohexane system: consideration of steric and stereoelectronic requirements; elimination (E2, E1), nucleophilic substitution (S_N1, S_N2, S_Ni, NGP), merged substitution-elimination; rearrangements; oxidation of cyclohexanol, esterification, saponification, lactonisation, epoxidation, pyrolytic *syn* elimination and fragmentation reactions.

Pericyclic reactions

Mechanism, stereochemistry, regioselectivity in case of

Electrocyclic reactions: FMO approach involving 4π- and 6π-electrons (thermal and photochemical) and corresponding cycloreversion reactions.

Cycloaddition reactions: FMO approach, Diels-Alder reaction, photochemical [2+2] cycloadditions.

Sigmatropic reactions: FMO approach, sigmatropic shifts and their order; [1,3]- and [1,5]-H shifts and [3,3]-shifts with reference to Claisen and Cope rearrangements.

Carbohydrates

Monosaccharides: Aldoses up to 6 carbons; structure of D-glucose & D-fructose (configuration & conformation); ring structure of monosaccharides (furanose and pyranose forms): Haworth representations and non-planar conformations; anomeric effect (including stereoelectronic explanation); mutarotation; epimerization; reactions (mechanisms in relevant cases): Fischer glycosidation, osazone formation, bromine-water oxidation, HNO_3 oxidation, selective oxidation of terminal $–CH_2OH$ of aldoses, reduction to alditols, Lobry de Bruyn-van Ekenstein rearrangement; stepping–up (Kiliani-Fischer method) and stepping–down (Ruff's & Wohl's methods) of aldoses;

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

end-group-interchange of aldoses; acetonide (isopropylidene) and benzylidene protections; ring-size determination; Fischer's proof of configuration of (+)-glucose.

Disaccharides: Glycosidic linkages, concept of glycosidic bond formation by glycosyl donor-acceptor; structure of sucrose, inversion of cane sugar.

Polysaccharides: starch (structure and its use as an indicator in titrimetric analysis).

Bio-molecules

Amino acids: synthesis with mechanistic details: Strecker, Gabriel, acetamido malonic ester, azlactone, Bücherer hydantoin synthesis, synthesis involving diketopiperazine; isoelectric point, zwitterions; electrophoresis, reaction (with mechanism): ninhydrin reaction, Dakin-West reaction; resolution of racemic amino acids.

Peptides: peptide linkage and its geometry; syntheses (with mechanistic details) of peptides using *N*-protection & C-protection, solid-phase (Merrifield) synthesis; peptide sequence: *C*-terminal and *N*-terminal unit determination (Edman, Sanger & 'dansyl' methods); partial hydrolysis; specific cleavage of peptides: use of CNBr.

Nucleic acids: pyrimidine and purine bases (only structure & nomenclature); nucleosides and nucleotides corresponding to DNA and RNA; mechanism for acid catalysed hydrolysis of nucleosides (both pyrimidine and purine types); comparison of alkaline hydrolysis of DNA and RNA; elementary idea of double helical structure of DNA (Watson-Crick model); complimentary base–pairing in DNA.

Suggested Readings:

1. Clayden, J., Greeves, N., Warren, S. *Organic Chemistry*, Second edition, Oxford University Press 2012.
2. Eliel, E. L. & Wilen, S. H. *Stereochemistry of Organic Compounds*, Wiley: London.
3. Nasipuri, D. *Stereochemistry of Organic Compounds*, Wiley Eastern Limited.
4. Fleming, I. *Molecular Orbitals and Organic Chemical reactions*, Reference/Studen Edition, Wiley, 2009.
5. Fleming, I. *Pericyclic Reactions*, Oxford Chemistry Primer, Oxford University Press.
6. Gilchrist, T. L. & Storr, R. C. *Organic Reactions and Orbital symmetry*, Cambridge University Press.
7. Finar, I. L. *Organic Chemistry (Volume 1)*, Dorling Kindersley (India) Pvt. Ltd.(Pearson Education).
8. Finar, I. L. *Organic Chemistry* (*Volume 2: Stereochemistry and the Chemistry of Natural Products*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
9. Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
10. Loudon, G. M. *Organic Chemistry*, Fourth edition, Oxford University Press.

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

11. James, J., Peach, J. M. *Stereochemistry at a Glance*, Blackwell Publishing, 2003.
12. Robinson, M. J. T., *Stereochemistry*, Oxford Chemistry Primer, Oxford University Press, 2005.
13. Davis, B. G., Fairbanks, A. J., *Carbohydrate Chemistry*, Oxford Chemistry Primer, Oxford University Press.
14. Joule, J. A. Mills, K. *Heterocyclic Chemistry*, Blackwell Science.
15. Acheson, R.M. *Introduction to the Chemistry of Heterocyclic compounds*, John Wiely & Sons (1976).
16. Gilchrist, T. L. *Heterocyclic Chemistry*, 3rd edition, Pearson.
17. Davies, D. T., *Heterocyclic Chemistry*, Oxford Chemistry Primer, Oxford University Press.
18. Organic Chemistry, Paula Bruice

C12P : LAB **Credits 06**

Practicals :

A. Chromatographic Separations

1. TLC separation of a mixture containing 2/3 amino acids
2. TLC separation of a mixture of dyes (fluorescein and methylene blue)
3. Column chromatographic separation of leaf pigments from spinach leaves
4. Column chromatographic separation of mixture of dyes
5. Paper chromatographic separation of a mixture containing 2/3 amino acids
6. Paper chromatographic separation of a mixture containing 2/3 sugars

B. **Spectroscopic Analysis of Organic Compounds**

1. Assignment of labelled peaks in the ^{1}H NMR spectra of the known organic compounds explaining the relative δ-values and splitting pattern.

2. Assignment of labelled peaks in the IR spectrum of the same compound explaining the relative frequencies of the absorptions (C-H, O-H, N-H, C-O, C-N, C-X, C=C, C=O, N=O, C≡C, C≡N stretching frequencies; characteristic bending vibrations are included).

3. The students must record full spectral analysis of **at least 15 (fifteen)** compounds from the following list:
(i) 4′-Bromoacetanilide (ii) 2-Bromo-4'-methylacetophenone (iii) Vanillin (iv) 2′-Methoxyacetophenone (v) 4-Aminobenzoic acid (vi) Salicylamide (vii) 2′-Hydroxyacetophenone (viii) 1,3-Dinitrobenzene (ix) *trans*-Cinnamic acid (x) *trans*-4-Nitrocinnamaldehyde (xi) Diethyl fumarate (xii) 4-Nitrobenzaldehyde (xiii) 4′-Methylacetanilide (xiv) Mesityl oxide (xv) 2-Hydroxybenzaldehyde (xvi) 4-Nitroaniline (xvii) 2-Hydroxy-3-nitrobenzaldehyde (xviii) 2,3-Dimethylbenzonitrile (xix) Pent-1-yn-3-ol (xx) 3-Nitrobenzaldehyde (xxi) 3-Ethoxy-4-hydroxybenzaldehyde (xxii) 2-Methoxybenzaldehyde (xxiii) Methyl 4-hydroxybenzoate (xxiv) Methyl 3-hydroxybenzoate (xxv) 3-Aminobenzoic acid (xxvi) Ethyl 3-aminobenzoate (xxvii) Ethyl 4-aminobenzoate (xxviii) 3-nitroanisole (xxix) 5-Methyl-2-nitroanisole (xxx) 3′-Methylacetanilide

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

Suggested Readings:

1. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N. University of Calcutta, 2003.
2. *Practical Workbook Chemistry (Honours), UGBS, Chemistry*, University of Calcutta, 2015
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.*, Pearson (2012).
4. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry*, Pearson Education.

Discipline Specific Electives (DSE)

DSE -1: Advanced Physical Chemistry **Credits 06**

DSE1T: Advanced Physical Chemistry **Credits 04**

Course Contents:

a) Crystal Structure

Bravais Lattice and Laws of Crystallography: Types of solid, Bragg's law of diffraction; Laws of crystallography (Haüy's law and Steno's law); Permissible symmetry axes in crystals; Lattice, space lattice, unit cell, crystal planes, Bravais lattice. Packing of uniform hard sphere, close packed arrangements (fcc and hcp); Tetrahedral and octahedral voids. Void space in p-type, F-type and I-type cubic systems

Crystal planes: Distance between consecutive planes [cubic, tetragonal and orthorhombic lattices]; Indexing of planes, Miller indices; calculation of d_{hkl}; Relation between molar mass and unit cell dimension for cubic system; Bragg's law (derivation)

Determination of crystal structure: Powder method; Structure of NaCl and KCl crystals

b) Statistical Thermodynamics

Configuration: Macrostates, microstates and configuration; calculation with harmonic oscillator; variation of W with E; equilibrium configuration

Boltzmann distribution: Thermodynamic probability, entropy and probability, Boltzmann distribution formula (with derivation); Applications to barometric distribution; Partition function, concept of ensemble - canonical ensemble and grand canonical ensembles

Partition function: molecular partition function and thermodynamic properties, Maxwell's speed distribution; Gibbs' paradox

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

c) Special selected topics

Specific heat of solid: Coefficient of thermal expansion, thermal compressibility of solids; Dulong –Petit's law; Perfect Crystal model, Einstein's theory – derivation from partition function, limitations; Debye's T^3 law – analysis at the two extremes

3rd law: Absolute entropy, Plank's law, Calculation of entropy, Nernst heat theorem

Adiabatic demagnetization: Approach to zero Kelvin, adiabatic cooling, demagnetization, adiabatic demagnetization – involved curves

Polymers: Classification of polymers, nomenclature, Molecular forces and chemical bonding in polymers, Texture of Polymers; Criteria for synthetic polymer formation; Relationships between functionality, extent of reaction and degree of polymerization; Mechanism and kinetics of step growth and copolymerization; Conducting polymers

Suggested Readings:

1. Castellan, G. W. *Physical Chemistry*, Narosa
2. Levine, I. N. *Physical Chemistry*, Tata McGraw-Hill
3. Moore, W. J. *Physical Chemistry*, Orient Longman
4. Atkins, P. W. & Paula, J. de *Atkins'*, *Physical Chemistry*, Oxford University Press
5. McQuarrie, D. A. & Simons, J. D. *Physical Chemistry*: A Molecular Approach, Viva Press
6. Engel, T. & Reid, P. *Physical Chemistry*, Pearson
7. Nash, L. K. *Elements of Statistical Thermodynamics*, Dover
8. Rastogi, R. P. & Misra, R.R. *An Introduction to Chemical Thermodynamics*, Vikas
9. Zemansky, M. W. & Dittman, R.H. *Heat and Thermodynamics*, Tata-McGraw-Hill
10. Billmeyer, F. W. *Textbook of Polymer Science*, John Wiley & Sons, Inc.
11. Seymour, R. B. & Carraher, C. E. *Polymer Chemistry: An Introduction*, Marcel Dekker, Inc.
12. Odian, G. *Principles of Polymerization*, Wiley
13. Billmeyer, F. W. *Textbook of Polymer Science*, Wiley Interscience, 1971.

DSE1P: Advanced Physical Chemistry (Lab) Credits 02

Practicals :

Computer programs based on numerical methods for

Programming 1: Roots of equations: (e.g. volume of van der Waals gas and comparison with ideal gas, pH of a weak acid)

Programming 2: Numerical differentiation (e.g., change in pressure for small change in volume of a van der Waals gas, potentiometric titrations)

Programming 3: Numerical integration (e.g. entropy/ enthalpy change from heat capacity data), probability distributions (gas kinetic theory) and mean values

Programming 4: Matrix operations (Application of Gauss-Siedel method in colourimetry)

Programming 5: Simple exercises using molecular visualization software

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

Suggested Readings:

1. Mc Quarrie, D. A. *Mathematics for Physical Chemistry* University Science Books (2008)
2. Mortimer, R. *Mathematics for Physical Chemistry*. 3rd Ed. Elsevier (2005)
3. Yates, P. *Chemical Calculations*. 2nd Ed. CRC Press (2007)
4. Harris, D. C. *Quantitative Chemical Analysis*. 6th Ed., Freeman (2007) Chapters 3-5
5. Noggle, J. H. *Physical Chemistry on a Microcomputer*. Little Brown & Co. (1985)

DSE-2: Analytical Methods in Chemistry **Credits 06**

DSE2T: Analytical Methods in Chemistry **Credits 04**

Course Contents:

Qualitative and quantitative aspects of analysis:

Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression, normal law of distribution if indeterminate errors, statistical test of data; F, Q and t test, rejection of data, and confidence intervals.

Optical methods of analysis:

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules, validity of Beer-Lambert's law.

UV-Visible Spectrometry: Basic principles of instrumentation (choice of source, monochromator and detector) for single and double beam instrument;
Basic principles of quantitative analysis: estimation of metal ions from aqueous solution, geometrical isomers, keto-enol tautomers. Determination of composition of metal complexes using Job's method of continuous variation and mole ratio method.
Infrared Spectrometry: Basic principles of instrumentation (choice of source, monochromator & detector) for single and double beam instrument; sampling techniques.

Structural illustration through interpretation of data, Effect and importance of isotope substitution.

Flame Atomic Absorption and Emission Spectrometry: Basic principles of instrumentation (choice of source, monochromator, detector, choice of flame and Burner designs. Techniques of atomization and sample introduction; Method of background correction, sources of chemical interferences and their method of removal. Techniques for the quantitative estimation of trace level of metal ions from water samples.

Thermal methods of analysis:

Theory of thermogravimetry (TG), basic principle of instrumentation.

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

Techniques for quantitative estimation of Ca and Mg from their mixture.

Electroanalytical methods:

Classification of electroanalytical methods, basic principle of pH metric, potentiometric and conductometric titrations. Techniques used for the determination of equivalence points. Techniques used for the determination of pKa values.

Separation techniques:

Solvent extraction: Classification, principle and efficiency of the technique.

Mechanism of extraction: extraction by solvation and chelation.

Technique of extraction: batch, continuous and counter current extractions.

Qualitative and quantitative aspects of solvent extraction: extraction of metal ions from aqueous solution, extraction of organic species from the aqueous and nonaqueous media.

Chromatography: Classification, principle and efficiency of the technique.

Mechanism of separation: adsorption, partition & ion exchange.

Development of chromatograms: frontal, elution and displacement methods.

Qualitative and quantitative aspects of chromatographic methods of analysis: IC, GLC, GPC, TLC and HPLC.

Stereoisomeric separation and analysis: Measurement of optical rotation, calculation of Enantiomeric excess (ee)/ diastereomeric excess (de) ratios and determination of enantiomeric composition using NMR, Chiral solvents and chiral shift reagents. Chiral chromatographic techniques using chiral columns (GC and HPLC).

Role of computers in instrumental methods of analysis.

Suggested Readings:

1. Mendham, J., *A. I. Vogel's Quantitative Chemical Analysis 6th Ed.*, Pearson, 2009.
2. Willard, H.H. *et al.*: *Instrumental Methods of Analysis*, 7th Ed. Wardsworth Publishing Company, Belmont, California, USA, 1988.
3. Christian, G.D. *Analytical Chemistry*, 6th Ed. John Wiley & Sons, New York, 2004.
4. Harris, D.C.: *Exploring Chemical Analysis*, 9th Ed. New York, W.H. Freeman, 2016.
5. Khopkar, S.M. *Basic Concepts of Analytical Chemistry*. New Age International Publisher, 2009.
6. Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

7. Mikes, O. *Laboratory Hand Book of Chromatographic & Allied Methods*, Elles Harwood Series on Analytical Chemistry, John Wiley & Sons, 1979.
8. Ditts, R.V. Analytical Chemistry; Methods of separation, van Nostrand, 1974.

DSE2P: Analytical Methods in Chemistry (lab) **Credits 02**

Practical :

I. Separation Techniques

Chromatography:

(a) Separation of mixtures

Separation and identification of the monosaccharides present in the given mixture (glucose & fructose) by paper chromatography. Reporting the R_f values.

(b) Separate a mixture of Sudan yellow and Sudan Red by TLC technique and identify them on the basis of their Rf values.

(c) Chromatographic separation of the active ingredients of plants, flowers and juices by TLC

II. Solvent Extractions:

To separate a mixture of Ni^{2+} & Fe^{2+} by complexation with DMG and extracting the Ni^{2+}-DMG complex in chloroform, and determine its concentration by spectrophotometry.

Analysis of soil:

(i) Determination of pH of soil.
(ii) Estimation of calcium, magnesium, phosphate

Ion exchange:
Determination of exchange capacity of cation exchange resins and anion exchange resins.

III. Spectrophotometry

1. Determination of pKa values of indicator using spectrophotometry.
2. Determination of chemical oxygen demand (COD).
3. Determination of Biological oxygen demand (BOD).

Suggested Readings:

1. Mendham, J., *A. I. Vogel's Quantitative Chemical Analysis 6th Ed.*, Pearson, 2009.
2. Willard, H.H. *et al.*: *Instrumental Methods of Analysis*, 7th Ed. Wardsworth Publishing Company, Belmont, California, USA, 1988.
3. Christian, G.D. *Analytical Chemistry*, 6th Ed. John Wiley & Sons, New York, 2004.
4. Harris, D.C. *Exploring Chemical Analysis*, 9th Ed. New York, W.H. Freeman, 2016.

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

5. Khopkar, S.M. *Basic Concepts of Analytical Chemistry*. New Age International Publisher, 2009.
6. Skoog, D.A. Holler F.J. and Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Edition.
7. Mikes, O. & Chalmes, R.A. *Laboratory Handbook of Chromatographic & Allied Methods*, Elles Harwood Ltd. London.
8. Ditts, R.V. *Analytical Chemistry: Methods of separation.* Van Nostrand, New York, 1974.

Or

DSE-2: Instrumental Methods of Chemical Analysis **Credits 06**

DSE2T: Instrumental Methods of Chemical Analysis **Credits 04**

Course Contents:

Introduction to spectroscopic methods of analysis:

Recap of the spectroscopic methods covered in detail in the core chemistry syllabus: Treatment of analytical data, including error analysis. Classification of analytical methods and the types of instrumental methods. Consideration of electromagnetic radiation.

Molecular spectroscopy:

Infrared spectroscopy:

Interactions with molecules: absorption and scattering. Means of excitation (light sources), separation of spectrum (wavelength dispersion, time resolution), detection of the signal (heat, differential detection), interpretation of spectrum (qualitative, mixtures, resolution), advantages of Fourier Transform (FTIR). Samples and results expected. Applications: Issues of quality assurance and quality control, Special problems for portable instrumentation and rapid detection.

UV-Visible/ Near IR – emission, absorption, fluorescence and photoaccoustic. Excitation sources (lasers, time resolution), wavelength dispersion (gratings, prisms, interference filters, laser, placement of sample relative to dispersion, resolution), Detection of signal (photocells, photomultipliers, diode arrays, sensitivity and S/N), Single and Double Beam instruments, Interpretation (quantification, mixtures, absorption vs. fluorescence and the use of time, photoaccoustic, fluorescent tags).

Separation techniques:

Chromatography: Gas chromatography, liquid chromatography, supercritical fluids, Importance of column technology (packing, capillaries), Separation based on increasing number of factors (volatility, solubility, interactions with stationary phase, size, electrical field), Detection: simple vs. specific (gas and liquid), Detection as a means of further analysis (use of tags and coupling to IR and MS), Electrophoresis (plates and capillary) and use with DNA analysis.

Elemental analysis:

Mass spectrometry (electrical discharges).

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

Atomic spectroscopy: Atomic absorption, Atomic emission, and Atomic fluorescence.

Excitation and getting sample into gas phase (flames, electrical discharges, plasmas), Wavelength separation and resolution (dependence on technique), Detection of radiation (simultaneous/scanning, signal noise), Interpretation (errors due to molecular and ionic species, matrix effects, other interferences).

NMR spectroscopy:
Principle, Instrumentation, Factors affecting chemical shift, Spin-coupling, Applications.

Electroanalytical Methods:

Potentiometry & Voltammetry

Radiochemical Methods:
Elementary idea

X-ray analysis and electron spectroscopy (surface analysis):
Elementary idea

Suggested Readings:

1. D.A. Skoog, F.J. Holler & S. Crouch (ISBN 0-495-01201-7) *Principles of Instrumental Analysis*, Cengage Learning India Edition, 2007.
2. Willard, Merritt, Dean, Settle, *Instrumental Methods of Analysis*, 7th ed, IBH Book House, New Delhi.
3. Atkins, P.W & Paula, J.D. *Physical Chemistry*, 10th Ed., Oxford University Press (2014).
4. Kakkar, R. *Atomic and Molecular Spectroscopy: Concepts and Applications.* Cambridge University Press, 2015.
5. Castellan, G. W. *Physical Chemistry 4th Ed.*, Narosa (2004).
6. Banwell, C. N. & McCash, E. M. *Fundamentals of Molecular Spectroscopy* 4th Ed.
7. Smith, B.C. *Infrared Spectral Interpretations: A Systematic Approach.* CRC Press, 1998.
8. Moore, W.J., *Physical Chemistry* Orient Blackswan, 1999.

DSE2P: Instrumental Methods of Chemical Analysis (Lab)

Credits 02

Practical :

1. Safety Practices in the Chemistry Laboratory
2. Determination of the isoelectric pH of a protein.
3. Titration curve of an amino acid.
4. Determination of the void volume of a gel filtration column.
5. Determination of a Mixture of Cobalt and Nickel (UV/Vis spec.)
6. Study of Electronic Transitions in Organic Molecules (i.e., acetone in water)
7. IR Absorption Spectra (Study of Aldehydes and Ketones)
8. Determination of Calcium, Iron, and Copper in Food by Atomic Absorption
9. Quantitative Analysis of Mixtures by Gas Chromatography (i.e., chloroform and carbon tetrachloride)

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

10. Separation of Carbohydrates by HPLC
11. Determination of Caffeine in Beverages by HPLC
12. Potentiometric Titration of a Chloride-Iodide Mixture
13. Cyclic Voltammetry of the Ferrocyanide/ Ferricyanide Couple
14. Nuclear Magnetic Resonance
15. Use of fluorescence to do “presumptive tests” to identify blood or other body fluids.
16. Use of “presumptive tests” for anthrax or cocaine
17. Collection, preservation, and control of blood evidence being used for DNA testing
18. Use of capillary electrophoresis with laser fluorescence detection for nuclear DNA (Y chromosome only or multiple chromosome)
19. Use of sequencing for the analysis of mitochondrial DNA
20. Laboratory analysis to confirm anthrax or cocaine
21. Detection in the field and confirmation in the laboratory of flammable accelerants or explosives
22. Detection of illegal drugs or steroids in athletes
23. Detection of pollutants or illegal dumping
24. Fibre analysis

At least 10 experiments to be performed.

Suggested Readings:

1. Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
2. Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA, 1988

Downloaded from Vidyasagar University by 47.11.222.60 on 22 January 2020 : 18:35:04; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons5.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Chemistry [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 13		**C13T:** Inorganic Chemistry-V	Core Course-13	4	0	0	6	75
		- **Lab**		0	0	4		
CC- 14		**C13T**: Physical Chemistry-V	Core Course-14	4	0	0	6	75
		- **Lab**		0	0	4		
DSE-3		**DSE3T**: Green Chemistry **Or** Inorganic Materials of Industrial Importance	Discipline Specific Electives -3	4	0	0	6	75
		- **Lab**		0	0	4		
DSE-4		**DSE4T:** Polymer Chemistry	Discipline Specific Electives -4	4	0	0	6	75
		- **Lab**		0	0	4		
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

Semester-VI

List of Core Course (CC)

CC-13: Inorganic Chemistry-V

CC-14: Physical Chemistry-V

Discipline Specific Electives (DSE)

DSE-3: Green Chemistry
Or
DSE- 3: Inorganic Materials of Industrial Importance

DSE-4: Polymer Chemistry

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

SEMESTER –VI

Core Courses (CC)

CC-13: Inorganic Chemistry-V — Credits 06

C13T: Inorganic Chemistry-V — Credits 04

Course Contents:

Bioinorganic Chemistry

Elements of life: essential and beneficial elements, major, trace and ultratrace elements. Basic chemical reactions in the biological systems and the role of metal ions (specially Na^+, K^+, Mg^{2+}, Ca^{2+}, $Fe^{3+/2+}$, $Cu^{2+/+}$, and Zn^{2+}). Metal ion transport across biological membrane Na^+/ K^+-ion pump. Dioxygen molecule in life. Dioxygen management proteins: Haemoglobin, Myoglobin, Hemocyanine and Hemerythrin. Electron transfer proteins: Cytochromes and Ferredoxins. Hydrlytic enzymes: carbonate bicarbonate buffering system and carbonic anhydrase and carboxyanhydrase A. Biological nitrogen fixation, Photosynthesis: Photosystem-I and Photosystem-II. Toxic metal ions and their effects, chelation therapy (examples only), Pt and Au complexes as drugs (examples only), metal dependent diseases (examples only)

Organometallic Chemistry

Definition and classification of organometallic compounds on the basis of bond type. Concept of hapticity of organic ligands. 18-electron and 16-electron rules (pictorial MO approach). Applications of 18-electron rule to metal carbonyls, nitrosyls, cyanides. General methods of preparation of mono and binuclear carbonyls of 3d series. Structures of mononuclear and binuclear carbonyls. pi-acceptor behaviour of CO, synergic effect and use of IR data to explain extent of back bonding. Zeise's salt: Preparation, structure, evidences of synergic effect. Ferrocene: Preparation and reactions (acetylation, alkylation, metallation, Mannich Condensation). Reactions of organometallic complexes: substitution, oxidative addition, reductive elimination and insertion reactions.

Catalysis by Organometallic Compounds

Study of the following industrial processes

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

1. Alkene hydrogenation (Wilkinson's Catalyst)

2. Hydroformylation

3. Wacker Process

4. Synthetic gasoline (Fischer Tropsch reaction)

5. Ziegler-Natta catalysis for olefin polymerization.

Reaction Kinetics and Mechanism

Introduction to inorganic reaction mechanisms. Substitution reactions in square planar complexes, Trans- effect and its application in complex synthesis, theories of trans effect, Mechanism of nucleophilic substitution in square planar complexes, Thermodynamic and Kinetic stability, Kinetics of octahedral substitution, Ligand field effects and reaction rates, Mechanism of substitution in octahedral complexes.

Suggested Readings:

1. Lippard, S.J. & Berg, J.M. *Principles of Bioinorganic Chemistry* Panima Publishing Company 1994.
2. Huheey, J. E.; Keiter, E.A. & Keiter, R.L. *Inorganic Chemistry, Principles of Structure and Reactivity 4th Ed.*, Harper Collins 1993, Pearson,2006.
3. Greenwood, N.N. & Earnshaw A. *Chemistry of the Elements*, Butterworth-Heinemann, 1997.
4. Cotton, F.A., Wilkinson, G., Murrillo, C. A., Bochmann, M., *Advanced Inorganic Chemistry 6th Ed. 1999.*, Wiley.
5. Bertini, I., Gray, H. B., Lippard, S.J., Valentine, J. S., Viva, 2007.
6. Basolo, F, and Pearson, R.C. *Mechanisms of Inorganic Chemistry*, John Wiley & Sons, NY, 1967.
7. Purecell, K.F. and Kotz, J.C., *An Introduction to Inorganic Chemistry*, Saunders: Philadelphia, 1980.
8. Powell, P. *Principles of Organometallic Chemistry*, Chapman and Hall, 1988.
9. Collman, J. P. *et al. Principles and Applications of Organotransition Metal Chemistry*. Mill Valley, CA: University Science Books, 1987.
10. Crabtree, R. H. *The Organometallic Chemistry of the Transition Metals.* New York, NY: John Wiley, 2000.

C13P: LAB Credits 02

Practical:

Qualitative semimicro analysis of mixtures containing four radicals. Emphasis should be given to the understanding of the chemistry of different reactions and to assign the most probable composition.

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

Cation Radicals: Na^{+}, K^{+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Al^{3+}, Cr^{3+}, Mn^{2+}/Mn^{4+}, Fe^{3+}, Co^{2+}/Co^{3+}, Ni^{2+}, Cu^{2+}, Zn^{2+}, Pb^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}/Sn^{4+}, As^{3+}/As^{5+}, $Sb^{3+/5+}$, NH_4^{+}, Mg^{2+}.

Anion Radicals: F^{-}, Cl^{-}, Br^{-}, BrO_3^{-}, I^{-}, IO_3^{-}, SCN^{-}, S^{2-}, SO_4^{2-}, NO_3^{-}, NO_2^{-}, PO_4^{3-}, AsO_4^{3--}, BO_3^{3-}, CrO_4^{2-} / $Cr_2O_7^{2-}$, $Fe(CN)_6^{4-}$, $Fe(CN)_6^{3-}$.

Insoluble Materials: Al_2O_3(ig), Fe_2O_3(ig), Cr_2O_3(ig), SnO_2, $SrSO_4$, $BaSO_4$, CaF_2, $PbSO_4$.

Suggested Readings:

1. Svehla, G., *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.

CC-14: Physical Chemistry-V — Credits 06

C14T: Physical Chemistry-V — Credits 04

Course Contents:

a) Molecular Spectroscopy

Interaction of electromagnetic radiation with molecules and various types of spectra; Born-Oppenheimer approximation

Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations, anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules, modes of vibration, concept of group frequencies; Diatomic vibrating rotator, P, Q, R branches

Raman spectroscopy: Qualitative treatment of Rotational Raman effect; Effect of nuclear spin, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, rule of mutual exclusion

Nuclear Magnetic Resonance (NMR) spectroscopy: Principles of NMR spectroscopy, Larmor precession, chemical shift and low resolution spectra, different scales, spin-spin coupling and high resolution spectra, interpretation of PMR spectra of organic molecules

Electron Spin Resonance (ESR) spectroscopy: Its principle, hyperfine structure, ESR of simple radicals

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

b) Photochemistry

Lambert-Beer's law: Characteristics of electromagnetic radiation, Lambert-Beer's law and its limitations, physical significance of absorption coefficients; Laws of photochemistry, Stark-Einstein law of photochemical equivalence quantum yield, actinometry, examples of low and high quantum yields

Photochemical Processes: Potential energy curves (diatomic molecules), Frank-Condon principle and vibrational structure of electronic spectra; Bond dissociation and principle of determination of dissociation energy (ground state); Decay of excited states by radiative and non-radiative paths; Pre-dissociation; Fluorescence and phosphorescence, Jablonskii diagram;

Rate of Photochemical processes: Photochemical equilibrium and the differential rate of photochemical reactions, Photostationary state; HI decomposition, H_2-Br_2 reaction, dimerisation of anthracene; photosensitised reactions, quenching; Role of photochemical reactions in biochemical processes, photostationary states, chemiluminescence

c) Surface phenomenon

Surface tension and energy: Surface tension, surface energy, excess pressure, capillary rise and surface tension; Work of cohesion and adhesion, spreading of liquid over other surface; Vapour pressure over curved surface; Temperature dependence of surface tension

Adsorption: Physical and chemical adsorption; Freundlich and Langmuir adsorption isotherms; multilayer adsorption and BET isotherm (no derivation required); Gibbs adsorption isotherm and surface excess; Heterogenous catalysis (single reactant); Zero order and fractional order reactions;

Colloids: Lyophobic and lyophilic sols, Origin of charge and stability of lyophobic colloids, Coagulation and Schultz-Hardy rule, Zeta potential and Stern double layer (qualitative idea), Tyndall effect; Electrokinetic phenomena (qualitative idea only); Determination of Avogadro number by Perrin's method; Stability of colloids and zeta potential; Micelle formation

Suggested Readings:

1. Castellan, G. W. Physical Chemistry, Narosa
2. Levine, I. N. Physical Chemistry, Tata McGraw-Hill
3. Atkins, P. W. & Paula, J. de Atkin's, Physical Chemistry, Oxford University Press
4. McQuarrie, D. A. & Simons, J. D. Physical Chemistry: A Molecular Approach, Viva Press
5. Mortimer, R. G. Physical Chemistry, Elsevier
6. Laidler, K. J. Chemical Kinetics, Pearson
7. Banwell, C. N. Fundamentals of Molecular Spectroscopy, Tata-McGraw-Hill
8. Barrow, G. M. Molecular Spectroscopy, McGraw-Hill
9. Hollas, J.M. Modern Spectroscopy, Wiley India
10. McHale, J. L. Molecular Spectroscopy, Pearson Education

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

11. Wayne, C. E. & Wayne, R. P. Photochemistry, OUP
12. Brown, J. M. Molecular Spectroscopy, OUP
13. Levine, I. N. Quantum Chemistry, PHI
14. Atkins, P. W. Molecular Quantum Mechanics, Oxford

C14P : LAB Credits 02

Practical

Experiment 1: Determination of surface tension of a liquid using Stalagmometer

Experiment 2: Determination of CMC from surface tension measurements

Experiment 3: Verification of Beer and Lambert's Law for $KMnO_4$ and $K_2Cr_2O_7$ solution

Experiment 4: Study of kinetics of $K_2S_2O_8$ + KI reaction, spectrophotometrically

Experiment 5: Determination of pH of unknown buffer, spectrophotometrically

Experiment 6: Spectrophotometric determination of CMC

Suggested Readings:

1. Viswanathan, B., Raghavan, P.S. *Practical Physical Chemistry* Viva Books (2009)
2. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson
3. Harris, D. C. *Quantitative Chemical Analysis*. 6th Ed., Freeman (2007)
4. Palit, S.R., De, S. K. *Practical Physical Chemistry* Science Book Agency
5. *University Hand Book of Undergraduate Chemistry Experiments*, edited by Mukherjee, G. N., University of Calcutta
6. Levitt, B. P. edited *Findlay's Practical Physical Chemistry* Longman Group Ltd.
7. Gurtu, J. N., Kapoor, R., *Advanced Experimental Chemistry* S. Chand & Co. Ltd.

Discipline Specific Electives (DSE)

DSE-3: Green Chemistry Credits 06

DSE3T: Green Chemistry **Credits 04**

Course Contents:

Introduction to Green Chemistry:

What is Green Chemistry? Need for Green Chemistry. Goals of Green Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry

Principles of Green Chemistry and Designing a Chemical synthesis:

Twelve principles of Green Chemistry with their explanations and examples and special

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

emphasis on the following:

- Designing a Green Synthesis using these principles; Prevention of Waste/ byproducts; maximum incorporation of the materials used in the process into the final products , Atom Economy, calculation of atom economy of the rearrangement, addition, substitution and elimination reactions.
- Prevention/ minimization of hazardous/ toxic products reducing toxicity. risk =

  (function) hazard × exposure; waste or pollution prevention hierarchy.

- Green solvents– supercritical fluids, water as a solvent for organic reactions, ionic liquids, fluorous biphasic solvent, PEG, solventless processes, immobilized solvents and how to compare greenness of solvents.

- Energy requirements for reactions – alternative sources of energy: use of microwaves and ultrasonic energy.
- Selection of starting materials; avoidance of unnecessary derivatization – careful use of blocking/protecting groups.

- Use of catalytic reagents (wherever possible) in preference to stoichiometric reagents; catalysis and green chemistry, comparison of heterogeneous and homogeneous catalysis, biocatalysis, asymmetric catalysis and photocatalysis.

- Prevention of chemical accidents designing greener processes, inherent safer design, principle of ISD "What you don't have cannot harm you", greener alternative to Bhopal Gas Tragedy (safer route to carcarbaryl) and Flixiborough accident (safer route to cyclohexanol) subdivision of ISD, minimization, simplification, substitution, moderation and limitation.

- Strengthening/ development of analytical techniques to prevent and minimize the generation of hazardous substances in chemical processes.

Examples of Green Synthesis/ Reactions and some real world cases:

1. Green Synthesis of the following compounds: adipic acid, catechol, disodium iminodiacetate (alternative to Strecker synthesis)

2. Microwave assisted reactions in water: Hofmann Elimination, methyl benzoate to benzoic acid, oxidation of toluene and alcohols; microwave assisted reactions in organic solvents Diels-Alder reaction and Decarboxylation reaction

3. Ultrasound assisted reactions: sonochemical Simmons-Smith Reaction (Ultrasonic alternative to Iodine)
4 Surfactants for carbon dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments.

5 Designing of Environmentally safe marine antifoulant.
6 Rightfit pigment: synthetic azopigments to replace toxic organic and inorganic pigments.

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

7 An efficient, green synthesis of a compostable and widely applicable plastic (poly lactic acid) made from corn.

8 Healthier Fats and oil by Green Chemistry: Enzymatic Inter esterification for production of no Trans-Fats and Oils

9 Development of Fully Recyclable Carpet: Cradle to Cradle Carpeting

Future Trends in Green Chemistry:

Oxidation reagents and catalysts; Biomimetic, multifunctional reagents; Combinatorial green chemistry; Proliferation of solventless reactions; co crystal controlled solid state synthesis (C^2S^3); Green chemistry in sustainable development.

Suggested Readings:

1. Anastas, P.T. & Warner, J.K.: *Green Chemistry - Theory and Practical*, Oxford University Press (1998).
2. Matlack, A.S. *Introduction to Green Chemistry*, Marcel Dekker (2001).
3. Cann, M.C. & Connely, M.E. *Real-World cases in Green Chemistry*, American Chemical Society, Washington (2000).
4. Ryan, M.A. & Tinnesand, M. *Introduction to Green Chemistry*, American Chemical Society, Washington (2002).
5. Lancaster, M. *Green Chemistry: An Introductory Text* RSC Publishing, 2nd Edition, 2010.

DSE3P: LAB Credits 02

Practical:

1. Safer starting materials

- Preparation and characterization of nanoparticles of gold using tea leaves.

2. Using renewable resources

- Preparation of biodiesel from vegetable/ waste cooking oil.

3. Avoiding waste

Principle of atom economy

- Use of molecular model kit to stimulate the reaction to investigate how the atom economy can illustrate Green Chemistry.
- Preparation of propene by two methods can be studied

$$\text{Triethylamine ion} + OH^- \rightarrow \text{propene} + \text{trimethyl propene} + \text{water}$$

$$\text{1-propanol} \xrightarrow{H_2SO_4/\Delta} \text{propene} + \text{water}$$

- Other types of reactions, like addition, elimination, substitution and rearrangement should also be studied for the calculation of atom economy.

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

3. Use of enzymes as catalysts

- Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide.

4. Alternative Green solvents

- Extraction of D-limonene from orange peel using liquid CO2 prepared form dry ice. Mechanochemical solvent free synthesis of azomethines

6. Alternative sources of energy

- Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper (II).
- Photoreduction of benzophenone to benzopinacol in the presence of sunlight.

Suggested Readings:

1. Anastas, P.T & Warner, J.C. *Green Chemistry: Theory and Practice,* Oxford University Press (1998).
2. Kirchoff, M. & Ryan, M.A. *Greener approaches to undergraduate chemistry experiment*. American Chemical Society, Washington DC (2002).
3. Ryan, M.A. *Introduction to Green Chemistry*, Tinnesand; (Ed), American Chemical Society, Washington DC (2002).
4. Sharma, R.K.; Sidhwani, I.T. & Chaudhari, M.K. I.K. *Green Chemistry Experiment: A monograph International Publishing House Pvt Ltd. New Delhi*. Bangalore CISBN 978-93-81141-55-7 (2013).
5. Cann, M.C. & Connelly, M. E. *Real world cases in Green Chemistry*, American Chemical Society (2008).
6. Cann, M. C. & Thomas, P. *Real world cases in Green Chemistry*, American Chemical Society (2008).
7. Lancaster, M. *Green Chemistry: An Introductory Text* RSC Publishing, 2nd Edition, 2010.
8. Pavia, D.L., Lampman, G.M., Kriz, G.S. & Engel, R.G. *Introduction to Organic Laboratory Techniques: A Microscale and Macro Scale Approach,* W.B.Saunders, 1995.

Or

DSE- 3: Inorganic Materials of Industrial Importance Credits 06

DSE3T: Inorganic Materials of Industrial Importance Credits 04

Course Contents:

1. Silicate Industries:

Glass: Glassy state and its properties, classification (silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

glasses: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, fluorosilicate, coloured glass, photosensitive glass.

Ceramics: Important clays and feldspar, ceramic, their types and manufacture. High technology ceramics and their applications, superconducting and semiconducting oxides, fullerenes carbon nanotubes and carbon fibre.

Cements: Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.

2. Fertilizers:

Different types of fertilizers. Manufacture of the following fertilizers: Urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates; polyphosphate, superphosphate, compound and mixed fertilizers, potassium chloride, potassium sulphate.

3. Surface Coatings:

Objectives of coatings surfaces, preliminary treatment of surface, classification of surface coatings. Paints and pigments-formulation, composition and related properties. Oil paint, Vehicle, modified oils, Pigments, toners and lakes pigments, Fillers, Thinners, Enamels, emulsifying agents. Special paints (Heat retardant, Fire retardant, Eco-friendly paint, Plastic paint), Dyes, Wax polishing, Water and Oil paints, additives, Metallic coatings (electrolytic and electroless), metal spraying and anodizing.

4. Batteries:

Primary and secondary batteries, battery components and their role, Characteristics of Battery. Working of following batteries: Pb acid, Li-Battery, Solid state electrolyte battery. Fuel cells, Solar cell and polymer cell.

5. Alloys:

Classification of alloys, ferrous and non-ferrous alloys, Specific properties of elements in alloys. Manufacture of Steel (removal of silicon decarbonization, demanganization, desulphurization dephosphorisation) and surface treatment (Ar and heat treatment, nitriding, carburizing). Composition and properties of different types of steels.

6. Chemistry of Nano Materials including Graphene. Syntheses, characterization and applications. Plasmonic materials, Semiconductor, Band gap, Types of Semiconductors, Colour Centres.

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

7. Catalysis:

General principles and properties of catalysts, homogenous catalysis (catalytic steps and examples) and heterogenous catalysis (catalytic steps and examples) and their industrial applications, Deactivation or regeneration of catalysts.

Phase transfer catalysts, application of zeolites as catalysts.

8. Chemical explosives:

Origin of explosive properties in organic compounds, preparation and explosive properties of lead azide, PETN, cyclonite (RDX). Introduction to rocket propellants.

Suggested Readings:

1. E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
2. R. M. Felder, R. W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
3. W. D. Kingery, H. K. Bowen, D. R. Uhlmann: *Introduction to Ceramics*, Wiley Publishers, New Delhi.
4. J. A. Kent: Riegel's *Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
5. P. C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
6. R. Gopalan, D. Venkappayya, S. Nagarajan: *Engineering Chemistry*, Vikas Publications, New Delhi.
7. Sharma, B.K. & Gaur, H. *Industrial Chemistry*, Goel Publishing House, Meerut (1996).

DSE3P: LAB **Credits 02**

Practical:

1. Determination of free acidity in ammonium sulphate fertilizer.
2. Estimation of Calcium in Calcium ammonium nitrate fertilizer.
3. Estimation of phosphoric acid in superphosphate fertilizer.
4. Electroless metallic coatings on ceramic and plastic material.
5. Determination of composition of dolomite (by complexometric titration).
6. Analysis of (Cu, Ni); (Cu, Zn) in alloy or synthetic samples.
7. Analysis of Cement.
8. Preparation of pigment (zinc oxide).

Suggested Readings:

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

1. E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.

2. R. M. Felder, R. W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
3. W. D. Kingery, H. K. Bowen, D. R. Uhlmann: *Introduction to Ceramics*, Wiley Publishers, New Delhi.

4. J. A. Kent: Riegel's *Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
5. P. C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
6. R. Gopalan, D. Venkappayya, S. Nagarajan: *Engineering Chemistry*, Vikas
7. Publications, New Delhi.
8. Sharma, B.K. & Gaur, H. *Industrial Chemistry*, Goel Publishing House, Meerut (1996).

DSE-4: Polymer Chemistry — Credits 06

DSE4T: Polymer Chemistry — Credits 04

Course Contents:

Introduction and history of polymeric materials:

Different schemes of classification of polymers, Polymer nomenclature, Molecular forces and chemical bonding in polymers, Texture of Polymers.

Functionality and its importance:

Criteria for synthetic polymer formation, classification of polymerization processes, Relationships between functionality, extent of reaction and degree of polymerization. Bi-functional systems, Poly-functional systems.

Kinetics of Polymerization:

Mechanism and kinetics of step growth, radical chain growth, ionic chain (both cationic and anionic) and coordination polymerizations, Mechanism and kinetics of copolymerization, polymerization techniques.

Crystallization and crystallinity:

Determination of crystalline melting point and degree of crystallinity, Morphology of crystalline polymers, Factors affecting crystalline melting point.

Nature and structure of polymers:

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

Structure Property relationships.

Determination of molecular weight of polymers:

(*Mn*, *Mw*, etc) by end group analysis, viscometry, light scattering and osmotic pressure methods. Molecular weight distribution and its significance. Polydispersity index.

Glass transition temperature (Tg) and determination of Tg:

Free volume theory, WLF equation, Factors affecting glass transition temperature (Tg).

Polymer Solution:

Criteria for polymer solubility, Solubility parameter, Thermodynamics of polymer solutions, entropy, enthalpy, and free energy change of mixing of polymers solutions, Flory- Huggins theory, Lower and Upper critical solution temperatures.

Properties of Polymer:

(Physical, thermal, Flow & Mechanical Properties).

Brief introduction to preparation, structure, properties and application of the following polymers: polyolefins, polystyrene and styrene copolymers, poly(vinyl chloride) and related polymers, poly(vinyl acetate) and related polymers, acrylic polymers, fluoro polymers,

polyamides and related polymers. Phenol formaldehyde resins (Bakelite, Novalac), polyurethanes, silicone polymers, polydienes,

Polycarbonates, Conducting Polymers, [polyacetylene, polyaniline, poly(p-phenylene sulphide polypyrrole, polythiophene)].

Suggested Readings:

1. R.B. Seymour & C.E. Carraher: *Polymer Chemistry: An Introduction*, Marcel Dekker, Inc. New York, 1981.
2. G. Odian: *Principles of Polymerization*, 4th Ed. Wiley, 2004.
3. F.W. Billmeyer: *Textbook of Polymer Science*, 2nd Ed. Wiley Interscience, 1971.
4. P. Ghosh: Polymer Science & Technology, Tata McGraw-Hill Education, 1991.
5. R.W. Lenz: *Organic Chemistry of Synthetic High Polymers.* Interscience Publishers, New York, 1967.

DSE4P: LAB Credits 02

Practical:

Polymer synthesis

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

1. Free radical solution polymerization of styrene (St) / Methyl Methacrylate (MMA) / Methyl Acrylate (MA) / Acrylic acid (AA).
    a) Purification of monomer
    b) Polymerization using benzoyl peroxide (BPO) / 2,2'-azo-bis-isobutylonitrile (AIBN)
    2. Preparation of nylon 66/6
    3. Interfacial polymerization, preparation of polyester from isophthaloyl chloride (IPC) and phenolphthalein
    4. Redox polymerization of acrylamide
    5. Precipitation polymerization of acrylonitrile
    6. Preparation of urea-formaldehyde resin
    7. Preparations of novalac resin/ resold resin.
    8. Microscale Emulsion Polymerization of Poly(methylacrylate).

Polymer characterization

1. Determination of molecular weight by viscometry:
    (a) Polyacrylamide-aq.$NaNO_2$ solution

    (b) (Poly vinyl proplylidine (PVP) in water
2. Determination of the viscosity-average molecular weight of poly(vinyl alcohol) (PVOH) and the fraction of "head-to-head" monomer linkages in the polymer.
3. Determination of molecular weight by end group analysis: Polyethylene glycol (PEG) (OH group).
4. Testing of mechanical properties of polymers.
5. Determination of hydroxyl number of a polymer using colorimetric method.

Polymer analysis

1. Estimation of the amount of HCHO in the given solution by sodium sulphite method
2. Instrumental Techniques
3. IR studies of polymers
4. DSC analysis of polymers
5. Preparation of polyacrylamide and its electrophoresis

*at least 7 experiments to be carried out.

Suggested Readings:

1. M.P. Stevens, *Polymer Chemistry: An Introduction*, 3rd Ed., Oxford University Press, 1999.
2. H.R. Allcock, F.W. Lampe & J.E. Mark, *Contemporary Polymer Chemistry*, 3rd ed. Prentice-Hall (2003)

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

3. F.W. Billmeyer, *Textbook of Polymer Science*, 3rd ed. Wiley-Interscience (1984)
4. J.R. Fried, *Polymer Science and Technology*, 2nd ed. Prentice-Hall (2003)
5. P. Munk & T.M. Aminabhavi, *Introduction to Macromolecular Science*, 2nd ed. John Wiley & Sons (2002)
6. L. H. Sperling, *Introduction to Physical Polymer Science*, 4th ed. John Wiley & Sons (2005)
7. M.P. Stevens, *Polymer Chemistry: An Introduction* 3rd ed. Oxford University Press (2005).
8. Seymour/ Carraher's Polymer Chemistry, 9th ed. by Charles E. Carraher, Jr. (2013).

******

Downloaded from Vidyasagar University by 202.142.96.3 on 10 January 2020 : 10:40:14; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Chemistry_Hons6.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B Sc (General)
in

Chemistry

Under Choice Based Credit System (CBCS)
w.e.f 2018-2019

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Chemistry

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Atomic structure, Bonding, General organic chemistry & Aliphatic Hydrocarbons - **Lab**	6	4-0-4	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
		Semester - I : Total			**20**				**275**
	II	SEMESTER-II							
		Core-4 (DSC-1B)		Chemical Energetics, Equilibria & Functional Organic Chemistry - **Lab**	6	4-0-4	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
		Semester - 2 : Total			**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-7 (DSC-1C)		Conductance, Electrochemistry & Functional Organic Chemistry - **Lab**	6	4-0-4	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 3 : Total			**20**				**275**
	IV	SEMESTER-IV							
		Core-10 (DSC-1D)		Coordination chemistry, State of Matter and Chemical Kinetics - **Lab**	6	4-0-4	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0/ 1-0-2	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Chemistry)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 5 : Total			**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Chemistry)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 6 : Total			**20**				**275**
	Total in all semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies .

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

List of Core and Elective Courses

Core Courses (CC)

DSC-1A: Atomic Structure, Bonding, general organic chemistry & aliphatic hydrocarbons
DSC-1B: Chemical Energetics, Equilibria &Functional Organic Chemistry
DSC-1C: Solutions, Phase equilibrium, Conductance, Electrochemistry & Functional Organic Chemistry
DSC-1D: Coordination Chemistry, States of matter Chemical Kinetics

Discipline Specific Electives (DSE)

DSE-1: Analytical Methods in Chemistry
Or
DSE-1: Polymer Chemistry
Or
DSE-1: Instrumental Methods of Chemical Analysis
Or
DSE-1: Organometallics, Bioinorganic Chemistry, Polynuclear hydrocarbons and **UV,** IR Spectroscopy
DSE-2: Applications of Computers in Chemistry.
Or
DSE-2: Green Chemistry
Or
DSE-2: Industrial Chemicals and Environment
Or
DSE-2: Quantum Chemistry, Spectroscopy & Photochemistry
Or
DSE-2: Molecular Modelling & Drug design

Skill Enhancement Course (SEC)

SEC-1: Basic Analytical Chemistry
Or
SEC-1: Chemo informatics
SEC-2: Analytical Clinical Biochemistry
Or
SEC-2: Intellectual Property Rights (IPR)
SEC-3: Pharmaceutical Chemistry
Or
SEC-3: Chemistry of Cosmetics & Perfumes
SEC-4: Pesticide Chemistry
Or
SEC-4: Fuel Chemistry

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Core Courses (CC)

DSC-1A(CC-1): Atomic Structure, Bonding, general organic chemistry & aliphatic hydrocarbons Credits 06

DSC1AT: Atomic Structure, Bonding, general organic chemistry & aliphatic hydrocarbons Credits 04

Course Contents:

Section A: Inorganic Chemistry-1

Atomic Structure:

Review of Bohr's theory and its limitations, dual behaviour of matter and radiation, de Broglie's relation, Heisenberg Uncertainty principle. Hydrogen atom spectra. Need of a new approach to Atomic structure. What is Quantum mechanics? Time independent Schrodinger equation and meaning of various terms in it. Significance of ψ and ψ^2, Schrödinger equation for hydrogen atom. Radial and angular parts of the hydogenic wavefunctions (atomic orbitals) and their variations for 1*s*, 2*s*, 2*p*, 3*s*, 3*p* and 3*d* orbitals (Only graphical representation). Radial and angular nodes and their significance. Radial distribution functions and the concept of the most probable distance with special reference to 1*s* and 2*s* atomic orbitals. Significance of quantum numbers, orbital angular momentum and quantum numbers m_l and m_s. Shapes of *s, p* and *d* atomic orbitals, nodal planes. Discovery of spin, spin quantum number (*s*) and magnetic spin quantum number (m_s). Rules for filling electrons in various orbitals, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, concept of exchange energy. Relative energies of atomic orbitals, Anomalous electronic configurations.

Chemical Bonding and Molecular Structure

Ionic Bonding: General characteristics of ionic bonding. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rules, ionic character in covalent compounds, bond moment, dipole moment and percentage ionic character. *Covalent bonding:* VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Concept of resonance and resonating structures in various inorganic and organic compounds. MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their haracteristics or *s-s*, *s-p* and *p-p* combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of *s-p* mixing) and heteronuclear diatomic molecules such as CO, NO and NO^+. Comparison of VB and MO approaches.

Section B: Organic Chemistry-1

Fundamentals of Organic Chemistry

Physical Effects, Electronic Displacements: Inductive Effect, Electromeric Effect, Resonance

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

and Hyperconjugation. Cleavage of Bonds: Homolysis and Heterolysis. Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals. Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Benzenoids and Hückel's rule.

Stereochemistry

Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations. Concept of chirality (upto two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). Threo and erythro; D and L; *cis – trans* nomenclature; CIP Rules: R/ S (for upto 2 chiral carbon atoms) and E / Z Nomenclature (for upto two C=C systems).

Aliphatic Hydrocarbons

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Alkanes: (Upto 5 Carbons). *Preparation:* Catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis, from Grignard reagent. *Reactions:* Free radical Substitution: Halogenation.

Alkenes: (Upto 5 Carbons) *Preparation:* Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule); cis alkenes (Partial catalytic hydrogenation) and trans alkenes (Birch reduction). *Reactions:* cis-addition (alk. KMnO4) and trans-addition (bromine), Addition of HX (Markownikoff's and anti-Markownikoff's addition), Hydration, Ozonolysis, oxymecuration-demercuration, Hydroboration-oxidation.

Alkynes: (Upto 5 Carbons) *Preparation:* Acetylene from CaC_2 and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides. *Reactions:* formation of metal acetylides, addition of bromine and alkaline $KMnO_4$, ozonolysis and oxidation with hot alk. $KMnO_4$.

Suggested Readings:

- Lee, J.D. *Concise Inorganic Chemistry* ELBS, 1991.
- Cotton, F.A., Wilkinson, G. & Gaus, P.L. *Basic Inorganic Chemistry*, 3rd ed., Wiley.
- Douglas, B.E., McDaniel, D.H. & Alexander, J.J. *Concepts and Models in Inorganic Chemistry*, John Wiley & Sons.
- Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. *Inorganic Chemistry: Principles of Structure and Reactivity*, Pearson Education India, 2006.
- Graham Solomon, T.W., Fryhle, C.B. & Dnyder, S.A. *Organic Chemistry*, John Wiley & Sons (2014).
- McMurry, J.E. *Fundamentals of Organic Chemistry*, 7th Ed. Cengage Learning India Edition, 2013.
- Sykes, P. *A Guidebook to Mechanism in Organic Chemistry*, Orient Longman, New Delhi (1988).
- Eliel, E.L. *Stereochemistry of Carbon Compounds*, Tata McGraw Hill education, 2000.
- Finar, I.L. *Organic Chemistry* (Vol. I & II), E.L.B.S.
- Morrison, R.T. & Boyd, R.N. *Organic Chemistry*, Pearson, 2010.
- Bahl, A. & Bahl, B.S. *Advanced Organic Chemistry*, S. Chand, 2010.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

DSC1AP: Atomic structure, Bonding, general organic chemistry & aliphatic hydrocarbons (Practical) **Credits 02**

Practical:

Section A: Inorganic Chemistry - Volumetric Analysis

1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
2. Estimation of oxalic acid by titrating it with $KMnO_4$.
3. Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$.
4. Estimation of Fe (II) ions by titrating it with $K_2Cr_2O_7$ using internal indicator.
5. Estimation of Cu (II) ions iodometrically using $Na_2S_2O_3$.

Section B: Organic Chemistry

1. Detection of extra elements (N, S, Cl, Br, I) in organic compounds (containing upto two extra elements)
2. Separation of mixtures by Chromatography: Measure the R_f value in each case (combination of two compounds to be given)
   (a) Identify and separate the components of a given mixture of 2 amino acids (glycine, aspartic acid, glutamic acid, tyrosine or any other amino acid) by paper chromatography

   (b) Identify and separate the sugars present in the given mixture by paper chromatography.

Suggested Readings:

- Svehla, G. *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.
- Mendham, J. *Vogel's Quantitative Chemical Analysis*, Pearson, 2009.
- Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.
- Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.

DSC-1B (CC-2): Chemical Energetics, Equilibria & Functional Organic Chemistry Credits 06

DSC1BT: Chemical Energetics, Equilibria &Functional Organic Chemistry
Credits 04

Course Contents:

Section A: Physical Chemistry-1

Chemical Energetic

Review of thermodynamics and the Laws of Thermodynamics. Important principles and definitions of thermochemistry. Concept of standard state and standard enthalpies of formations, integral and

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

differential enthalpies of solution and dilution. Calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data. Variation of enthalpy of a reaction with temperature – Kirchhoff's equation. Statement of Third Law of thermodynamics and calculation of absolute entropies of substances.

Chemical Equilibrium:
Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. Distinction between ΔG and ΔG_o, Le Chatelier's principle. Relationships between K_p, K_c and K_x for reactions involving ideal gases.

Ionic Equilibria:

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

Section B: Organic Chemistry-2

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Aromatic hydrocarbons
Preparation (Case benzene): from phenol, by decarboxylation, from acetylene, from benzene sulphonic acid.
Reactions: (Case benzene): Electrophilic substitution: nitration, halogenation and sulphonation. Friedel-Craft's reaction (alkylation and acylation) (upto 4 carbons on benzene). Side chain oxidation of alkyl benzenes (upto 4 carbons on benzene).

Alkyl and Aryl Halides

Alkyl Halides (Upto 5 Carbons) Types of Nucleophilic Substitution (S_N1, S_N2 and S_Ni) reactions. *Preparation:* from alkenes *and* alcohols. *Reactions:* hydrolysis, nitrite & nitro formation, nitrile & isonitrile formation. Williamson's ether synthesis: Elimination vs substitution.

Aryl Halides *Preparation:* (Chloro, bromo and iodo-benzene case): from phenol, Sandmeyer & Gattermann reactions. *Reactions (Chlorobenzene):* Aromatic nucleophilic substitution (replacement by –OH group) and effect of nitro substituent. Benzyne Mechanism: KNH_2/NH_3 (or $NaNH_2/NH_3$). Reactivity and Relative strength of C-Halogen bond in alkyl, allyl, benzyl, vinyl and aryl halides.

Alcohols, Phenols and Ethers (Upto 5 Carbons)

Alcohols: *Preparation:* Preparation of 1^o, 2^o and 3^o alcohols: using Grignard reagent, Ester hydrolysis, Reduction of aldehydes, ketones, carboxylic acid and esters. *Reactions:* With sodium, HX (Lucas test), esterification, oxidation (with PCC, alk. $KMnO_4$, acidic dichromate, conc. HNO_3). Oppeneauer oxidation *Diols:* (Upto 6 Carbons) oxidation of diols. Pinacol-Pinacolone rearrangement.

Phenols: (Phenol case) *Preparation:* Cumene hydroperoxide method, from diazonium salts.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Reactions: Electrophilic substitution: Nitration, halogenation and sulphonation. Reimer-Tiemann Reaction, Gattermann-Koch Reaction, Houben–Hoesch Condensation, Schotten – Baumann Reaction.

Ethers (aliphatic and aromatic): Cleavage of ethers with HI.

Aldehydes and ketones (aliphatic and aromatic): (Formaldehye, acetaldehyde, acetone and benzaldehyde) *Preparation:* from acid chlorides and from nitriles. *Reactions* – Reaction with HCN, ROH, $NaHSO_3$, NH_2-G derivatives. Iodoform test. Aldol Condensation, Cannizzaro's reaction, Wittig reaction, Benzoin condensation. Clemensen reduction and Wolff Kishner reduction. Meerwein-Pondorff Verley reduction.

Suggested Readings:

- Graham Solomon, T.W., Fryhle, C.B. & Dnyder, S.A. *Organic Chemistry,* John Wiley & Sons (2014).
- McMurry, J.E. *Fundamentals of Organic Chemistry*, 7th Ed. Cengage Learning India Edition, 2013.
- Sykes, P. *A Guidebook to Mechanism in Organic Chemistry,* Orient Longman, New Delhi (1988).
- Finar, I.L. *Organic Chemistry* (Vol. I & II), E.L.B.S.
- Morrison, R.T. & Boyd, R.N. *Organic Chemistry*, Pearson, 2010.
- Bahl, A. & Bahl, B.S. *Advanced Organic Chemistry,* S. Chand, 2010.
- Barrow, G.M. *Physical Chemistry* Tata McGraw-Hill (2007).
- Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
- Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry* Cengage Learning India Pvt. Ltd., New Delhi (2009).
- Mahan, B.H. *University Chemistry* 3rd Ed. Narosa (1998).
- Petrucci, R.H. *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).

DSC1BP: Chemical Energetics, Equilibria & Functional Organic Chemistry (Practical)

Credits 02

Section A: Physical Chemistry

Thermo chemistry:

1. Determination of heat capacity of calorimeter for different volumes.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Determination of enthalpy of ionization of acetic acid.
4. Determination of integral enthalpy of solution of salts (KNO_3, NH_4Cl).
5. Determination of enthalpy of hydration of copper sulphate.
6. Study of the solubility of benzoic acid in water and determination of ΔH.

Ionic equilibria:

pH measurements

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

a) Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter.
b) Preparation of buffer solutions:

(i) Sodium acetate-acetic acid
(ii) Ammonium chloride-ammonium hydroxide Measurement of the pH of buffer solutions and comparison of the values with theoretical values.

Section B: Organic Chemistry

1. Purification of organic compounds by crystallization (from water and alcohol) and distillation.
2. Criteria of Purity: Determination of melting and boiling points.
3. Preparations: Mechanism of various reactions involved to be discussed. Recrystallisation, determination of melting point and calculation of quantitative yields to be done.

(a) Bromination of Phenol/Aniline
(b) Benzoylation of amines/phenols
(c) Oxime and 2,4-dinitrophenylhydrazone of aldehyde/ketone

Suggested Readings:

- Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.
- Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.
- Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).

DSC-1C(CC-3): Solutions, Phase equilibrium, Conductance, Electrochemistry & Functional Organic Chemistry Credits 06

DSC1CT: Solutions, Phase equilibrium, Conductance, Electrochemistry & Functional Organic Chemistry Credits 04

Course Contents:

Section A: Physical Chemistry-2

Solutions

Thermodynamics of ideal solutions: Ideal solutions and Raoult's law, deviations from Raoult's law – non-ideal solutions. Vapour pressure-composition and temperature composition curves of ideal and non-ideal solutions. Distillation of solutions. Lever rule. Azeotropes. Partial miscibility of liquids: Critical solution temperature; effect of impurity on partial miscibility of liquids. Immiscibility of liquids- Principle of steam distillation. Nernst distribution law and its applications, solvent extraction.

Phase Equilibrium

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Phases, components and degrees of freedom of a system, criteria of phase equilibrium. Gibbs Phase Rule and its thermodynamic derivation. Derivation of Clausius – Clapeyron equation and its importance in phase equilibria. Phase diagrams of one-component systems (water and sulphur) and two component systems involving eutectics, congruent and incongruent melting points (lead-silver, $FeCl_3$-H_2O and Na-K only).

Conductance

Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. Kohlrausch law of independent migration of ions. Transference number and its experimental determination using Hittorf and Moving boundary methods. Ionic obility. Applications of conductance measurements: determination of degree of ionization of weak electrolyte, solubility and solubility products of sparingly soluble salts, ionic product of water, hydrolysis constant of a salt. Conductometric titrations (only acidbase).

Electrochemistry

Reversible and irreversible cells. Concept of EMF of a cell. Measurement of EMF of a cell. Nernst equation and its importance. Types of electrodes. Standard electrode potential. Electrochemical series. Thermodynamics of a reversible cell, calculation of thermodynamic properties: ΔG, ΔH and ΔS from EMF data. Calculation of equilibrium constant from EMF data. Concentration cells with transference and without transference. Liquid junction potential and salt bridge. pH determination using hydrogen electrode and quinhydrone electrode. Potentiometric titrations -qualitative treatment (acid-base and oxidation-reduction only).

Section B: Organic Chemistry-3

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Carboxylic acids and their derivatives

Carboxylic acids (aliphatic and aromatic)

Preparation: Acidic and Alkaline hydrolysis of esters. *Reactions:* Hell – Vohlard - Zelinsky Reaction.

Carboxylic acid derivatives (aliphatic): (Upto 5 carbons)

Preparation: Acid chlorides, Anhydrides, Esters and Amides from acids and their inter-conversion. *Reactions:* Comparative study of nucleophilicity of acyl derivatives. Reformatsky Reaction, Perkin condensation.

Amines and Diazonium Salts

Amines (Aliphatic and Aromatic): (Upto 5 carbons)

Preparation: from alkyl halides, Gabriel's Phthalimide synthesis, Hofmann Bromamide reaction. *Reactions:* Hofmann vs. Saytzeff elimination, Carbylamine test, Hinsberg test, with HNO_2, Schotten – Baumann Reaction. Electrophilic substitution (case aniline): nitration, bromination, sulphonation.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Diazonium salts: *Preparation:* from aromatic amines.*Reactions:* conversion to benzene, phenol, dyes.

Amino Acids, Peptides and Proteins:

Preparation of Amino Acids: Strecker synthesis using Gabriel's phthalimide synthesis. Zwitterion, Isoelectric point and Electrophoresis. *Reactions of Amino acids*: ester of – COOH group, acetylation of $–NH_2$ group, complexation with Cu^{2+} ions, ninhydrin test. Overview of Primary, Secondary, Tertiary and Quaternary Structure of proteins. Determination of Primary structure of Peptides by degradation Edmann degradation (Nterminal) and C–terminal (thiohydantoin and with carboxypeptidase enzyme). Synthesis of simple peptides (upto dipeptides) by N-protection (t-butyloxycarbonyl and phthaloyl) & Cactivating groups and Merrifield solid-phase synthesis.

Carbohydrates:

Classification, and General Properties, Glucose and Fructose (open chain and cyclic structure), Determination of configuration of monosaccharides, absolute configuration of Glucose and Fructose, Mutarotation, ascending and descending in monosaccharides. Structure of disacharrides (sucrose, cellobiose, maltose, lactose) and polysacharrides (starch and cellulose) excluding their structure elucidation.

Suggested Readings:

- Barrow, G.M. *Physical Chemistry* Tata McGraw-Hill (2007).
- Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
- Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry*, Cengage Learning India Pvt. Ltd.: New Delhi (2009).
- Mahan, B.H. *University Chemistry*, 3rd Ed. Narosa (1998).
- Petrucci, R.H. *General Chemistry*, 5th Ed., Macmillan Publishing Co.: New York (1985).
- Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Finar, I. L. *Organic Chemistry* (*Volume 1*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Finar, I. L. *Organic Chemistry* (*Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Bioch*emistry *7th Ed.*, W. H. Freeman.
- Berg, J.M., Tymoczko, J.L. & Stryer, L. *Biochemistry*, W.H. Freeman, 2002.

DSC-1CP: Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Organic Chemistry (Practical) Credits 02

Practical:

Section A: Physical Chemistry

Distribution

Study of the equilibrium of one of the following reactions by the distribution method:

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

$I_2(aq) + I^-(aq) \rightleftharpoons I_3^-(aq)$
$Cu^{2+}(aq) + xNH_2(aq) \rightleftharpoons [Cu(NH_3)_x]^{2+}$

Phase equilibria

a) Construction of the phase diagram of a binary system (simple eutectic) using cooling curves.
b) Determination of the critical solution temperature and composition of the phenol water system and study of the effect of impurities on it.
c) Study of the variation of mutual solubility temperature with concentration for the phenol water system and determination of the critical solubility temperature.

Conductance

I. Determination of cell constant
II. Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.
III. Perform the following conductometric titrations:

i. Strong acid vs. strong base
ii. Weak acid vs. strong base

Potentiometry

Perform the following potentiometric titrations:
i. Strong acid vs. strong base
ii. Weak acid vs. strong base
iii. Potassium dichromate vs. Mohr's salt

Section B: Organic Chemistry

I Systematic Qualitative Organic Analysis of Organic Compounds possessing monofunctional groups (-COOH, phenolic, aldehydic, ketonic, amide, nitro, amines) and preparation of one derivative.

II

1. Separation of amino acids by paper chromatography
2. Determination of the concentration of glycine solution by formylation method.
3. Titration curve of glycine
4. Action of salivary amylase on starch
5. Effect of temperature on the action of salivary amylase on starch.
6. Differentiation between a reducing and a nonreducing sugar.

Suggested Readings:

- Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry,* Prentice-Hall, 5th edition, 1996.
- Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.
- Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
- Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry*, Universities Press.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

DSC-1D(CC-4):Coordination Chemistry, States of matter Chemical Kinetics Credits 06

DSC1DT: Coordination Chemistry, States of matter Chemical Kinetics Credits 04

Course Contents:

Transition Elements (3d series)

General group trends with special reference to electronic configuration, variable valency, colour, magnetic and catalytic properties, ability to form complexes and stability of various oxidation states (Latimer diagrams) for Mn, Fe and Cu. Lanthanoids and actinoids: Electronic configurations, oxidation states, colour, magnetic properties, lanthanide contraction, separation of lanthanides (ion exchange method only).

Coordination Chemistry

Valence Bond Theory (VBT): Inner and outer orbital complexes of Cr, Fe, Co, Ni and Cu (coordination numbers 4 and 6). Structural and stereoisomerism in complexes with coordination numbers 4 and 6. Drawbacks of VBT. IUPAC system of nomenclature.

Crystal Field Theory

Crystal field effect, octahedral symmetry. Crystal field stabilization energy (CFSE), Crystal field effects for weak and strong fields. Tetrahedral symmetry. Factors affecting the magnitude of D. Spectrochemical series. Comparison of CFSE for O_h and T_d complexes, Tetragonal distortion of octahedral geometry. Jahn-Teller distortion, Square planar coordination.

Section B: Physical Chemistry-3

Kinetic Theory of Gases

Postulates of Kinetic Theory of Gases and derivation of the kinetic gas equation. Deviation of real gases from ideal behaviour, compressibility factor, causes of deviation. Van der Waals equation of state for real gases. Boyle temperature (derivation not required). Critical phenomena, critical constants and their calculation from van der Waals equation. Andrews isotherms of CO_2. Maxwell Boltzmann distribution laws of molecular velocities and molecular energies (graphic representation – derivation not required) and their importance. Temperature dependence of these distributions. Most probable, average and root mean square velocities (no derivation). Collision cross section, collision number, collision frequency, collision diameter and mean free path of molecules. Viscosity of gases and effect of temperature and pressure on coefficient of viscosity (qualitative treatment only).

Liquids

Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

Solids

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Forms of solids. Symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices. Miller indices. X–Ray diffraction by crystals, Bragg's law. Structures of NaCl, KCl and CsCl (qualitative treatment only). Defects in crystals. Glasses and liquid crystals.

Chemical Kinetics

The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction. Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half–life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation.
Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only).

Suggested Readings:

- Barrow, G.M. *Physical Chemistry* Tata McGraw-Hill (2007).
- Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
- Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry* Cengage Learning India Pvt. Ltd., New Delhi (2009).
- Mahan, B.H. *University Chemistry* 3rd Ed. Narosa (1998).
- Petrucci, R.H. *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).
- Cotton, F.A. & Wilkinson, G. *Basic Inorganic Chemistry*, Wiley.
- Shriver, D.F. & Atkins, P.W. *Inorganic Chemistry*, Oxford University Press.
- Wulfsberg, G. *Inorganic Chemistry*, Viva Books Pvt. Ltd.
- Rodgers, G.E. *Inorganic & Solid State Chemistry*, Cengage Learning India Ltd., 2008.

DSC1DP: Coordination Chemistry, States of matter & Chemical Kinetics (Practical)

Credits 02

Practical:

Section A: Inorganic Chemistry

Semi-micro qualitative analysis using H_2S of mixtures - not more than four ionic species (two anions and two cations and excluding insoluble salts) out of the following:

Cations : NH^{4+}, Pb^{2+}, Ag^{2+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, Sn^{2+}, Fe^{3+}, Al^{3+}, Co^{2+}, Cr^{3+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, K^{+}

Anions : CO_3^{2-}, S^{2-}, SO^{2-}, $S_2O_3^{2-}$, NO_3^{-}, CH_3COO^{-}, Cl^{-}, Br^{-}, I^{-}, NO_3^{-},SO_4^{2-}, PO_4^{3-}, BO_3^{3-}, $C_2O_4^{2-}$, F^{-}

(Spot tests should be carried out wherever feasible)

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

1. Estimate the amount of nickel present in a given solution as bis (dimethylglyoximato) nickel(II) or aluminium as oximate in a given solution gravimetrically.
2. Draw calibration curve (absorbance at λ_{max} vs. concentration) for various concentrations of a given coloured compound ($KMnO_4$/ $CuSO_4$) and estimate the concentration of the same in a given solution.
3. Determine the composition of the Fe^{3+}-salicylic acid complex solution by Job's method.
4. Estimation of (i) Mg^{2+} or (ii) Zn^{2+} by complexometric titrations using EDTA.
5. Estimation of total hardness of a given sample of water by complexometric titration.
6. Determination of concentration of Na^+ and K^+ using Flame Photometry.

Section B: Physical Chemistry

(I) Surface tension measurement (use of organic solvents excluded).

a) Determination of the surface tension of a liquid or a dilute solution using a stalagmometer.
c) Study of the variation of surface tension of a detergent solution with concentration.

(II) Viscosity measurement (use of organic solvents excluded).
a) Determination of the relative and absolute viscosity of a liquid or dilute solution using an Ostwald's viscometer.
b) Study of the variation of viscosity of an aqueous solution with concentration of solute.

(III) Chemical Kinetics

Study the kinetics of the following reactions.
1. Initial rate method: Iodide-persulphate reaction
2. Integrated rate method:
   a. Acid hydrolysis of methyl acetate with hydrochloric acid.
   b. Saponification of ethyl acetate.
   c. Compare the strengths of HCl and H_2SO_4 by studying kinetics of hydrolysis of methyl acetate

Suggested Readings:

- Svehla, G. *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.
- Mendham, J. *Vogel's Quantitative Chemical Analysis*, Pearson, 2009.
- Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R.
- Chand & Co.: New Delhi (2011).

Discipline Specific Electives (DSE)

DSE-1: Analytical Methods in Chemistry — Credits 06

DSE1T: Analytical Methods in Chemistry — Credits 04

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Qualitative and quantitative aspects of analysis:

Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression, normal law of distribution if indeterminate errors, statistical test of data; F, Q and t test, rejection of data, and confidence intervals.

Optical methods of analysis:

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules, validity of Beer-Lambert's law.

UV-Visible Spectrometry: Basic principles of instrumentation (choice of source, monochromator and detector) for single and double beam instrument; *Basic principles of quantitative analysis:* estimation of metal ions from aqueous solution, geometrical isomers, keto -enol tautomers. Determination of composition of metal complexes using Job's method of continuous variation and mole ratio method.

Infrared Spectrometry: Basic principles of instrumentation (choice of source, monochromator & detector) for single and double beam instrument; sampling techniques. Structural illustration through interpretation of data, Effect and importance of isotope substitution.

Flame Atomic Absorption and Emission Spectrometry: Basic principles of instrumentation (choice of source, monochromator, detector, choice of flame and Burner designs. Techniques of atomization and sample introduction; Method of background correction, sources of chemical interferences and their method of removal. Techniques for the quantitative estimation of trace level of metal ions from water samples.

Thermal methods of analysis:

Theory of thermogravimetry (TG), basic principle of instrumentation. Techniques for quantitative estimation of Ca and Mg from their mixture.

Electro-analytical methods:

Classification of electroanalytical methods, basic principle of pH metric, potentiometric and conductometric titrations. Techniques used for the determination of equivalence points. Techniques used for the determination of pK_a values.

Separation techniques:

Solvent extraction: Classification, principle and efficiency of the technique. Mechanism of extraction: extraction by solvation and chelation. **Technique of extraction:** batch, continuous and counter current extractions. **Qualitative and quantitative aspects of solvent extraction:** extraction of metal ions from aqueous solution, extraction of organic species from the aqueous and nonaqueous media. **Chromatography:** Classification, principle and efficiency of the technique. Mechanism of separation: adsorption, partition & ion exchange. **Development of chromatograms:** frontal, elution and displacement methods. Qualitative and quantitative aspects of chromatographic methods of analysis: IC, GLC, GPC, TLC and HPLC. **Stereoisomeric separation and analysis:** Measurement of optical rotation, calculation of Enantiomeric excess (ee)/ diastereomeric excess (de) ratios and determination of enantiomeric composition using NMR, Chiral solvents and chiral shift reagents.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Chiral chromatographic techniques using chiral columns (GC and HPLC). Role of computers in instrumental methods of analysis.

Suggested Readings:

- Jeffery, G.H., Bassett, J., Mendham, J. & Denney, R.C. *Vogel's Textbook of Quantitative Chemical Analysis*, John Wiley & Sons.
- Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA,
- Christian, G.D; *Analytical Chemistry*, 6th Ed. John Wiley & Sons, New York.
- Harris, D. C. *Exploring Chemical Analysis*, Ed. New York, W.H. Freeman.
- Khopkar, S.M. *Basic Concepts of Analytical Chemistry*. New Age, International Publisher.
- Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
- Mikes, O. *Laboratory Hand Book of Chromatographic & Allied Methods*, Elles Harwood Series on Analytical Chemistry, John Wiley & Sons.
- Ditts, R.V. *Analytical Chemistry; Methods of Separation*, van Nostrand.

DSE1P: Analytical methods in Chemistry (Lab) **Credits 02**

I. Separation Techniques

1. Chromatography:
   (a) Separation of mixtures
      (i) Paper chromatographic separation of Fe^{3+} Al^{3+}, and Cr^{3+} .
      (ii) Separation and identification of the monosaccharide present in the given mixture (glucose & fructose) by paper chromatography. Reporting the R_f values.
   (b) Separate a mixture of Sudan yellow and Sudan Red by TLC technique and identify them on the basis of their R_f values.
   (c) Chromatographic separation of the active ingredients of plants, flowers and juices by TLC

II. Solvent Extractions:

1. To separate a mixture of Ni^{2+} & Fe^{2+} by complexation with DMG and extracting the Ni^{2+}-DMG complex in chloroform, and determine its concentration by spectrophotometry.
2. Solvent extraction of zisconium with amberliti LA-1, separation from a mixture of irons and gallium.
3. Determine the pH of the given aerated drinks fruit juices, shampoos and soaps.
4. Determination of Na, Ca, Li in cola drinks and fruit juices using flame photometric techniques.
5. Analysis of soil:
   1. Determination of pH of soil.
   2. Total soluble salt
   3. Estimation of calcium, magnesium, phosphate, nitrate
6. Ion exchange:
   i. Determination of exchange capacity of cation exchange resins and anion exchange resins.
   ii. Separation of metal ions from their binary mixture.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

iii. Separation of amino acids from organic acids by ion exchange chromatography.

III Spectrophotometry

1. Determination of pK_a values of indicator using spectrophotometry.
2 Structural characterization of compounds by infrared spectroscopy.
3 Determination of dissolved oxygen in water.
4 Determination of chemical oxygen demand (COD).
5 Determination of Biological oxygen demand (BOD).
6 Determine the composition of the Ferric-salicylate / Ferric-thiocyanate complex by Job's method.

Suggested Readings:

- Jeffery, G.H., Bassett, J., Mendham, J. & Denney, R.C. *Vogel's Textbook of Quantitative Chemical Analysis*, John Wiley & Sons.
- Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA.
- Christian, Gary D; Analytical Chemistry, 6th Ed. John Wiley & Sons, New York.
- Harris, Daniel C: Exploring Chemical Analysis, Ed. New York, W.H. Freeman.
- Khopkar, S.M. Basic Concepts of Analytical Chemistry. New Age, International Publisher.
- Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
- Mikes, O. *Laboratory Hand Book of Chromatographic & Allied Methods*, Elles Harwood Series on Analytical Chemistry, John Wiley & Sons.
- Ditts, R.V. *Analytical Chemistry; Methods of Separation*, van Nostrand.

Or

DSE-1: Polymer Chemistry — Credits 06

DSE1T: Polymer Chemistry — Credits 04

Course Contents:

Introduction and history of polymeric materials:

Different schemes of classification of polymers, Polymer nomenclature, Molecular forces and chemical bonding in polymers, Texture of Polymers.

Functionality and its importance:

Criteria for synthetic polymer formation, classification of polymerization processes, Relationships between functionality, extent of reaction and degree of polymerization. Bifunctional systems, Poly-functional systems.

Kinetics of Polymerization:

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Mechanism and kinetics of step growth, radical chain growth, ionic chain (both cationic and anionic) and coordination polymerizations, Mechanism and kinetics of copolymerization, polymerization techniques.

Crystallization and crystallinity:

Determination of crystalline melting point and degree of crystallinity, Morphology of crystalline polymers, Factors affecting crystalline melting point.

Nature and structure of polymers - Structure Property relationships.

Determination of molecular weight of polymers (M_n, M_w, etc) by end group analysis, viscometry, light scattering and osmotic pressure methods. Molecular weight distribution and its significance. Polydispersity index.

Glass transition temperature (Tg) and determination of Tg, Free volume theory, WLF equation, Factors affecting glass transition temperature (Tg).

Polymer Solution – Criteria for polymer solubility, Solubility parameter, Thermodynamics of polymer solutions, entropy, enthalpy, and free energy change of mixing of polymers olutions, Flory-Huggins theory, Lower and Upper critical solution temperatures.

Properties of Polymers (Physical, thermal, Flow & Mechanical Properties).

Brief introduction to preparation, structure, properties and application of the following polymers: polyolefins, polystyrene and styrene copolymers, poly(vinyl chloride) and related polymers, poly(vinyl acetate) and related polymers, acrylic polymers, fluoro polymers, polyamides and related polymers. Phenol formaldehyde resins (Bakelite, Novalac), polyurethanes, silicone polymers, polydienes, Polycarbonates, Conducting Polymers, [polyacetylene, polyaniline, poly(p-phenylene sulphide polypyrrole, polythiophene)].

Suggested Readings:

- Seymour, R.B. & Carraher, C.E. *Polymer Chemistry: An Introduction,* Marcel Dekker, Inc. New York, 1981.
- Odian, G. *Principles of Polymerization*, 4th Ed. Wiley, 2004.
- Billmeyer, F.W. *Textbook of Polymer Science*, 2nd Ed. Wiley Interscience, 1971.
- Ghosh, P. *Polymer Science & Technology*, Tata McGraw-Hill Education, 1991.
- Lenz, R.W. *Organic Chemistry of Synthetic High Polymers.* Interscience Publishers, New York, 1967.

DSE1P: Polymer Chemistry (Lab) **Credits 02**

Practical:

1. **Polymer synthesis**
    1. Free radical solution polymerization of styrene (St) / Methyl Methacrylate (MMA) Methyl Acrylate (MA) / Acrylic acid (AA).
        a. Purification of monomer
        b. Polymerization using benzoyl peroxide (BPO) / 2,2'-azo-bis-isobutylonitrile (AIBN)

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

2. Preparation of nylon 66/6
3. Interfacial polymerization, preparation of polyester from isophthaloyl chloride (IPC) and phenolphthalein
    a. Preparation of IPC
    b. Purification of IPC
    c. Interfacial polymerization
4. Redox polymerization of acrylamide
5. Precipitation polymerization of acrylonitrile
6. Preparation of urea-formaldehyde resin
7. Preparations of novalac resin/resold resin.
8. Microscale Emulsion Polymerization of Poly(methylacrylate).

Polymer characterization

1. Determination of molecular weight by viscometry:
   (a) Polyacrylamide-aq.$NaNO_2$ solution
   (b) (Poly vinyl proplylidine (PVP) in water
2. Determination of the viscosity-average molecular weight of poly(vinyl alcohol) (PVOH) and the fraction of "head-to-head" monomer linkages in the polymer.
3. Determination of molecular weight by end group analysis: Polyethylene glycol (PEG)(OH group).
4. Testing of mechanical properties of polymers.
5. Determination of hydroxyl number of a polymer using colorimetric method.

Polymer analysis

1. Estimation of the amount of HCHO in the given solution by sodium sulphite method
2. Instrumental Techniques
3. IR studies of polymers
4. DSC analysis of polymers
5. Preparation of polyacrylamide and its electrophoresis

*at least 7 experiments to be carried out.

Suggested Readings:

- M.P. Stevens, *Polymer Chemistry: An Introduction*, 3rd Ed., Oxford University Press, 1999.
- H.R. Allcock, F.W. Lampe & J.E. Mark, *Contemporary Polymer Chemistry*, 3rd ed. Prentice-Hall (2003)
- F.W. Billmeyer, *Textbook of Polymer Science*, 3rd ed. Wiley-Interscience (1984)
- J.R. Fried, *Polymer Science and Technology*, 2nd ed. Prentice-Hall (2003)
- P. Munk & T.M. Aminabhavi, *Introduction to Macromolecular Science*, 2nd ed. John Wiley & Sons (2002)
- L. H. Sperling, *Introduction to Physical Polymer Science*, 4th ed. John Wiley & Sons (2005)
- M.P. Stevens, *Polymer Chemistry: An Introduction* 3rd ed. Oxford University Press (2005).
- Seymour/ Carraher's Polymer Chemistry, 9th ed. by Charles E. Carraher, Jr. (2013).

Or

DSE-1: Instrumental Methods of Chemical Analysis Credits 06

DSE1T: Instrumental Methods of Chemical Analysis Credits 04

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Course Contents:

Introduction to spectroscopic methods of analysis:

Recap of the spectroscopic methods covered in detail in the core chemistry syllabus: Treatment of analytical data, including error analysis. Classification of analytical methods and the types of instrumental methods. Consideration of electromagnetic radiation.

Molecular spectroscopy:

Infrared spectroscopy:

Interactions with molecules: absorption and scattering. Means of excitation (light sources), separation of spectrum (wavelength dispersion, time resolution), detection of the signal (heat, differential detection), interpretation of spectrum (qualitative, mixtures, resolution),advantages of Fourier Transform (FTIR). Samples and results expected. Applications: Issues of quality assurance and quality control, Special problems for portable instrumentation and rapid detection.

UV-Visible/ Near IR – emission, absorption, fluorescence and photoaccoustic. Excitation sources (lasers, time resolution), wavelength dispersion (gratings, prisms, interference filters, laser, placement of sample relative to dispersion, resolution), Detection of signal (photocells, photomultipliers, diode arrays, sensitivity and S/N), Single and Double Beam instruments, Interpretation (quantification, mixtures, absorption vs. fluorescence and the use of time, photoaccoustic, fluorescent tags).

Separation techniques

Chromatography: Gas chromatography, liquid chromatography, supercritical fluids, Importance of column technology (packing, capillaries), Separation based on increasing number of factors (volatility, solubility, interactions with stationary phase, size, electrical field), Detection: simple vs. specific (gas and liquid), Detection as a means of further analysis (use of tags and coupling to IR and MS), Electrophoresis (plates and capillary) and use with DNA analysis. Immunoassays and DNA techniques

Mass spectroscopy: Making the gaseous molecule into an ion (electron impact, chemical ionization), Making liquids and solids into ions (electrospray, electrical discharge, laser desorption, fast atom bombardment), Separation of ions on basis of mass to charge ratio, Magnetic, Time of flight, Electric quadrupole. Resolution, time and multiple separations, Detection and interpretation (how this is linked to excitation).

Elemental analysis:

Mass spectrometry (electrical discharges).
Atomic spectroscopy: Atomic absorption, Atomic emission, and Atomic fluorescence. Excitation and getting sample into gas phase (flames, electrical discharges, plasmas), Wavelength separation and resolution (dependence on technique), Detection of radiation (simultaneous/scanning, signal noise), Interpretation (errors due to molecular and ionic species, matrix effects, other interferences).

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

NMR spectroscopy: **P**rinciple, Instrumentation, Factors affecting chemical shift, Spin coupling, Applications.

Electro analytical Methods: Potentiometry & Voltammetry

Radiochemical Methods.

X-ray analysis and electron spectroscopy (surface analysis).

Suggested Readings:

- Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
- Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA, 1988.
- P.W. Atkins: Physical Chemistry.
- G.W. Castellan: Physical Chemistry.
- C.N. Banwell: Fundamentals of Molecular Spectroscopy.
- Brian Smith: Infrared Spectral Interpretations: A Systematic Approach.
- W.J. Moore: Physical Chemistry.

DSE1P: Instrumental Methods of Chemical Analysis (Lab) Credits 02

Practical:

1. Safety Practices in the Chemistry Laboratory
2. Determination of the isoelectric pH of a protein.
3. Titration curve of an amino acid.
4. Determination of the void volume of a gel filtration column.
5. Determination of a Mixture of Cobalt and Nickel (UV/Vis spec.)
6. Study of Electronic Transitions in Organic Molecules (i.e., acetone in water)
7. IR Absorption Spectra (Study of Aldehydes and Ketones)
8. Determination of Calcium, Iron, and Copper in Food by Atomic Absorption
9. Quantitative Analysis of Mixtures by Gas Chromatography (i.e., chloroform and carbon tetrachloride)
10. Separation of Carbohydrates by HPLC
11. Determination of Caffeine in Beverages by HPLC
12. Potentiometric Titration of a Chloride-Iodide Mixture
13. Cyclic Voltammetry of the Ferrocyanide/Ferricyanide Couple
14. Nuclear Magnetic Resonance
15. Use of fluorescence to do “presumptive tests” to identify blood or other body fluids.
16. Use of “presumptive tests” for anthrax or cocaine
17. Collection, preservation, and control of blood evidence being used for DNA testing
18. Use of capillary electrophoresis with laser fluorescence detection for nuclear DNA (Y chromosome only or multiple chromosomes)
19. Use of sequencing for the analysis of mitochondrial DNA
20. Laboratory analysis to confirm anthrax or cocaine
21. Detection in the field and confirmation in the laboratory of flammable accelerants or explosives
22. Detection of illegal drugs or steroids in athletes
23. Detection of pollutants or illegal dumping
24. Fibre analysis

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

At least 10 experiments to be performed.

Suggested Readings:

- Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.

- Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA, 1988.

Or

DSE-1: Organometallics, Bioinorganic Chemistry, Polynuclear hydrocarbons and UV, IR Spectroscopy

Credits 06

DSE1T: Organometallics, Bioinorganic Chemistry, Polynuclear hydrocarbons and UV, IR Spectroscopy **Credits 04**

Course Contents:

Section A: Inorganic Chemistry-4

Chemistry of 3d metals

Oxidation states displayed by Cr, Fe, Co, Ni and Co. A study of the following compounds (including preparation and important properties); Peroxo compounds of Cr, $K_2Cr_2O_7$, $KMnO_4$, $K_4[Fe(CN)_6]$, sodium nitroprusside $[Co(NH_3)_6]Cl_3$, $Na_3[Co(NO_2)_6]$.

Organometallic Compounds

Definition and Classification with appropriate examples based on nature of metal-carbon bond (ionic, s, p and multicentre bonds). Structures of methyl lithium, Zeiss salt and ferrocene. AN rule as applied to carbonyls. Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals. p-acceptor behaviour of carbon monoxide. Synergic effects (VB approach)-(MO diagram of CO can be referred to for synergic effect to IR frequencies).

Bio-inorganic Chemistry

A brief introduction to bio-inorganic chemistry. Role of metal ions present in biological systems with special reference to Na^+, K^+ and Mg^{2+} ions: Na/K pump; Role of Mg^{2+} ions in energy production and chlorophyll. Role of Ca^{2+} in blood clotting, stabilization of protein structures and structural role (bones).

Section B: Organic Chemistry - 4

Polynuclear and heteronuclear aromatic compounds:

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Properties of the following compounds with reference to electrophilic and nucleophilic substitution: Naphthalene, Anthracene , Furan, Pyrrole, Thiophene, and Pyridine.

Active methylene compounds:

Preparation: Claisen ester condensation. Keto-enol tautomerism. *Reactions:* Synthetic uses of ethylacetoacetate (preparation of non-heteromolecules having upto 6 carbon).

Application of Spectroscopy to Simple Organic Molecules

Application of visible, ultraviolet and Infrared spectroscopy in organic molecules. Electromagnetic radiations, electronic transitions, λ_{max} & ε_{max}, chromophore, auxochrome, bathochromic and hypsochromic shifts. Application of electronic spectroscopy and Woodward rules for calculating l max of conjugated dienes and α,β – unsaturated Compounds.

Infrared radiation and types of molecular vibrations, functional group and fingerprint region. IR spectra of alkanes, alkenes and simple alcohols (inter and intramolecular hydrogen bonding), aldehydes, ketones, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions).

Suggested Readings:

- James E. Huheey, Ellen Keiter & Richard Keiter: *Inorganic Chemistry: Principles of Structure and Reactivity,* Pearson Publication.
- G.L. Miessler & Donald A. Tarr: *Inorganic Chemistry*, Pearson Publication.
- J.D. Lee: *A New Concise Inorganic Chemistry*, E.L.B.S.
- F.A. Cotton & G. Wilkinson: *Basic Inorganic Chemistry*, John Wiley & Sons.
- I.L. Finar: *Organic Chemistry* (Vol. I & II), E.L.B.S.
- John R. Dyer: *Applications of Absorption Spectroscopy of Organic Compounds*, Prentice Hall.
- R.M. Silverstein, G.C. Bassler & T.C. Morrill*: Spectroscopic Identification of*
- *Organic Compounds*, John Wiley & Sons.
- R.T. Morrison & R.N. Boyd: *Organic Chemistry*, Prentice Hall.
- Peter Sykes: *A Guide Book to Mechanism* in *Organic Chemistry*, Orient Longman.
- Arun Bahl and B. S. Bahl: *Advanced Organic Chemistry*, S. Chand.

DSE-1P: Practical **Credits 02**

Practical:

Section A: Inorganic Chemistry

1. Separation of mixtures by chromatography: Measure the R_f value in each case. (Combination of two ions to be given) Paper chromatographic separation of Fe^{3+}, $A1^{3+}$ and Cr^{3+} or Paper chromatographic separation of Ni^{2+}, Co^{2+}, Mn^{2+} and Zn^{2+}
2. Preparation of any two of the following complexes and measurement of their conductivity:
   (i) tetraamminecarbonatocobalt (III) nitrate
   (ii) tetraamminecopper (II) sulphate
   (iii) potassium trioxalatoferrate (III) trihydrate

Compare the conductance of the complexes with that of M/1000 solution of NaCl, $MgCl_2$ and

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

$LiCl_3$.

Section B: Organic Chemistry

Systematic Qualitative Organic Analysis of Organic Compounds possessing monofunctional groups (-COOH, phenolic, aldehydic, ketonic, amide, nitro, amines) and preparation of one derivative.

Suggested Readings:

- A.I. Vogel: Qualitative Inorganic Analysis, Prentice Hall, 7th Edn.
- A.I. Vogel: Quantitative Chemical Analysis, Prentice Hall, 6th Edn.
- Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.
- Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.

DSE-2: Applications of computers in chemistry Credits 06

DSE2T: Applications of computers in chemistry Credits 04

Course Contents:

Basics:

Constants, variables, bits, bytes, binary and ASCII formats, arithmetic expressions, hierarchy of operations, inbuilt functions. Elements of the BASIC language. BASIC keywords and commands. Logical and relative operators. Strings and graphics. Compiled versus interpreted languages. Debugging. Simple programs using these concepts. Matrix addition and multiplication. Statistical analysis.

Numerical methods:

Roots of equations: Numerical methods for roots of equations: Quadratic formula, iterative method, Newton-Raphson method, Binary bisection and Regula-Falsi. *Differential calculus:* Numerical differentiation. *Integral calculus:* Numerical integration (Trapezoidal and Simpson's rule), probability distributions and mean values. *Simultaneous equations:* Matrix manipulation: addition, multiplication. Gauss-Siedal method. *Interpolation, extrapolation and curve fitting:* Handling of experimental data. *Conceptual background of molecular modelling:* Potential energy surfaces. Elementary idea of molecular mechanics and practical MO methods.

Suggested Readings:

- Harris, D. C. *Quantitative Chemical Analysis*. 6th Ed., Freeman (2007) Chapters 3-5.
- Levie, R. de, *How to use Excel in analytical chemistry and in general scientific data analysis*, Cambridge Univ. Press (2001) 487 pages.
- Noggle, J. H. *Physical chemistry on a Microcomputer*. Little Brown & Co. (1985).
- Venit, S.M. *Programming in BASIC: Problem solving with structure and style.* Jaico Publishing House: Delhi (1996).

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

DSE1P: Applications of computers in chemistry (Lab) **Credits 02**

Computer programs based on numerical methods for

1. Roots of equations: (e.g. volume of *van der Waals* gas and comparison with ideal gas, pH of a weak acid).
2. Numerical differentiation (e.g., change in pressure for small change in volume of a van der Waals gas, potentiometric titrations).
3. Numerical integration (e.g. entropy/ enthalpy change from heat capacity data), probability distributions (gas kinetic theory) and mean values.
4. Matrix operations. Application of Gauss-Siedel method in colourimetry.
5. Simple exercises using molecular visualization software.

Suggested Readings:

- McQuarrie, D. A. *Mathematics for Physical Chemistry* University Science Books (2008).
- Mortimer, R. *Mathematics for Physical Chemistry*. 3rd Ed. Elsevier (2005).
- Steiner, E. *The Chemical Maths Book* Oxford University Press (1996).
- Yates, P. *Chemical Calculations.* 2nd Ed. CRC Press (2007).
- Harris, D. C. *Quantitative Chemical Analysis*. 6th Ed., Freeman (2007) Chapters 3-5.
- Levie, R. de, *How to use Excel in analytical chemistry and in general scientific data analysis*, Cambridge Univ. Press (2001) 487 pages.
- Noggle, J. H. *Physical Chemistry on a Microcomputer.* Little Brown & Co. (1985).
- Venit, S.M. *Programming in BASIC: Problem solving with structure and style.* Jaico Publishing House: Delhi (1996).

Or

DSE-2: Green Chemistry **Credits 06**

DSE2T: Green Chemistry **Credits 04**

Course Contents:

Introduction to Green Chemistry

What is Green Chemistry? Need for Green Chemistry. Goals of Green Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry

Principles of Green Chemistry and Designing a Chemical synthesis

Twelve principles of Green Chemistry with their explanations and examples and special emphasis on the following:

- Designing a Green Synthesis using these principles; Prevention of Waste/ byproducts; maximum incorporation of the materials used in the process into the final products , Atom Economy, calculation of atom economy of the rearrangement, addition, substitution and elimination reactions.
- Prevention/ minimization of hazardous/ toxic products reducing toxicity. Risk = (function) hazard × exposure; waste or pollution prevention hierarchy.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

- Green solvents – supercritical fluids, water as a solvent for organic reactions, ionic liquids, fluorous biphasic solvent, PEG, solvent less processes, immobilized solvents and how to compare greenness of solvents.
- Energy requirements for reactions – alternative sources of energy: use of microwaves and ultrasonic energy.
- Selection of starting materials; avoidance of unnecessary derivatization – careful use of blocking/protecting groups.
- Use of catalytic reagents (wherever possible) in preference to stoichiometric reagents; catalysis and green chemistry, comparison of heterogeneous and homogeneous catalysis, biocatalysis, asymmetric catalysis and photocatalysis.
- Prevention of chemical accidents designing greener processes, inherent safer design, principle of ISD "What you don't have cannot harm you", greener alternative to Bhopal Gas Tragedy (safer route to carcarbaryl) and Flixiborough accident (safer route to cyclohexanol) subdivision of ISD, minimization, simplification, substitution, moderation and limitation.
- Strengthening/ development of analytical techniques to prevent and minimize the generation of hazardous substances in chemical processes.

Green Synthesis/ Reactions and some real world cases:

1. Green Synthesis of the following compounds: adipic acid, catechol, disodium iminodiacetate (alternative to Strecker synthesis)
2. Microwave assisted reactions in water: Hofmann Elimination, methyl benzoate to benzoic acid, oxidation of toluene and alcohols; microwave assisted reactions in organic solvents Diels-Alder reaction and Decarboxylation reaction
3. Ultrasound assisted reactions: sonochemical Simmons-Smith Reaction (Ultrasonic alternative to iodine)
4 Surfactants for carbon dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments.
5 Designing of Environmentally safe marine antifoulant.
6 Rightfit pigment: synthetic azopigments to replace toxic organic and inorganic pigments.
7 n efficient, green synthesis of a compostable and widely applicable plastic (poly lactic acid) made from corn.
8 Healthier fats and oil by Green Chemistry: Enzymatic interesterification for production of no Trans-Fats and Oils
9 Development of Fully Recyclable Carpet: Cradle to Cradle Carpeting

Future Trends in Green Chemistry

Oxidation reagents and catalysts; Biomimetic, multifunctional reagents; Combinatorial green chemistry; Proliferation of solventless reactions; co crystal controlled solid state synthesis (C_2S_3); Green chemistry in sustainable development.

Suggested Readings:

- Ahluwalia, V.K. & Kidwai, M.R. *New Trends in Green Chemistry*, Anamalaya Publishers (2005).
- Anastas, P.T. & Warner, J.K.: *Green Chemistry - Theory and Practical*, Oxford University Press (1998).
- Matlack, A.S. *Introduction to Green Chemistry*, Marcel Dekker (2001).
- Cann, M.C. & Connely, M.E. *Real-World cases in Green Chemistry*, American Chemical Society, Washington (2000).

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

- Ryan, M.A. & Tinnesand, M. *Introduction to Green Chemistry*, American Chemical Society, Washington (2002).
- Lancaster, M. *Green Chemistry: An Introductory Text* RSC Publishing, 2nd Edition, 2010.

DSE2P: Green Chemistry (Lab) **Credits 02**

Practical:

1. Safer starting materials

Preparation and characterization of nanoparticles of gold using tea leaves.

2. Using renewable resources

Preparation of biodiesel from vegetable/ waste cooking oil.

3. Avoiding waste

- Principle of atom economy.

- Use of molecular model kit to stimulate the reaction to investigate how the atom economy can illustrate Green Chemistry.
- Preparation of propene by two methods can be studied
  (I) Triethylamine ion + OH^- → propene + trimethylpropene + water
  (II) 1-propanol $\xrightarrow{H_2SO_4/\Delta}$ propane + water

- Other types of reactions, like addition, elimination, substitution and rearrangement should also be studied for the calculation of atom economy.

4. Use of enzymes as catalysts

Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide.

5. Alternative Green solvents

Extraction of D-limonene from orange peel using liquid CO_2 prepared form dry ice.

Mechanochemical solvent free synthesis of azomethines

6. Alternative sources of energy

- Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper (II).
- Photoreduction of benzophenone to benzopinacol in the presence of sunlight.

Suggested Readings:

- Anastas, P.T & Warner, J.C. *Green Chemistry: Theory and Practice*, Oxford University Press (1998).
- Kirchoff, M. & Ryan, M.A. *Greener approaches to undergraduate chemistry experiment*. American Chemical Society, Washington DC (2002).
- Ryan, M.A. *Introduction to Green Chemistry*, Tinnesand; (Ed), American Chemical Society, Washington DC (2002).
- Sharma, R.K.; Sidhwani, I.T. & Chaudhari, M.K. I.K. *Green Chemistry Experiment: A monograph International Publishing House Pvt Ltd. New Delhi*. Bangalore CISBN 978-93-81141-55-7 (2013).

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

- Cann, M.C. & Connelly, M. E. *Real world cases in Green Chemistry*, American Chemical Society (2008).
- Cann, M. C. & Thomas, P. *Real world cases in Green Chemistry*, American Chemical Society (2008).
- Lancaster, M. *Green Chemistry: An Introductory Text* RSC Publishing, 2nd Edition, 2010.
- Pavia, D.L., Lampman, G.M., Kriz, G.S. & Engel, R.G. *Introduction to Organic Laboratory Techniques: A Microscale and Macro Scale Approach,* W.B.Saunders, 1995.

Or

DSE-2: Industrial Chemicals and Environment — Credits 06

DSE2T: Industrial Chemicals and Environment — Credits 04

Course Contents:

Industrial Gases and Inorganic Chemicals

Industrial Gases: Large scale production, uses, storage and hazards in handling of the following gases: oxygen, nitrogen, argon, neon, helium, hydrogen, acetylene, carbon monoxide, chlorine, fluorine, sulphur dioxide and phosgene.

Inorganic Chemicals: Manufacture, application, analysis and hazards in handling the following chemicals: hydrochloric acid, nitric acid, sulphuric acid, caustic soda, common salt, borax, bleaching powder, sodium thiosulphate, hydrogen peroxide, potash alum, chrome alum, potassium dichromate and potassium permanganate.

Industrial Metallurgy

General Principles of Metallurgy

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon as reducing agent. Hydrometallurgy, Methods of purification of metals (Al, Pb, Ti, Fe, Cu, Ni, Zn): electrolytic, oxidative refining, Kroll process, Parting process, van Arkel-de Boer process and Mond's process. Preparation of metals (ferrous and nonferrous) and ultrapure metals for semiconductor technology.

Environment and its segments

Ecosystems. Biogeochemical cycles of carbon, nitrogen and sulphur.

Air Pollution: Major regions of atmosphere. Chemical and photochemical reactions in atmosphere. Air pollutants: types, sources, particle size and chemical nature; Photochemical smog: its constituents and photochemistry. Environmental effects of ozone, Major sources of air pollution. Pollution by SO_2, CO_2, CO, NO_x, H_2S and other foul smelling gases. Methods of estimation of CO, NO_x, SO_x and control procedures. Effects of air pollution on living organisms and vegetation. Greenhouse effect and Global warming, Ozone depletion by oxides of nitrogen, chlorofluorocarbons and Halogens, removal of sulphur from coal. Control of particulates.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Water Pollution: Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Techniques for measuring water pollution, Impacts of water pollution on hydrological and ecosystems. Water purification methods. Effluent treatment plants (primary, secondary and tertiary treatment). Industrial effluents from the following industries and their treatment: lectroplating, textile, tannery, dairy, petroleum and petrochemicals, agro, fertilizer, etc. Sludge disposal. Industrial waste management, incineration of waste. Water treatment and purification (reverse osmosis, electro dialysis, ion exchange). Water quality parameters for waste water, industrial water and domestic water.

Energy & Environment

Sources of energy: Coal, petrol and natural gas. Nuclear Fusion / Fission, Solar energy, Hydrogen, geothermal, Tidal and Hydel, etc.
Nuclear Pollution: Disposal of nuclear waste, nuclear disaster and its management.

Biocatalysis

Introduction to biocatalysis: Importance in "Green Chemistry" and Chemical Industry.

Suggested Readings:

- E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
- R.M. Felder, R.W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
- J. A. Kent: *Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.*
- *S. S. Dara: A Textbook of Engineering Chemistry*, S. Chand & Company Ltd. New Delhi.
- K. De, *Environmental Chemistry*: New Age International Pvt., Ltd, New Delhi.
- S. M. Khopkar, *Environmental Pollution Analysis*: Wiley Eastern Ltd, New Delhi.
- S.E. Manahan, *Environmental Chemistry*, CRC Press (2005).
- G.T. Miller, *Environmental Science* 11th edition. Brooks/ Cole (2006).
- Mishra, *Environmental Studies*. Selective and Scientific Books, New Delhi (2005).

DSE2P: Industrial Chemicals & Environment **Credits 02**

Practical:

1. Determination of dissolved oxygen in water.
2. Determination of Chemical Oxygen Demand (COD)
3. Determination of Biological Oxygen Demand (BOD)
4. Percentage of available chlorine in bleaching powder.
5. Measurement of chloride, sulphate and salinity of water samples by simple titration method ($AgNO_3$ and potassium chromate).
6. Estimation of total alkalinity of water samples (CO_3^{2-} HCO_3^-) using double titration method.
7. Measurement of dissolved CO_2.
8. Study of some of the common bio-indicators of pollution.
9. Estimation of SPM in air samples.
10. Preparation of borax/ boric acid.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Suggested Readings:

- E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
- R.M. Felder, R.W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
- J. A. Kent: Riegel's *Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
- S. S. Dara: *A Textbook of Engineering Chemistry*, S. Chand & Company Ltd. New Delhi.
- K. De, *Environmental Chemistry*: New Age International Pvt. Ltd, New Delhi.
- S. M. Khopkar, *Environmental Pollution Analysis*: Wiley Eastern Ltd, New Delhi.

Or

DSE-2: Quantum Chemistry, Spectroscopy & Photochemistry Credits 06

DSE2T: Quantum Chemistry, Spectroscopy & Photochemistry Credits 04

Course Contents:

Quantum Chemistry

Postulates of quantum mechanics, quantum mechanical operators, Schrödinger equation and its application to free particle and "particle-in-a-box" (rigorous treatment), quantization of energy levels, zero-point energy and Heisenberg Uncertainty principle; wavefunctions, probability distribution functions, nodal properties, Extension to two and three dimensional boxes, separation of variables, degeneracy.

Qualitative treatment of simple harmonic oscillator model of vibrational motion: Setting up of Schrödinger equation and discussion of solution and wave functions. Vibrational energy of diatomic molecules and zero-point energy.

Angular momentum: Commutation rules, quantization of square of total angular momentum and z-component. Rigid rotator model of rotation of diatomic molecule. Schrödinger equation, transformation to spherical polar coordinates. Separation of variables. Spherical harmonics. Discussion of solution.

Qualitative treatment of hydrogen atom and hydrogen like ions: setting up of Schrödinger equation in spherical polar coordinates, radial part, quantization of energy (only final energy expression). Average and most probable distances of electron from nucleus. Setting up of Schrödinger equation for many-electron atoms (He, Li). Need for approximation methods. Statement of variation theorem and application to simple systems (particle-in-a-box, harmonic oscillator, hydrogen atom).

Chemical bonding: Covalent bonding, valence bond and molecular orbital approaches, LCAO-MO treatment of H_2^+. Bonding and antibonding orbitals. Qualitative extension to H_2. Comparison of LCAO-MO and VB treatments of H_2 (only wave functions, detailed solution not required) and their limitations. Refinements of the two approaches (Configuration Interaction for MO, ionic terms in VB). Qualitative description of LCAO-MO treatment of homonuclear and heteronuclear diatomic molecules (HF, LiH). Localised and non-localised molecular orbitals treatment of triatomic (BeH_2, H_2O) molecules. Qualitative MO theory and its application to AH_2 type molecules.

Molecular Spectroscopy:

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Interaction of electromagnetic radiation with molecules and various types of spectra; Born Oppenheimer approximation.

Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution.

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations, anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules, modes of vibration, concept of group frequencies. Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches.

Raman spectroscopy: Qualitative treatment of Rotational Raman effect; Effect of nuclear spin, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, rule of mutual exclusion.

Electronic spectroscopy: Franck-Condon principle, electronic transitions, singlet and triplet states, fluorescence and phosphorescence, dissociation and predissociation, calculation of electronic transitions of polyenes using free electron model.

Nuclear Magnetic Resonance (NMR) spectroscopy: Principles of NMR spectroscopy, Larmor precession, chemical shift and low resolution spectra, different scales, spin-spin coupling and high resolution spectra, interpretation of PMR spectra of organic molecules.

Electron Spin Resonance (ESR) spectroscopy: Its principle, hyperfine structure, ESR of simple radicals.

Photochemistry

Characteristics of electromagnetic radiation, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws, of photochemistry, quantum yield, actinometry, examples of low and high quantum yields, photochemical equilibrium and the differential rate of photochemical reactions, photosensitised reactions, quenching. Role of photochemical reactions in biochemical processes, photostationary states, chemiluminescence.

Suggested Readings:

- Banwell, C. N. & McCash, E. M. *Fundamentals of Molecular Spectroscopy* 4th Ed. Tata McGraw-Hill: New Delhi (2006).
- Chandra, A. K. *Introductory Quantum Chemistry* Tata McGraw-Hill (2001).
- House, J. E. *Fundamentals of Quantum Chemistry* 2nd
- Ed. Elsevier: USA (2004).
- Lowe, J. P. & Peterson, K. *Quantum Chemistry*, Academic Press (2005).
- Kakkar, R. *Atomic & Molecular Spectroscopy*: *Concepts & Applications*, Cambridge University Press (2015).

DSE2P: Practical **Credits 02**

UV/Visible spectroscopy

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

I. Study the 200-500 nm absorbance spectra of $KMnO_4$ and $K_2Cr_2O_7$ (in 0.1 M H_2SO_4) and determine the λ_{max} values. Calculate the energies of the two transitions in different units (J molecule^{-1}, kJ mol^{-1}, cm^{-1}, eV).
II. Study the pH-dependence of the UV-Vis spectrum (200-500 nm) of $K_2Cr_2O_7$.
III. Record the 200-350 nm UV spectra of the given compounds (acetone, acetaldehyde, 2-propanol, acetic acid) in water. Comment on the effect of structure on the UV spectra of organic compounds.

Colourimetry

I. Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/$KMnO_4$/$K_2Cr_2O_7$ in a solution of unknown concentration
II. Determine the concentrations of $KMnO_4$ and $K_2Cr_2O_7$ in a mixture.
III. Study the kinetics of iodination of propanone in acidic medium.
IV. Determine the amount of iron present in a sample using 1,10-phenathroline.
V. Determine the dissociation constant of an indicator (phenolphthalein).
VI. Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium hydroxide.
VII. Analyse the given vibration-rotation spectrum of HCl (g)

Suggested Readings:

- Mendham, J. *Vogel's Quantitative Chemical Analysis*, Pearson, 2009.
- Khosla, B. D.; Garg, V. C. & Gulati, A., *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
- Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.;* McGraw-Hill: New York (2003).
- Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.;* W.H. Freeman & Co.: New York (2003).

Or

DSE-2: Molecular Modelling & Drug design — Credits 06

DSE2T: Molecular Modelling & Drug design — Credits 04

Course Contents:

Introduction to Molecular Modelling:

Introduction. Useful Concepts in Molecular Modelling: Coordinate Systems. Potential Energy Surfaces. Molecular Graphics. Surfaces. Computer Hardware and Software. The Molecular Modelling Literature.

Force Fields:

Fields. Bond Stretching. Angle Bending. Introduction to non-bonded interactions. Electrostatic interactions. *van der Waals* Interactions. Hydrogen bonding in Molecular Mechanics. Force Field Models for the Simulation of Liquid Water.

Energy Minimization and Computer Simulation:

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Minimization and related methods for exploring the energy surface. Non-derivative method, First and second order minimization methods. Computer simulation methods. Simple thermodynamic properties and Phase Space. Boundaries. Analyzing the results of a simulation and estimating Errors.

Molecular Dynamics & Monte Carlo Simulation:

Molecular Dynamics Simulation Methods. Molecular Dynamics using simple models. Molecular Dynamics with continuous potentials. Molecular Dynamics at constant temperature and pressure. Metropolis method. Monte Carlo simulation of molecules. Models used in Monte Carlo simulations of polymers.

Structure Prediction and Drug Design:

Structure prediction - Introduction to comparative Modelling. Sequence alignment. Constructing and evaluating a comparative model. Predicting protein structures by 'Threading', Molecular docking. Structure based de novo ligand design, Drug Discovery – Chemo informatics – QSAR.

Suggested Readings:

- Leach, A.R. *Molecular Modelling Principles and Application*, Longman, 2001.
- Haile, J.M. *Molecular Dynamics Simulation Elementary Methods*, John Wiley and Sons, 1997.
- Gupta, S.P. *QSAR and Molecular Modeling*, Springer - Anamaya Publishers, 2008.

DSE2P: Molecular Modelling & Drug design (Lab) Credits 02

Practical:

i. Compare the optimized C-C bond lengths in ethane, ethene, ethyne and benzene. Visualize the molecular orbitals of the ethane σ bonds and ethene, ethyne, benzene and pyridine π bonds.

ii. (a) Perform a conformational analysis of butane.
(b) Determine the enthalpy of isomerization of *cis* and *trans* 2-butene.

iii. Visualize the electron density and electrostatic potential maps for LiH, HF, N_2, NO and CO and comment. Relate to the dipole moments. Animate the vibrations of these molecules.

iv. (a) Relate the charge on the hydrogen atom in hydrogen halides with their acid character.
(b) Compare the basicities of the nitrogen atoms in ammonia, methylamine, dimethylamine and trimethylamine.

v. (a) Compare the shapes of the molecules: 1-butanol, 2-butanol, 2-methyl-1-propanol, and 2-methyl-2-propanol. Note the dipole moment of each molecule.
(b) Show how the shapes affect the trend in boiling points: (118 ºC, 100 ºC, 108 ºC, 82 ºC, respectively).

vi. Build and minimize organic compounds of your choice containing the following functional groups. Note the dipole moment of each compound:
(a) alkyl halide (b) aldehyde (c) ketone (d) amine (e) ether (f) nitrile (g) thiol (h) carboxylic acid (i) ester (j) amide.

vii. (a) Determine the heat of hydration of ethylene.
(b) Compute the resonance energy of benzene by comparison of its enthalpy of hydrogenation with that of cyclohexene.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

viii. Arrange 1-hexene, 2-methyl-2-pentene, (*E*)-3-methyl-2-pentene, (*Z*)-3-methyl-2-pentene, and 2,3-dimethyl-2-butene in order of increasing stability.

ix. (a) Compare the optimized bond angles H_2O, H_2S, H_2Se.
(b) Compare the HAH bond angles for the second row dihydrides and compare with the results from qualitative MO theory.

Note: Software: ChemSketch, ArgusLab (www.planaria-software.com), TINKER 6.2 (dasher.wustl.edu/ffe), WebLab Viewer, Hyperchem, or any similar software.

Suggested Readings:

- Leach, A.R. *Molecular Modelling Principles and Application*, Longman, 2001.
- Haile, J.M. *Molecular Dynamics Simulation Elementary Methods*, John Wiley and Sons, 1997.
- Gupta, S.P. *QSAR and Molecular Modeling*, Springer - Anamaya Publishers, 2008.

Skill Enhancement Course (SEC)

SEC-1: Basic Analytical Chemistry — Credits 02

SEC1T: Basic Analytical Chemistry — Credits 01

Course Contents:

Introduction: Introduction to Analytical Chemistry and its interdisciplinary nature. Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures.

Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators.

Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods.

Analysis of food products: Nutritional value of foods, idea about food processing and food preservations and adulteration.

Chromatography: Definition, general introduction on principles of chromatography, paper chromatography, TLC etc.

Ion-exchange: Column, ion-exchange chromatography etc. Determination of ion exchange capacity of anion / cation exchange resin (using batch procedure if use of column is not feasible).

Analysis of cosmetics: Major and minor constituents and their function.

SEC1P: Practical — Credits 01

A:

1. Determination of pH of soil samples.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

2. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration.
3. Determination of pH, acidity and alkalinity of a water sample.
4. Determination of dissolved oxygen (DO) of a water sample.
5. Identification of adulterants in some common food items like coffee powder, asafoetida,chilli powder, turmeric powder, coriander powder and pulses, etc.
6. Analysis of preservatives and colouring matter.
7. Paper chromatographic separation of mixture of metal ion (Fe^{3+} and Al^{3+}).
8. To compare paint samples by TLC method.
9. Determination of ion exchange capacity of anion / cation exchange resin (using batch procedure if use of column is not feasible).
10. Analysis of deodorants and antiperspirants, Al, Zn, boric acid, chloride, sulphate.
11. Determination of constituents of talcum powder: Magnesium oxide, Calcium oxide, Zinc oxide and Calcium carbonate by complexometric titration.

B:

Suggested Applications (Any one):

1. To study the use of phenolphthalein in trap cases.
2. To analyze arson accelerants.
3. To carry out analysis of gasoline.

C:

Suggested Instrumental demonstrations:

1. Estimation of macro nutrients: Potassium, Calcium, Magnesium in soil samples by flame photometry.
2. Spectrophotometric determination of Iron in Vitamin / Dietary Tablets.
3. Spectrophotometric Identification and Determination of Caffeine and Benzoic Acid in Soft Drink.

Suggested Readings:

- Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*. 7th Ed. Wadsworth Publishing Co. Ltd., Belmont, California, USA.
- Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
- Skoog, D.A.; West, D.M. & Holler, F.J. *Fundamentals of Analytical Chemistry 6th Ed.*, Saunders College Publishing, Fort Worth.
- Harris, D. C. *Quantitative Chemical Analysis*, W. H. Freeman.
- Dean, J. A. *Analytical Chemistry Notebook*, McGraw Hill.
- Day, R. A. & Underwood, A. L. *Quantitative Analysis*, Prentice Hall of India.
- Freifelder, D. *Physical Biochemistry 2nd Ed.*, W.H. Freeman and Co., N.Y. USA.
- Cooper, T.G. *The Tools of Biochemistry*, John Wiley and Sons, N.Y. USA.
- Vogel, A. I. *Vogel's Qualitative Inorganic Analysis 7th Ed.*, Prentice Hall.
- Vogel, A. I. Vogel's *Quantitative Chemical Analysis 6th Ed.*, Prentice Hall.
- Robinson, J.W. *Undergraduate Instrumental Analysis 5th Ed.*, Marcel Dekker, Inc., New York.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Or

SEC-1: Chemo informatics Credits 02

SEC1T: Chemo informatics

Course Contents:

Introduction to Chemo informatics:

History and evolution of chemo informatics, Use of chemo informatics, Prospects of chemo informatics, Molecular Modelling and Structure elucidation.

Representation of molecules and chemical reactions:

Nomenclature, Different types of notations, SMILES coding, Matrix representations, Structure of Molfiles and Sdfiles, Libraries and toolkits, Different electronic effects, Reaction classification.

Searching chemical structures:
Full structure search, sub-structure search, basic ideas, similarity search, three dimensional search methods, basics of computation of physical and chemical data and structure descriptors, data visualization.

Applications:

Prediction of Properties of Compounds; Linear Free Energy Relations; Quantitative Structure-Property Relations; Descriptor Analysis; Model Building; Modeling Toxicity; Structure-Spectra correlations; Prediction of NMR, IR and Mass spectra; Computer Assisted Structure elucidations; Computer Assisted Synthesis Design, Introduction to drug design; Target Identification and Validation; Lead Finding and Optimization; Analysis of HTS data; Virtual Screening; Design of Combinatorial Libraries; Ligand-Based and Structure Based Drug design; Application of Chemoinformatics in Drug Design.

Suggested Readings:

- Andrew R. Leach & Valerie, J. Gillet (2007) *An introduction to Chemoinformatics.* Springer: The Netherlands.
- Gasteiger, J. & Engel, T. (2003) *Chemoinformatics: A text-book.* Wiley-VCH.
- Gupta, S. P. (2011) *QSAR & Molecular Modeling.* Anamaya Pub.: New Delhi.

SEC-2: Intellectual Property Rights (IPR) Credits 02

SEC2T: Intellectual Property Rights (IPR)

Course Contents:

Introduction to Intellectual Property: Historical Perspective, Different Types of IP, Importance of protecting IP.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Copyrights: Introduction, How to obtain, Differences from Patents.

Trade Marks: Introduction, How to obtain, Different types of marks – Collective marks, certification marks, service marks, Trade names, etc. Differences from Designs.

Patents: Historical Perspective, Basic and associated right, WIPO, PCT system, Traditional Knowledge, Patents and Healthcare – balancing promoting innovation with public health, Software patents and their importance for India.

Geographical indications: Definition, rules for registration, prevention of illegal exploitation, importance to India.

Industrial Designs: Definition, How to obtain, features, International design registration.

Layout design of integrated circuits: Circuit Boards, Integrated Chips, Importance for electronic industry.

Trade Secrets: Introduction and Historical Perspectives, Scope of Protection, Risks involved and legal aspects of Trade Secret Protection.

Different International agreements

(a) Word Trade Organization (WTO):

(i) General Agreement on Tariffs & Trade (GATT), Trade Related Intellectual Property Rights (TRIPS) agreement
(ii) General Agreement on Trade related Services (GATS)
(iii) Madrid Protocol
(iv) Berne Convention
(v) Budapest Treaty

(b) Paris Convention

WIPO and **TRIPS, IPR** and Plant Breeders Rights, IPR and Biodiversity

IP Infringement issue and enforcement – Role of Judiciary, Role of law enforcement agencies – Police, Customs etc. Economic Value of Intellectual Property – Intangible assets and their valuation, Intellectual Property in the Indian Context – Various laws in India Licensing and technology transfer.

Suggested Readings:

- N.K. Acharya: *Textbook on intellectual property rights*, Asia Law House .
- Manjula Guru & M.B. Rao, *Understanding Trips: Managing Knowledge in Developing Countries*, Sage Publications.
- P. Ganguli, Intellectual Property Rights: *Unleashing the Knowledge Economy*, Tata McGraw-Hill.
- Arthur Raphael Miller, Micheal H.Davis; *Intellectual Property: Patents, Trademarks and Copyright in a Nutshell*, West Group Publishers (2000).
- Jayashree Watal, *Intellectual property rights in the WTO and developing countries*, Oxford University Press, Oxford.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Or

SEC-2: Analytical Clinical Biochemistry Credits 02

SEC2T: Analytical Clinical Biochemistry Credits 01

Course Contents:

Basic understanding of the structures, properties and functions of carbohydrates, lipids and proteins:

Review of concepts studied in the core course:

Carbohydrates: Biological importance of carbohydrates, Metabolism, Cellular currency of energy (ATP), Glycolysis, Alcoholic and Lactic acid fermentations, Krebs cycle. Isolation and characterization of polysachharides.

Proteins: Classification, biological importance; Primary and secondary and tertiary structures of proteins: α-helix and β- pleated sheets, Isolation, characterization, denaturation of proteins.

Enzymes: Nomenclature, Characteristics (mention of Ribozymes), Classification; Active site, Mechanism of enzyme action, Stereospecificity of enzymes, Coenzymes and cofactors, Enzyme inhibitors, Introduction to Biocatalysis: Importance in "Green Chemistry" and Chemical Industry.

Lipids: Classification. Biological importance of triglycerides and phosphoglycerides and cholesterol; Lipid membrane, Liposomes and their biological functions and underlying applications. Lipoproteins.

Hormone : Properties, functions and biochemical functions of steroid hormones. Biochemistry of peptide hormones.

Structure of DNA (Watson-Crick model) and RNA, Genetic Code, Biological roles of DNA and RNA: Replication, Transcription and Translation, Introduction to Gene therapy.

Enzymes: Nomenclature, classification, effect of pH, temperature on enzyme activity, enzyme inhibition.

Biochemistry of disease: A diagnostic approach by blood/ urine analysis.

Blood: Composition and functions of blood, blood coagulation. Blood collection and preservation of samples. Anaemia, Regulation, estimation and interpretation of data for blood sugar, urea, creatinine, cholesterol and bilirubin.
Urine: Collection and preservation of samples. Formation of urine. Composition an estimation of constituents of normal and pathological urine.

SEC2P: Practical Credit 01

Practical
Identification and estimation of the following:

1. Carbohydrates – qualitative and quantitative.

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

2. Lipids – qualitative.
3. Determination of the iodine number of oil.
4. Determination of the saponification number of oil.
5. Determination of cholesterol using Liebermann- Burchard reaction.
6. Proteins – qualitative.
7. Isolation of protein.
8. Determination of protein by the Biuret reaction.
9. Determination of nucleic acids

Suggested Readings:

- T.G. Cooper: Tool of Biochemistry.
- Keith Wilson and John Walker: Practical Biochemistry.
- Alan H Gowenlock: Varley's Practical Clinical Biochemistry.
- Thomas M. Devlin: Textbook of Biochemistry.
- Berg, J.M., Tymoczko, J.L. & Stryer, L. *Biochemistry*, W.H. Freeman, 2002.
- Talwar, G.P. & Srivastava, M. *Textbook of Biochemistry and Human Biology*, 3rd Ed. PHI Learning.
- Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Biochemistry 7th Ed.*, W. H. Freeman.
- Mikes, O. *Laboratory Hand Book of Chromatographic & Allied Methods*, Elles Harwood Series on Analytical Chemistry, John Wiley & Sons, 1979.

SEC-3: Pharmaceutical Chemistry — Credits 02

SEC3T: Pharmaceutical Chemistry — Credits 01

Course Contents:

Drugs & Pharmaceuticals:

Drug discovery, design and development; Basic Retrosynthetic approach. Synthesis of the representative drugs of the following classes: analgesics agents, antipyretic agents, antiinflammatory agents (Aspirin, paracetamol, lbuprofen); antibiotics (Chloramphenicol); antibacterial and antifungal agents (Sulphonamides; Sulphanethoxazol, Sulphacetamide, Trimethoprim); antiviral agents (Acyclovir), Central Nervous System agents (Phenobarbital, Diazepam),Cardiovascular (Glyceryl trinitrate), antilaprosy (Dapsone), HIV-AIDS related drugs (AZT- Zidovudine).

Fermentation:

Aerobic and anaerobic fermentation. Production of (i) Ethyl alcohol and citric acid, (ii) Antibiotics; Penicillin, Cephalosporin, Chloromycetin and Streptomycin, (iii) Lysine, Glutamic acid, Vitamin B2, Vitamin B12 and Vitamin C.

SEC3P: Practical — Credit 01

Practical:

1. Preparation of Aspirin and its analysis.
2. Preparation of magnesium bisilicate (Antacid).

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Suggested Readings:

- G.L. Patrick: Introduction to *Medicinal Chemistry, Oxford University* Press, UK.
- Hakishan, V.K. Kapoor: *Medicinal and Pharmaceutical Chemistry,* Vallabh Prakashan, Pitampura, New Delhi.
- William O. Foye, Thomas L., Lemke , David A. William: *Principles of Medicinal Chemistry*, B.I. Waverly Pvt. Ltd. New Delhi.

Or

SEC-3: Chemistry of Cosmetics & Perfumes — Credits 02

SEC3T: Chemistry of Cosmetics & Perfumes — Credits 01

Course Contents:

A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, suntan lotions, face powder, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours. Essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone.

SEC3P: Practical — Credit 01

1. Preparation of talcum powder.
2. Preparation of shampoo.
3. Preparation of enamels.
4. Preparation of hair remover.
5. Preparation of face cream.
6. Preparation of nail polish and nail polish remover.

Suggested Readings:

- E. Stocchi: *Industrial Chemistry*, Vol -I, Ellis Horwood Ltd. UK.
- P.C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
- Sharma, B.K. & Gaur, H. *Industrial Chemistry,* Goel Publishing House, Meerut (1996).

SEC-4: Pesticide Chemistry — Credits 02

SEC4T: Pesticide Chemistry — Credits 01

Course Contents:

General introduction to pesticides (natural and synthetic), benefits and adverse effects, changing concepts of pesticides, structure activity relationship, synthesis and technical manufacture and uses of representative pesticides in the following classes: Organochlorines (DDT, Gammexene,);

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Organophosphates (Malathion, Parathion); Carbamates (Carbofuran and carbaryl); Quinones (Chloranil), Anilides (Alachlor and Butachlor).

SEC4P: Practical **Credit 01**

1 To calculate acidity/alkalinity in given sample of pesticide formulations as per BIS specifications.
2 Preparation of simple organophosphates, phosphonates and thiophosphates

Suggested Readings:

- Cremlyn, R. *Pesticides. Preparation and Modes of Action*, John Wiley & Sons, New York, 1978.

Or

SEC- 4: Fuel Chemistry Credits 02

SEC4T: Fuel Chemistry

Course Contents:

Introduction: Review of energy sources (renewable and non-renewable). Classification of fuels and their calorific value.

Coal: Uses of coal (fuel and nonfuel) in various industries, its composition, carbonization of coal. Coal gas, producer gas and water gas—composition and uses. Fractionation of coal tar, uses of coal tar bases chemicals, requisites of a good metallurgical coke, Coal gasification (Hydro gasification and Catalytic gasification), Coal liquefaction and Solvent Refining. **Petroleum and Petrochemical Industry:** Composition of crude petroleum, Refining and different types of petroleum products and their applications. Fractional Distillation (Principle and process), Cracking (Thermal and catalytic cracking), Reforming Petroleum and non-petroleum fuels (LPG, CNG, LNG, bio-gas, fuels derived from biomass), fuel from waste, synthetic fuels (gaseous and liquids), clean fuels. **Petrochemicals:** Vinyl acetate, Propylene oxide, Isoprene, Butadiene, Toluene and its derivatives Xylene. **Lubricants:** Classification of lubricants, lubricating oils (conducting and non-conducting), Solid and semisolid lubricants, synthetic lubricants. Properties of lubricants (viscosity index, cloud point, pore point) and their determination.

Suggested Readings:

- Stocchi, E. *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK (1990).
- Jain, P.C. & Jain, M. *Engineering Chemistry* Dhanpat Rai & Sons, Delhi.
- Sharma, B.K. & Gaur, H. *Industrial Chemistry*, Goel Publishing House, Meerut (1996).

Downloaded from Vidyasagar University by 103.77.136.236 on 06 December 2021 : 14:34:31; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Chemistry_General.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Nutrition [Choice Based Credit System]

Semester-I

Sl.No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C1	**C1T:** Basic Nutrition (Theory)	Core Course-1		4	0	0	6	75
	C1P: Basic Nutrition (Practical)	Core Course1 [Practical]		0	0	4		
C2	**C2T:** Food Science and Food Commodity (Theory)	Core Course-2		4	0	0	6	75
	C2P: Nutritional Biochemistry (Practical)	Core Course-2 [Practical]		0	0	4		
GE-1	GE-1	GE					4/5	75
	GE-1	GE					2/1	
AECC	English	AECC					2	50
				Total Credits =20				

L= Lecture, T= Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: English /Modern Indian Language

Interdisciplinary/Generic Elective (GE) from other Department

[**Four papers are to be taken and each paper will be of 6 credits**]: Papers are to be taken from any of the following discipline: **Chemistry/Physiology/Botany /Zoology/Computer Sc/Microbiology/Bio-Technology/Mathematics/Statistics**

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Semester-1

Core Courses

CC-1 : Basic Nutrition **Credits 06**

C1 T1: Basic Nutrition (Theory) **Credits 04**

1. Concept and definition of terms Nutrition, Malnutrition and Health: Brief history of nutritional science. Scope of nutrition.

2. Minimum Nutritional Requirements and RDA : Formulation of RDA and Dietary Guidelines: Reference Man and Reference Woman.

3. Body Composition and Changes through the life cycle.

4. Energy in Human Nutrition: Idea of energy and its unit, energy balance, Assessment of energy requirements, Deficiency and Excess, Determination of energy in food, B.M.R & influencing factors, S.D.A.

5. Energy and other nutritional requirement of adult male and female engaged in different types of work (Sedentary, moderate, heavy).

6. Food as source of nutrients, function of food, definition of nutrition, nutrients and energy, adequate, optimum and good nutrition, malnutrition.

7. Nutrition- Fitness, Athletics and sports.

8. Food Guide- Basic food groups, How to use food guide (according to RDA).

9. Interrelationship between nutrition and health- Visible symptoms of goods health.

10. Function of nutrients- Carbohydrate, dietary fibre, protein, fat, vitamins, minerals, anti-oxidants, water.

11. Effect of cooking and heat processing on the nutritive value of foods.

12. Processed supplementary foods

13. Food sanitation in hygiene.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

C1 P1: Basic Nutrition (Practical) Credits 02

1. Use and care of kitchen equipment.

2. Weights and measures standards; household measures of raw and cooked foods.
3. Food preparation and classifying recipes as good, moderate or poor, sources of specific nutrients, Amount of ingredients to be in standard recipe-

a) Portion size
b) Beverages: tea, coffee, cocoa, fruit juice, milk, milkshakes.
c) Cereals and flour mixtures- basic preparation and there nutritive value- Boiled rice and rice pulao, chapatti, parantha, sandwiches, pastas, pancakes, cookies and cakes.

4. Vegetables and fruits: Simple salad, dry vegetables, curries, fruits preparation using fresh and dried stewed fruit, fruit salad.

5. Milk and milk products: Porridges, curds, anner and their commonly made preparations, milk based simple desserts and puddings, custard, kheer, ice-cream.

6. Meat- Cut of meats Meat preparations, Fish, poultry, hard and soft cooked, poached, scrambled, fried omelette, eggnogs.

7. Soups: Basic, clear and cream soups.
8. Snacks: pakoras, cheese toast, upma, poha, peanut, chikki, ti and laddo

Core Course -2

CC-2 : Food Science and food commodity Credits 06

C2 T2: Food Science and food commodity Credits 04

1. Basic concept on Food, Nutrients, Nutrition.

2. Classification of Food, Classification of Nutrients.

3. Carbohydrates - Definition, Classification, Structure and properties. Monosaccharides - glucose, fructose, galactose. Disaccharides - Maltose, lactose, sucrose. Polysaccharides - Dextrin, starch, glycogen, resistance starch.

4. Lipids - Definition, Classification & Properties. Fatty acids - composition, properties, types.

5. Proteins - Definition, Classification, Structure & properties.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Amino acids - Classification, types, functions.

6. Carbohydrates - Sources, daily requirements, functions. Effects of too high - too low carbohydrates on health. Digestion & Absorption. Blood glucose and effect of different carbohydrates on blood glucose. Glycemic Index. Functional role of Sugars in food, Fermention of Sugar.

7. Proteins - Sources, daily requirements, functions. Effect of too high - too low proteins on health. Digestion & absorption. Assessment of Protein quality (BV, PER, NPU). Factors affecting protein bio-availability including anti-nutritional factors.

8. Lipids - Sources, daily requirements, functions. Digestion & Absorption. Role & nutritional significances of PUFA, MUFA, SFA, W-3 fatty acid.

9. Dietary Fibre - Classification, sources, composition, properties & nutritional significance.

10. Minerals & Trace Elements, Bio-Chemical and Physiological Role, bio-availability & requirements, sources, deficiency & excess (Calcium, Sodium, Potassium Phosphorus, Iron, Fluoride, Zinc, Selenium, Iodine, Chromium).

11. Vitamins - Bio-Chemical and Physiological Role Physiological role, bio-availability and requirements, sources, deficiency & excess.

12. Water - Functions, daily requirements, Water balance.

13. Sensory characteristics of food

14 Food behaviour, modification of food behaviour

15. Cereals and Millets: Cereal products, breakfast cereals, fast foods. Structure, processing, storage, use in various preparations, variety, selection and cost.

16. Pulses and Legumes: Production (in brief), structures, selection and variety. Storage, processing and use in different preparations. Nutritional aspects and cost.

17. Milk and Milk-products: Composition, classification, selection quality and cost, processing, storage and uses in different preparations. Nutritional aspects, shelf - life and spoilage.

18. Eggs: Production, grade, quality, selection, storage and spoilage, cost, nutritional aspects and use in different preparations.

19. Meat, Fish and Poultry: Types, selection, purchase, storage, uses, cost, spoilage of fish poultry and meat, uses and preparations.

20. Vegetables and Fruits: Types, selection, purchase, storage, availability. Cost of use and nutritional aspects of raw & processed products and use in different preparations.

21. Sugar and Sugar products: Types of natural sweeteners, manufacture, selection, storage and use as preserver, stages in sugar cookery.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

22. Fats and Oils: Types and sources (animal and vegetable), processing, uses in different preparations, storage, cost and nutritional aspects.

23. Raising and Leavening agents: Types, Constituents, Uses in cookery and bakery, Storage.

24. Food Adjuncts: Spices, Condiments, Herbs, Extracts, Concentrates, Essences, Food Colours. Origin, classification, Description, uses, Specifications, procurements and Storage.

25. Convenience Foods: Role, types, advantages, uses, cost and contribution to diet.

26. Salt: Types and uses.

27. Beverages: Tea; Coffee. Chocolate and Cocoa Powder-Processing, cost and nutritional aspects, other beverages-Aerated beverages, juices.

28. Preserved Products : Jams, Jellies, Pickles, Squashes, Syrups types, composition and manufacture, selection, cost, storage, uses and nutritional aspects.

29. Food Standards : ISI, Agmark, FPO, MPO, PFA.

30. New food: fast food, junk food, GM food, Free food

31. Food, preservation, food processing, food adulteration and food storage.

C2 P2: Nutritional Biochemistry (Practical) Credits 02

1. **Carbohydrate**

a. Reactions of Mono, Di and Polysaccharides and their identification in unknown mixtures.
b. Estimation of reducing and total sugars in foods.
c. Estimation of lactose in milk.

2. **Fats**

a. Reactions of fats and oils
b. Determination of Acid value, Saponification of natural fats and oils.

3. **Proteins**

a. Reactions of proteins in foods
b. Reaction of amino acids and their identification in unknown mixtures
c. Estimation of total nitrogen of foods by Kjeldhal method.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Generic Elective

GE-1 [Interdisciplinary for other department]

GE-1 : BASIC HUMAN NUTRITION Credits 06

GE-1 T: BASIC HUMAN NUTRITION

(Credits: 6)

1. Concept and definition of terms-Nutrition, Malnutrition and Health. Brief history of nutrition science. Scope of Nutrition.

2. Body Composition and Changes through the life cycle.

3. Minimum Nutritional Requirement and RDA. Reference Man and Reference Woman.

3. Energy in Human Nutrition : Idea of Energy and its unit, Energy Balance, Assessment of Energy Requirements of the body, B.M.R & influencing factors, S.D.A, Calorific value of food, Determination of Energy in food.
4. Food groups.

5. Function of nutrients- Carbohydrate, dietary fibre, protein, fat, vitamins, minerals, anti-oxidants, water.

6. Effect of cooking and heat processing on the nutritive value of foods.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Nutrition [Choice Based Credit System]

Semester-II

Sl. No.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C3	**C3T:** Nutritional Biophysics & Biochemistry	Core Course-3		4	0	0	6	75
	C3P: Nutritional Biophysics & Biochemistry (Practical)	Core Course-3 [Practical]		0	0	4		
C4	**C4T:** Human Physiology	Core Course-4		4	0	0	6	75
	C4P: Human Physiology (Practical)	Core Course-4 [Practical]		0	0	4		
GE-2	GE-2	GE					4/5	75
	GE-2	GE					2/1	
AEC C-2	Environmental Studies	AECC					4	100
				Total Credits =22				

L= Lecture, T= Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: Environmental Studies.

Interdisciplinary/Generic Elective (GE) from other Department

[**Four papers are to be taken and each paper will be of 6 credits**]: Papers are to be taken from any of the following discipline: **Chemistry/Physiology/Botany /Zoology**

/Computer Sc/Microbiology/Bio-Technology/Mathematics/Statistics

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Semester-2

Core Courses

Core -3

CC-3 Nutritional Biophysics and biochemistry Credits 06

C3T Nutritional Biophysics and biochemistry Credits 04

1. Biochemistry: Definition, objectives, scope and interrelationship between biochemistry and other biological science.
2. Biophysics- general idea of biophysics in nutrition
3. Basic process and nutritional importances of Diffusion,Osmosis, Absorption, Viscosity, Surface tension, Colloids.
4. Principles of Thermodynamics and its importance in nutrition.
5. Acid, Base, Buffer, pH and Acid-Base balance.
6. Molecular aspects of transport; Passive diffusion, facilitated diffusion, active transport.
7. Enzymes: Definition, types and classification of enzymes, definition and types of coenzymes. specificity of enzymes, Isozymes, enzyme Kinetics including factors affecting enzyme action, velocity of enzyme catalyzed reactions, enzyme inhibition.
8. Intermediary metabolism:
   a) Carbohydrate Metabolism, Glycolysis, TCA cycle & energy generation, gluconeogenesis, glycogenesis, glycogenolysis, blood sugar regulation.
   b) Lipids : Oxidation and biosynthesis of fatty acids (saturated &mono-unsaturated) : Synthesis and utilization of ketone bodies, Ketosis, fatty livers.
   c) Proteins : General reaction of amino acid metabolism, urea cycle.
9. Lipoproteins : Types, composition, role and significance in disease (in brief)
10. Introduction to Nucleic acids: Structure, replication, transcription, genetic code (in brief) elementary knowledge of biosynthesis of proteins.
11. Fluid, Electrolytes and Acid-Base balance brief.

C3P Nutritional Biophysics and biochemistry(Practicals) Credits 02

1. To study the general properties of urease amd salivary amylase.
2. Preparation of buffer of particular PH (Phosphate buffer, tris buffer)
3. Determination of strength of $KMNO_4$ using primary standard (oxalic acid).
4. Electrophoresis
5. Dialysis

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Core -4

CC-4: HUMAN PHYSIOLOGY **Credits 06**

C4T: HUMAN PHYSIOLOGY **Credits 04**

1. Cell structure and function
2. Blood cells: Haemoglobin, Blood groups, Coagulation factors, Anaemia.
3. Skeletal System: bones, joints and bone deformities in brief.
4. Cardiovascular System: Cardiac cycle, Cardiac output, Blood pressure, Hypertension, Radial Pulse
5. Lymphatic System: Lymph glands and its function, Splen- Structure and functions.
6. Respiratory System:- Ventilation, functions, Lungs volume and capacities.
7. Gastrointestinal System: a. Structure of various parts of the GI tract b. Digestion and absorption of Carbohydrate, protein and fat. (Digestion and absorption of Carbohydrate, protein and fat repeated in CC2T 6, 7, 8)
8. Endocrinology: List of endocrine glands, Hormonestheir secretion and function (in brief)
9. Excretory System: Structure of Nephron, formation of urine.
10. Central Nervous System: Parts, Sliding filament theory, neuromuscular junction, wallerian egeneration, Motor Nervous System- Upper motor Nervous System and lower motor Nervous System. Sensory Nervous System, Sympathetic and Parasympathetic nervous system.
11. Skin: Structure and function of skin
12. Reproductive System: a. Structure and functions of male and female reproductive organs, Menstrual cycle, Puberty, Menopause, fertilization and development of fertilized ovum, placenta and its function.
13. Special senses: Structure and function of eye and ear, common diseases in eye and ear (in brief).

C4 P: HUMAN PHYSIOLOGY (Practicals) **Credits 02**

1. Identification of prepared Slides:
(a) Lungs, (b) Supra Renal Gland, (c) Thyroid, (d) Pituitary (e) Testis, (f) Ovary, (g) Kidney, (h) Liver, (i) Pancreas, G) Small Intestine, (k) Large Intestine, (1) Spinal cord, (m) Cerebellum.
2. Preparation of blood film and identification of white blood cells, Differential count.
3. Estimation of Haemoglobin.
4. Determination of Bleeding time and clotting time of blood, Blood grouping.
5. Measurement of Blood pressure and Pulse Rate.
6. Elicitation of Reflexes and jerks.
7. Estimation of haemoglobin, RBC, WBC, TLC, DLC and ESR.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Generic Elective

GE-2 [Interdisciplinary for other department]

GE-2 : FOOD SCIENCE **Credits : 06**

GE-2 T : FOOD SCIENCE

1. Cereals and Millets: Cereal products, breakfast cereals, fast foods. Structure, processing, storage, use in various preparations, variety, selection and cost.
2. Pulses and Legumes: Production (in brief), structures, selection and variety. Storage, processing and use in different preparations. Nutritional aspects and cost.
3. Milk and Milk-products: Composition, classification, selection quality and cost, processing, storage and uses in different preparations. Nutritional aspects, shelf - life and spoilage.
4. Eggs: Production, grade, quality, selection, storage and spoilage, cost, nutritional aspects and use in different preparations.
5. Meat, Fish and Poultry: Types, selection, purchase, storage, uses, cost, spoilage of fish poultry and meat, uses and preparations.
6. Vegetables and Fruits: Types, selection, purchase, storage, availability. Cost of use and nutritional aspects of raw & processed products and use in different preparations.
7. Sugar and Sugar products: Types of natural sweeteners, manufacture, selection, storage and use as preserver, stages in sugar cookery.
8. Fats and Oils: Types and sources (animal and vegetable), processing, uses in different preparations, storage, cost and nutritional aspects.
9. Raising and Leavening agents: Types, Constituents, Uses in cookery and bakery, Storage.
10. Food Adjuncts: Spices, Condiments, Herbs, Extracts, Concentrates, Essences, Food Colours. Origin, classification, Description, uses, Specifications, procurements and Storage.
11. Convenience Foods: Role, types, advantages, uses, cost and contribution to diet.
12. Salt : Types and uses.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

13. Beverages : Tea; Coffee. Chocolate and Cocoa Powder-Processing, cost and nutritional aspects, other beverages-Aerated beverages, juices.
14. Preserved Products : Jams, Jellies, Pickles, Squashes, Syrups types, composition and manufacture, selection, cost, storage, uses and nutritional aspects.
15. Food Standards : ISI, Agmark, FPO, MPO, PFA.
16. New food: fast food, junk food, GM food, Free food
17. Food, preservation, food processing, food adulteration and food storage.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Nutrition

[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		**C5T:**Family meal management and meal planning	Core Course - 5	4	0	0	6	75
		C5P: Practical		0	0	4		
CC-6		**C6T:**Community Nutrition and Nutritional Epidemiology	Core Course - 6	4	0	0	6	75
		C6P: Practical		0	0	4		
CC-7		**C7T:**Basic Dietetics	Core Course - 7	4	0	0	6	75
		C7P: Practical		0	0	4		
GE-3	TBD		Generic Elective -3				4/5	75
							2/1	
SEC-1		**SEC1T:** Immunology, Toxicology and Public Health **Or** **SEC1T:** Biostatistics and Bioinformatics	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P**=Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE)(Interdisciplinary) from other Department [**Four papers are to be taken and each paper will be of 6 credits**]:

Papers are to be taken from any of the following discipline:

Chemistry/Physiology/Botany /Zoology/Computer Sc/Microbiology/Bio-Technology/ Mathematics/Statistics

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Semester-III
Core Course (CC)

CC-5: Family meal management and meal planning **Credits 06**

CC5T: Family meal management and meal planning **Credits 04**

Course Contents:

1. Nutrition during Pregnancy: Physiology of pregnancy, factors (nonnutritional) affecting pregnancy outcome, importance of adequate weight gain during pregnancy, antenatal care and its schedule, Nutritional requirements during pregnancy and modification of existing diet and supplementation, nutritional factors affecting breast feeding. Deficiency of nutrients and impact- energy, iron, folic acid, protein, calcium, iodine. Common problems of pregnancy and their managements- nausea, vomiting, pica, food aversions, pregnancy induced hypertension, obesity, diabetes and Adolescent Pregnancy.
2. Nutrition during Lactation: Physiology of Lactation: Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation. Care and preparation of nipples during breast feeding.
3. Nutrition during infancy: Infant physiology relevant to feeding and care. Breast feeding - colostrums, its composition and importance in feeding. Initiation of breast-feeding and duration of breast-feeding, Advantages of exclusive breast-feeding, Nutritional and other advantages of breast-feeding. Introduction of complementary foods, initiation of management of weaning, breast feeding etc. Bottlefeeding circumstances under which bottle-feeding is to be given. Careand sterilization of bottles. Preparation of formula. Mixed feeding, breast feeding and artificial feeding. Teething and management of problems.
4. Nutrition to toddlers / preschool/school going children or adolescent.
5. Management of preterm and low birth weight children – their special needs.
6. Growth and development from infancy to adulthood: Importance of nutrition for ensuring adequate development, Preventions of growth faltering. Growth assessment by Height, Weight, BMI, Skin fold thickness, Waist Hip Ratio.
7. Geriatric nutrition – Dietary requirement, Geriatric health problems, Nutritional care.
8. Sports Nutrition- nutritional demand on different sports and dietary recommendations.
9. Space Nutrition- Body composition changes in space, special diet in space persons.
10. Meal planning for the family
11. Indian meal pattern- vegetarian and non- vegetarian
12. Food faddism and the faulty food habits
13. Nutritive value of common Indian recepies.

C5P: Family meal management and meal planning (practical) **Credits 02**

1. Planning and preparation of balanced diet for a pregnant women
2. Diet during complication of pregnancy
3. Planning and preparation of balanced diet for a lactating women
4. Preparation of weaning food
5. Planning and preparation of balanced diet for a pre-school children
6. Planning and preparation of balanced diet for school going child. Preparation of packed lunch
7. Planning and preparation of balanced diet for adolescents

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

8. Planning and preparation of balanced diet for adult men and women of different Physical activity and economic status.
9. Planning and preparation of balanced diet for senior citizen.

CC-6: COMMUNITY NUTRITION AND NUTRITIONAL EPIDEMIOLOGY

Credit 06

C6T: Community Nutrition and Nutritional Epidemiology Credit 04

Course Contents:

1. Concept of community, types of community, factors affecting health of Community.
2. Nutritional Anthropometry, Biochemical tests and Biophysical methodology - Merits, Limitations
3. Diet Survey: Need and importance, methods of dietary survey- Merits and Limitations. Family food security.
4. Clinical Signs: Merits, Limitations, Need and importance, identifying signs of PEM, vitamin A deficiency,Vit.–D deficiency and iodine deficiency, Classify clinical sign according to WHO.
5. Nutritional problem in the community
6. National Nutritional Intervention Programme to combat malnutrition
7. Food availability, factors affective food availability and its consumption.
8. Infection and Immunization:Importance and Schedule of Vaccination of Children, Adult andforeign travelers. Full and partial immunization. Role of community for universal vaccination implementation
9. Principles of Epidemiology: Concept of disease, rate of a disease in a population (attack rate, morbidity rate, mortality rate, incidence and prevalence rate).
10. Dietary Exposure-National, Household, Institution and Individual level (NHFS and NNMB)
11. Biomarkers and nutrient intakes.
12. Epidemiological methods: descriptive studies, analytical studies and experimental studies.
13. Study of the epidemiologic approach – time, place, person distribution. Determinants of disease. Vital statistics and their significance.
14. Demography- Demography cycle and its applications. Socio-demographic and psychosocial variables.
15. Public health hazards from contaminated foods
16. Comparison with norms, standards, Z-scores.
17. Interpretation of the nutritional assessment data and its significance
18. Determining Validity and Reliability
19. Sources of errors for different methods of measurement relating to nutritional exposures.
20. Malnutrition and Infection vicious cycle-UNICEF conceptual model of Malnutrition.

C6P: Community Nutrition and Nutritional Epidemiology (Practical) Credit 02

1. Diet and nutrition surveys
   a. Identification of vulnerable and risk groups
   b. Diet survey for breast feeding and weaning practices of specific groups

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

c. Use of anthropometric measurement of children and adolescent girls and boys
2. Preparation of visual aids to highlight community nutrition, nutritional awareness, nutritional surveillance.
3. Field visit to-
   a. Observe the working of nutrition and health oriented programmes (survey based result).
   b. Hospitals to observe nutritional deficiencies.

CC-7: Basic Dietetics **Credits 06**

C7T: Basic Dietetics **Credits 04**

1. Role of dietician: The hospital and community
2. Basic Concepts of diet therapy
3. Principle of diet therapy and therapeutic nutrition for changing needs
4. Routine Hospital Diets: Regular, light, soft, fluid, parenteral and eternal feeding
5. Diets for febrile conditions, infections and surgical conditions.
6. Diet for gastro-intestinal disorders- Constipation, diarrhoea, peptic ulcer
7. Diet for Renal Diseases- Nephritis, Nephrotic syndrome, Renal failure.
8. Diet for obesity and different cardiovascular disorders
9. Diet for diabetes mellitus
10. Nutrition in cancer
11. Nutrition in Immune system dysfunction (AIDS &Allergy)
12. Nutrition support in metabolic disorder
13. Nutrition in burn and surgery
14. Nutrition- Addictive behaviour in anorexia nervosa, bulimia and alcoholism
15. Nutrient Drug interaction
16. Feeding infants and children's- problems in feeding children in hospital
17. Nutrition and diet clinics- Nutrition education in general, Patients check-up and dietary counselling, educating the patient and follow up.

C7P: Basic Dietetics (Practical) **Credits 02**

1. Planning and preparation of normal diets.
2. Planning and preparation of fluid diets.
3. Planning and preparation of soft/semi solid diets.
4. Planning and preparation of high and low calorie diets.
5. Planning and preparation of diets for diabetes mellitus
6. Planning and preparation of diet for hypertension and atherosclerosis
7. Planning the preparation of diets for nephritis and nephrotic syndrome
8. Planning and preparation of diets for Peptic Ulcers.
9. Low and medium cost diets for PEM, anaemia and vitamin A deficiency

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Skill Enhancement Course (SEC)

SEC-1: IMMUNOLOGY, TOXICOLOGY AND PUBLIC HEALTH Credits 02

SEC1T: Immunology, Toxicology and Public Health

Theory:

1. Immunology:
• Basic concept of immunity, Types of immunity-innate, acquired, active and passive immunity.

2. Humoral immune system:
• Mechanisms of humoral immunity, Immunoglobulin isotypes- IgG, IgM, IgA, IgD, and IgE.

3. Cell mediated immune system:
• Types of effector T cells, mechanisms of cell mediated immunity.

4. Toxic agents:
• Human exposure, mechanism of action and resultant toxicities of the following xenobiotics: Metals: lead, arsenic Pesticides: organophosphates, carbamates, organochlorine.

5. Eco-toxicology:
• Brief introduction to avian and aquatic toxicology, movement and effect of toxic compounds in food chain (DDT, mercury), bioaccumulation, biomagnifications, concept of BOD and COD.

Suggested Reading:

1. Immunology, 8th edition, (2012), Male, D., Brostoff, J., Roth, D.B. and Roitt, I., Elseivier-Sauders.
2. An Introduction to Immunology, Immunochemistry and Immunobiology, 5th edition, (1988), Barrett, James T., Mosby Company, St. Louis.
3. Immunology: An Introduction, 4th edition, (1994), Tizard, I.R., Saunders College Publishing, Philadelphia.
4. Cassarett and Doull's "Essentials of Toxicology" 2nd edition (2010), Klaassen and Whatkins, McGraw Hill Publisher.
5. Introduction to Toxicology, 3rd edition (2001), John Timbrell, Taylor and Francis Publishers..
6. Principles of Toxicology, 2nd edition (2006), Stine Karen and Thomas M Brown, CRC press.
7. Lu's basic toxicology: Fundamentals target organ and risk assessment, 5th edition (2009), Frank C Lu and Sam Kacow, Informa Health care.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

OR

SEC 1: BIOSTATISTICS AND BIOINFORMATICS **Credits 02**

SEC1T: Biostatistics and Bioinformatics

Theory:

1. Data and Data Types: Primary data and Secondary Data.
2. Measures of Central Tendency: Mean, Median, Mode.
3. Dispersion: Range, Standard Deviation.
4. Hypothesis Testing: Chi-square Test, Student‘t’ test, Analysis of Variance (ANOVA).
5. Bioinformatics and Health Informatics: Concept and applications.
6. Nucleic acid and Protein Data Bases, Nutrient data bases.
7. Sequence similarity searching by BLAST, Principle, features and types of BLAST, Significance of Multiple Sequence Alignments, Phylogenetic Tree.

Suggested Readings :

1. Saxena Sanjay (2003) A First Course in Computers, Vikas Publishing House.
2. Pradeep and Sinha Preeti (2007) Foundations of Computing, 4th ed., BPB Publications.
3. Lesk M.A. (2008) Introduction to Bioinformatics. Oxford Publication, 3rd International Student Edition.
4. Rastogi S.C., Mendiratta N. and Rastogi P. (2007) Bioinformatics: methods and applications, genomics, proteomics and drug discovery, 2nd ed. Prentice Hall India Publication.
5. Primrose and Twyman (2003) Principles of Genome Analysis & Genomics. Blackwell.
6. Debjyoti Das (2012). Biostatistics. Academic Publishers
7. E. Batschelet : Introduction to Mathematics for Life Scientists,Springer Verlag, International Student Edition, Narosa Publishing House, New Delhi (1971, 1975).
8. A. Edmondson and D. Druce : Advanced Biology Statistics, Oxford University Press; 1996.
9. W. Danial : Biostatistics : A foundation for Analysis in Health Sciences, John Wiley and Sons Inc; 2004.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Generic Elective Syllabus
GE-3 [Interdisciplinary for other department]

GE-3: Community Nutrition and Nutritional Programme **Credits 06**

GE3T: Community Nutrition and Nutritional Programme

Community Nutrition and Nutritional Programme:

1. Concept of community, types of community, factors affecting health of Community.
2. Basic concept of Nutritional Programme Formulation.
3. ICDS Programme – Aims, Objectives, Target group, Services provided, Advantages, Limitation, Suggestion for improvement.
4. MDMP – Aims, Objectives, Target group, Service provided, Advantages, Limitation, Suggestion for improvement.
5. ANP, SNP, CNP, BFP – Aims and Objectives, Target group, Service provided, Advantages, Limitation.
6. PHC and Public distribution system to combat malnutrition
7. Identifying signs and symptoms of vitamin A deficiency, Vit.–D deficiency, iodine and iron deficiency, and role of prophylaxis programme to overcome such deficiencies.
8. Nutritional Anthropometry, Biochemical tests and Biophysical methodology - Merits, Limitations
9. Diet Survey: Need and importance, methods of dietary survey- Merits and Limitations. Family food security.
10. Concept of Surveillance Systems: Role of international, national, regionalagencies and organizations.
11. Nutritional problem in the community : Epidemiology, etiology and prevention of Marasmus, Kworshiorkar, Scurvy, Ricket, Osteomalacia, Obesity.
12. Importance of dietitian in community

Nutrition in specific pathophysiological conditions:

1. Hospital diets- liquid, clear fluid, soft & normal diets.
2. Diet therapy in diabetes mellitus and obesity.
3. Dietary management and nutritional factors involved in cardiovascular disease like atherosclerosis,hyperlipidemia, hypertension.
4. Diet therapy in peptic ulcer, gastritis, diarrhea, colitis, constipation, flatulence and jaundice.
5. Diet during febrile condition, infection, surgical condition, nephritis, and nutritional anemia.
6. Therapeutic uses of dietary fibers with special reference to chronic constipation, diverticular disease, irritable bone syndrome, obesity and diabetes, possible adverse effects of dietary fibers.
7. Rehydration therapy- Elementary idea about rehydration, Conditions for rehydration. Different types of rehydration therapy with special emphasis on ORS -its types and importance, Age dependent ORS quantity for rehydration therapy.
8. Nutrition and Infection:Infection, a cause of malnutrition and vice-versa. Nutrition and immunity during childhood and in adult.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:17:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Nutrition

[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-8		**C8T:** Diet and Diseases	Core Course - 8	4	0	0	6	75
		C8P: Practical		0	0	4		
CC-9		**C9T:** Food Microbiology	Core Course - 9	4	0	0	6	75
		C9P: Practical		0	0	4		
CC-10		**C10T:** Food processing and Preservation	Core Course - 10	4	0	0	6	75
		C10P: Practical		0	0	4		
GE-4	TBD		Generic Elective-4				4/5	75
							2/1	
SEC-2		Basic Molecular Biology **Or** Nutrition and Fitness **Or** Entrepreneurship Development **Or** Women Health & Nutrition	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P=**Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE)(Interdisciplinary) from other Department: Papers are to be taken from any of the following discipline: **Chemistry/Physiology/Botany /Zoology/Computer Sc/Microbiology/Bio-Technology/ Mathematics/Statistics**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

Core Course (CC)

CC-8: Diet and Diseases — Credits 06

C8T: Diet and Diseases — Credits 04

Course Contents:

1. Inborn error of metabolism – Lactose Intolerance, Galactosamia, Phenylketonuria and its dietary management.

2. Etiology, symptoms, diagnostic tests and dietary management of intestinal diseases: Diarrhea, Steatorrhoea, Diverticular disease, Inflammatorybowel disease, Ulcerative Colitis, Flatulence, Constipation, Irritable Bowel Syndrome, Haemorrhoids.

3. Etiology, symptoms, diagnostic tests and dietary management of Malabsorption syndrome, Celiacsprue, tropical sprue, Intestinal brushborder deficiencies (Acquired disaccharide intolerance), Protein losingenteropathy. RUTF.

4. Disease of the liver, Exocrine Pancreas and Biliary System. Liver function tests, application of diet therapy and nutritional care in liver disease. Dietary care and management in Viral Hepatitis, Cirrhosis of liver, Wilson's diseases. Dietary care and management in diseases of Gall Bladder and Pancreas Cholelithiasis, Cholecystitis, Cholecystectomy,Pancreatitis.

5. Anaemias: Pathogenesis and dietary management - Nutritional Anaemias, Sickle Cell Anaemias, Thalassemia, Anaemia resulting from Acute Haemorrhage.

6. Arthritis and gout: Etiology, symptoms, diagnostic tests and dietary management.

C8P: Diet and Diseases (Practical) — Credits 02

Practical:

1. Planning and preparation of diet for diarrhoea patient.
2. Planning and preparation of diet for Steatorrhoea patient.
3. Planning and preparation of diet for Diverticular disease patient.
4. Planning and preparation of diet for Ulcerative Colitis patient.
5. Planning and preparation of diet for Flatulence patient.
6. Planning and preparation of diet for Constipation patient.
7. Planning and preparation of diet for IrritableBowel Syndrome patient.
8. Planning and preparation of diet for Haemorrhoids patient.
9. Planning and preparation of diet for Celiac sprue patient.

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

10. Planning and preparation of diet forViral Hepatitis patient.
11. Planning and preparation of diet for Cirrhosis ofliver patient.
12. Planning and preparation of diet for Cholelithiasis patient.
13. Planning and preparation of diet for Pancreatitis patient.
14. Planning and preparation of diet for Anaemia patient.
15. Planning and preparation of diet for Thalassemia patient.

CC-9: Food Microbiology — Credits 06

C9T: Food Microbiology — Credits 04

Course Contents:

1. Introduction to microbiology and its relevance to everyday life. General characteristics of bacteria, fungi, virus, protozoa and algae.
2. Cultivation of microorganisms: Nutritional requirements of microorganisms, types of media used, methods of isolation.
3. Growth of microorganisms: Growth curve, effect of environmental factors in growth of microorganism – pH, water activity, oxygen availability, temperature and others.
4. Primary sources of microorganisms in foods, physical and chemical methods used in destruction of micro organisms in foods - sterilisation and disinfection.
5. Food Spoilage: Contamination of micro organisms in the spoilage of different kinds of foods, such as cereal and cereal products, vegetable and fruits, fish and other sea foods, meat and meat products, eggs and poultry, milk and milk products, canned foods.
6. Assessing the microbiological quality of food: indicator organisms, microbiological standards, principles of GMP & HACCP in food processing. Safety management at household and industrial level.
7. Foodborne infections: Bacterial food infections-Salmonellosis, Shigellosis and Listeriosis. Food poisoning (Staphylococcal and Botulism) - Symptoms, mode of transmission and methods of prevention, Concept of aflatoxin intoxication.
8. Beneficial effect of microorganisms-concept of probiotics and related factors
9. Environmental microbiology: Water and water borne diseases, air and air borne diseases, soil and soil borne diseases, sewage and diseases.
10. Waste product handling: Planning for waste disposal- solid wastes and liquid wastes.
11. Fermented Foods- Dietary different fermented products, importance of fermented foods.

C9P: Food Microbiology (Practical) — Credits 02

Practical:

1. Study of equipments in a microbiology lab.
2. Preparation of different culture media.
3. Staining of bacteria with gram staining.
4. Microbiological examination of milk (Methylene blue reduction test).

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

5. Preparation of traditional Indian fermented food and its quality checking e.g. testing of physical, chemical and nutritional properties.

CC-10: Food processing and Preservation Credits 06

C10T: Food processing and Preservation Credits 04

Course Contents:

1. Significance, principles of different methods of food processing: thermal processing-Cooking (moist heat, dry heat, combination method of cooking), blanching, pasteurization, sterilization, canning.
2. Principles of microwave cooking and solar cooking.
3. Principle of freezing, changes occurring during freezing. Types of freezing - slow freezing, quick freezing. Food preservation by drying and dehydration, differences between sun drying and dehydration (i.e. mechanical drying), types of driers used in the food industry.
4. Preservation by Irradiation: Units of radiation, kinds of ionizing radiations used in food irradiation. Mechanism of action, concept of cold sterilization.
5. Principle and methods of making pickles, jam and jellies from different vegetables / fruits.
6. Principle and methods of preparation of food from cereals.
7. Principle and methods of preparation of meat, fish, poultry and egg products.

C10P: Food processing and Preservation (Practical) Credits 02

Practical:

A:

1. **Milk cookery**: Experimental milk cookery. Preparation of selected common recipes.
2. **Egg cookery:** Experimental cookery on eggs-boiled eggs, poached eggs, Omelettes and custards. Preparation of selected common recipes.
3. **Vegetables Cookery:** a. Different methods of cooking vegetables – effect of shredding, dicing, acid and alkali, pressure cooking, steaming with and without lid. e.g. Potato, beetroot, carrot and greens. Recipes with Vegetables
4. **Fruits**: Prevention of browning on fruits. Preparation of selected common recipes.
5. Estimation of Sodium, Potassium, Calcium and Iron in different food staffs.
6. Estimation of vitamin C content of food by biochemical method.

B:

Visit to a food processing industry.

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

Skill Enhancement Course (SEC)

SEC-2: Basic Molecular Biology **Credits 02**

SEC2T: Basic Molecular Biology

Course Contents:

1. Nucleic acid: Bases, nucleosides and nucleotides.
2. DNA structure: DNA double helix (Watson and Crick Model). Types of DNA and RNA, DNA and RNA as genetic material.
3. DNA replication: Semi-conservative replication, Basic mechanism of replication (Prokaryotes / Eukaryotes).
4. Transcriptional unit and basic concept of transcription (Prokaryotes / Eukaryotes).
5. Genetic code and basic mechanism of translation (Prokaryotes / Eukaryotes).
6. Basic concept of genomics, proteomics and metabolomics.

Suggested readings

1. Bolandar, M. (2001). Molecular Endocrinology. Elsevier Science.
2. Alberts, B. et al. (2008). Molecular Biology of the Cell. 5th Ed. Garland Publishing House.
3. Yoshinori Mine (Editor), Kazuo Miyashita (Editor), Fereidoon Shahidi (Editor): Nutrigenomics and Proteomics in Health and Disease: Food Factors and Gene Interactions.
4. Van Ommen, B. (2004). Nutrigenomics: Exploiting systems biology in the nutrition and health arenas. Nutrition.20:4-8.
5. Simopoulos, A.P. and Ordovas, J.M. (Editors)(2004). Nutrigenetics and Nutrigenomics.
6. Roche, H.M. (2004). Dietary lipids and gene expression. Biochem Soc Trans. 32(Pt 6):999-1002.
7. Mount, D. W. Bioinformatics. Sequence and Genome Analysis, CSHL Press.
8. Jones.N. C., Pevzner, P. A. (2004). An Introduction to Bioinformatics Algorithms, MPI Press.
9. Kaput J, Rodriguez RL. (2004)Nutritional genomics: The next frontier in the Postgenomic era. Physiol Genomics.16:166-177.
10. Kaput J. and Rodriguez. R. L. (2006). Nutritional Genomics. John Wiley & Sons, Inc.
11. De Busk RM, Fogarty CP, Ordovas JM, Kornman KS. (2005). Nutritional genomics in practice: Where do we begin? *J Am Diet Assoc*. 105:589-598.

Or

SEC2T: Nutrition and Fitness **Credits 02**

SEC2T: Nutrition and Fitness

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

Course Contents

1. Understanding Fitness: Definition of fitness, health and related terms. Assessment of fitness, Approaches for keeping fit.

.

2. Importance and benefits of physical activity: Physical Activity – frequency, intensity, time and type with examples Physical Activity, physical activity guidelines and physical activity pyramid.

3. Importance of nutrition Role of nutrition in fitness, Nutritional guidelines for health and fitness, Nutritional supplements.

4. Importance of diet and exercise for weight management.

Suggested Readings:

1. Campbell BI. (2014). Sports Nutrition: Enhancing Athletic Performance, CRC Press, Taylor& Francis,
2. Haff GG. (2008). Essentials of Sports Nutrition Study Guide, Humana Press.
3. Dunford M and Doyle JA. (2008). Nutrition for Sport and Exercise, Thomson Wadsworth.
4. Srilakshmi B. (2018). Dietetics, New Delhi: New Age International.

Or

SEC-2: Entrepreneurship Development **Credits 02**

SEC2T: Entrepreneurships Development

Unit-I: Introduction

Meaning, Needs and Importance of Entrepreneurship, Promotion of entrepreneurship, Factors influencing entrepreneurship, Features of a successful Entrepreneurship.

Unit-II: Establishing an enterprise

Forms of Business Organization, Project Identification, Selection of the product, Project formulation, Assessment of project feasibility.

Unit- III: Financing the enterprise

Importance of finance / loans and repayments, Characteristics of Business finance, Fixed capital management: Sources of fixed capital, working capital its sources and how to move for loans, Inventory direct and indirect raw materials and its management.

Unit- IV: Marketing management

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

Meaning and Importance, Marketing-mix, product management – Product line, Product mix, stages of product like cycle, marketing Research and Importance of survey, Physical Distribution and Stock Management.

Unit – V: Entrepreneurship and International business

Meaning of international business, Selection of a product, Selection of a market for international business, Export financing, Institutional support for exports.

Suggested Reading:

1. Holt DH. Entrepreneurship: New Venture Creation.
2. Kaplan JM Patterns of Entrepreneurship.
3. Gupta CB, Khanka SS. Entrepreneurship and Small Business Management, Sultan Chand & Sons.

Or

SEC-2: Women Health & Nutrition **Credits 02**

SEC2T: Women Health & Nutrition

1. Factors (non-nutritional) affecting pregnancy outcome, importance of adequate weight gain during pregnancy, antenatal care and its schedule, Nutritional requirements during pregnancy and modification of existing diet and supplementation, Deficiency of nutrients, specially energy, iron folic acid, protein, calcium, iodine. Common problems of pregnancy and their managements, specially - nausea, vomiting, pica, food aversions, pregnancy induced hypertension, obesity, diabetes. Adolescent pregnancy.

2. Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation. Care and preparation of nipples during breast feeding.

Suggested Readings:

1. Ghosh, S: The Feeding and Care of Infants arid Young Children, VHAI. 6th Ed. Delhi.
2. WHO: A growth chart for International use In Maternal and Children Health Care, Geneva.
3. Mann and Truswell: Essentials of Human Nitration, Oxford University press.
4. Indian Council of Medical Research: Nutrient Requirements and Recommended- Dietary Allowance for Indians, New Delhi.

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

Generic Elective Syllabus
GE-4 [Interdisciplinary for other department]

GE-4: Family Meal Management — Credits 06

GE4T: Family Meal Management — Credits 04

Course Contents:

1. Introduction to meal management - balanced diet, food groups & the planning of balance diet.
2. Food guides for selecting adequate diet .
3. Diet therapy
4. Diet & stress in current scenario.
5. Meal planning for the family.
6. Indian meal patterns - vegetarian & non-vegetarian.
7. Food faddism & the faulty food habits.
8. Nutritive value of common Indian recepies.
9. Nutrition in pregnancy - Physiological stages of pregnancy, nutritional requirements. Food selection, complication of pregnancy.
10. Nutrition during lactation - Physiology of lactation, nutritional requirements.
11. Nutrition during infancy - growth & development, nutritional requirements, breast feeding, infant formula, introduction of supplementary foods.
12. Nutrition during early childhood (Toddler/Preschool)- Growth & nutrient need, nutrition related problems, feeding patterns.
13. Nutrition of school children- Nutritional requirement, importance of snacks, school lunch.
14. Nutrition during adolescence - Growth & nutrient needs, food choices, eating habits, factor influencing needs.
15. Nutrition during adulthood - Nutritional requirements, feeding pattern.
16. Geriatric nutrition: Factors affecting food intake and nutrient use, nutrient needs, nutrition related problems.

GE4P: Family Meal Management (Lab) — Credits 02

Practical:
Planning, preparation and nutritional evaluation of diets in relation to activity levels and physiological state.

A:

1. Planning and preparation of a balanced diet for a pregnant woman.
2. Diet during complication of pregnancy.
3. Planning and preparation of a balanced diet for a lactating woman.
4. Preparation of weaning foods.

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

5. Planning and preparation of a balanced diet for pre-school child.
6. Balanced diet for school going child. Preparation of packed lunch.
7. Planning and preparation of a balanced diet for adolescence.
8. Planning of meals for adult belonging to different income group.
9. Planning meal for senior citizen.

B: Project work with proper diet plan based on survey.

Or

GE-4: Dietetics and Counseling **Credits 06**

GE4T: Dietetics and Counseling **Credits 04**

Course Contents:

1. Practical consideration in giving dietary advice and counselling -
    a) Factors affecting and individual food choice.
    b) Communication of dietary advice
    c) Consideration of behaviour modification
    d) Motivation.

2. Counselling and educating patient
    a) Introduction to nutrition counselling
    b) Determining the role of nutrition counseller
    c) Responsibilities of the nutrition counseller
    d) Practitioner v/s client managed care
    e) Conceptualizing entrepreneur skills and behaviour
    f) Communication and negotiation skills.

3. Teaching aids used by dietitians- charts, leaflets, posters etc., preparation of teaching material for patients suffering from Digestive disorders, Hypertension, Diabetes, Atherosclerosis & Hepatitis and cirrhosis.

4. Computer application
    a) Use of computers by dietitian
    b) Dietary computations
    c) Dietetic management
    d) Education/ training
    e) Information storage
    f) Administrations
    g) Research

5. Computer application
    a) Execution of software packages

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

b) Straight line, frequency table, bar diagram, pie chart, Preparation of dietary charts for patients
c) Statistical computation- mean, median, standard deviation, conclusion and regression test.

GE4P: Practical **Credit 02**

1. Project planning for any one disease.
2. Computer application for different diseases.
3. Submitting computed data.
4. Preparations of teaching aids in the field of nutrition.
5. Preparation of case history of a patient and feeding of information in the hard disc.

Downloaded from Vidyasagar University by 103.77.136.197 on 26 July 2023 : 13:47:20; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons4.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Nutrition [Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 11		**C11T:** Public Health and Hygiene	Core Course -11	4	0	0	6	75
		- Lab		0	0	4		
CC- 12		**C12T:** Research Methodology	Core Course -12	4	0	0	6	75
		- Lab		0	0	4		
DSE-1		**TBD**	Discipline Specific Elective - 1	5/4	1/0	0/4	6	75
DSE-2		**TBD**	Discipline Specific Elective -2	5/4	1/0	0/4	6	75
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

Semester-V

List of Core Course (CC)

CC-11: Public Health and Hygiene

CC-12: Research Methodology

Discipline Specific Electives (DSE)

DSE-1: Chemical Safety of Foods
Or
DSE-1: Microbiological safety of foods
Or
DSE-1: Food Sanitation and Hygiene

DSE-2: Quality Assurance in Food Sectors
Or
DSE-2: Quality Control and Food Standards
Or
DSE-2: Food Quality and Sensory Evaluation

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

Semester-V

Core Courses (CC)

CC- 11: Public Health and Hygiene **Credits 06**

CC11T: Public Health and Hygiene **Credits 04**

Course Contents:

1. **Food adulteration**: common, adulterants, and health hazards.Food standards and food laws. National and International; PFA, FSSAI, HACCP, ISO Certification; Consumer guidance society, Consumer rights, Consumer court, Central facilities for assessing food adulteration, Role of food inspectors.

2. **Community Water and Waste Management**: Importance of water to the community, etiology and effects of toxic agents, water borne infectious agents, sources of water, safe drinking water/portability and tests for portability, community, waste and waste disposal, sewage disposal and treatment, solid waste and disposal, liquid waste disposal.

3. **Food Borne Disorders**: Food borne infections- Typhoid, Para typhoid, cholera, infective hepatitis, amoebiasis - Food borne intoxications- Disorders caused by; Natural toxins, chemical toxins and Microbiological toxins in food- Lathyrism, staphylococcal intoxication, Botulism, clostridium perfrignens, Mycotoxins.

4. **Food handling and Public Health**: Preventing food borne illness and the speed of communicable disease; Sanitation of food serving institution; environmental sanitation, hygienic in food handling and personal hygiene of food handler.

5. **Air & health**- Indices of thermal comfort , Pollution a) Sources b) Pollutants c) Monitoring d) Effects e) Prevention & control.

6. **Mental health**- Health & diseases, Concept of a) Normality b) Mental health, Magnitude of the problem, Prevention of mental diseases, Alcohol related & drug related problems, mental health services in India.

7. **Health care delivery system**: Patterns of health care delivery, History of development of health care delivery system in India, Reports of different committees, Three–tier health care delivery system, Primary health center, Subcentre, CHV, Urban health infrastructure.
8. **Demography & Population Control**: Introduction, Definition, Demographic cycle, Population Pyramid, Fertility, Factors affecting fertility, Indicators of fertility, Population

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

explosion as a public health problem, Approaches for population control, Family planning methods.

C11P: Public Health and Hygiene (Lab) **Credits 02**

List of Practical

Assignment programme on public health, nutrition and disease – covering any one of the following fields

1. Protein under nutrition and its recovery.
2. Vitamin or Mineral under nutrition and its recovery.
3. Dietary management of non-communicable disease.
4. Dietary management of growing child.
5. Impact of nutrition education on awareness development in the field of personal health.

CC-12: Research Methodology **Credits 06**

C12T: Research Methodology **Credits 04**

Course Contents:

1. Introduction to Research Methodology: Meaning of Research, Objectives of Research, Motivations in Research, Criteria of Good Research, Types of Research– Fundamental research, Applied Research, Action research, Qualitative Research, Quantitative Research, Historical research.

2. Defining the Research Problem : Scientific Problem, Formation of scientific Problem, criteria of good research problem

3. The Review of Literature: Meaning of Review of Literature, Need and importances of Review of Literature, Objectives of Review of Literature

4. The Research Hypotheses: Definitions of Hypothesis, Functions of Hypothesis, types of Hypothesis, Characteristics of a Good Hypothesis

5. Sampling – Criteria, Design, Characteristics of good sampling, types of sampling method.

6. Methods of Data Collection: Primary and secondary data, Criteria of good data, Observation Method, Interview method, questionnaire and Schedules, Case Study Method.

7. Experimental design – single and multi group experimental design, Quasi experimental Design

9. Ethical issues in research: Code of Ethics in Research – Ethics and Research Process – Importance of Ethics in Research

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

C12P: Research Methodology (Lab) **Credits 02**

Practical

A Project work on public health / nutritional biochemistry / nutritional survey to be submitted.
Formulation of the Project:

1. Meaning of scientific research and its methods. Formulation of project design.
2. Types of project design- exploratory, descriptive, experimental, cross sectional or longitudinal.
3. Methods: survey, case study, anthropological or experimental
4. Tools and techniques: observation, interviewing, questionnaire schedules or rating scales
5. Tabulation and interpretation: Tabular and graphic representation of data and its interpretation, bar diagram, pie diagram. Statistical procedures - variables, mean, standard deviation, test of hypothesis (t-test), chi-square test, degrees of freedom, null hypothesis, z-score.

Discipline Specific Electives (DSE)

DSE-1: Chemical Safety of Foods **Credits 06**

DSE1T: Chemical Safety of Foods **Credits 06**

Course Contents:

Pesticides and veterinary drugs: Detection and quantification of carbamates, organochlorine and organosuplhur, organohalogens, nitrites, herbicides, hormones, antibiotics, steroids, environmental chemicals - heavy metals, toxic residues, radioactive isotopes.

Processing contaminants: Detection, quantification and health hazards of direct contaminants – acrylamide, PAHs, oxyhalides, and haloacetic acids, preservatives, flavor enhancers, color additives. Indirect contaminants- boiler water additives, peeling aids, defoaming agents, building and equipment contaminates: lubricants, paint and coatings, contaminants during packaging, storage and transport: cleaners, sanitizers and cross contaminants.

Food additives: Detection, quantification and health hazards of hydrogenated or partially hydrogenated oils, high-fructose corn syrup, artificial colorants, artificial sweeteners such as aspartame, sucralose and saccharin, BHA or BHT, monosodium glutamate, hydrolyzed vegetable protein or autolyzed yeast extract, potassium bromate, propyl gallate, sulfites, sodium nitrate, sodium benzoate.

Food colorants and sweeteners: Detection, quantification and health hazards of brilliant

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

blue, Indigo, carmine, citrus red , fast green, erythrosine, allura red ,tartrazine, sunset yellow,lake pigments and non-certified colorants, food sweeteners- neotame, sorbitol and non certified sweeteners.

Emulsifiers, stabilizers, thickening and gelling agents: tara gum, soyabean hemicelucose, sucroglycerides, stearyltartarate, talc, gluconic acid, candelilla wax, carbamide, argon, salt of aspartame and other non certified agents- detection, quantification and health hazards.

Suggested Readings:

1. Branen, A.L., Davidson, P.M. & Salminen, S. (2007) Food Additives, 2nd Ed., Marcel Dekker.
2. George, A.B. (2006) Encyclopedia of Food and Color Additives, Vol. III, CRC Press, LLC. Boca Raton, FL
3. George, A.B. (2008) Fenaroli's Handbook of Flavor Ingredients, 5th Ed, CRC Press, LLC. Boca Raton, FL
4. Madhavi, D.L., Deshpande, S.S., & Salunkhe, D.K. (2006) Food Antioxidants: Technological, Toxicological and Health Perspective, MarcelDekker
5. Morton, I.D., & MacLeod, A.J. (2008) Food Flavors, Part A, B & C. Elsevier.
6. Nakai, S., & Modler, H.W. (2007) Food Proteins. Processing Applications. Wiley VCH.

Or

DSE-1: Microbiological Safety of Foods **Credits 06**

DSE1T: Microbiological Safety of Foods **Credits 06**

Course Contents:

Importance and significance of microorganisms in food safety, intrinsic and extrinsic factors affecting the growth of micro organisms in food. Protection and preservation of foods: Hurdle technology, chemical, modified atmosphere, irradiation, thermal and non thermal techniques.

Food borne diseases: characteristics and incidence - global and Indian scenario, food poisoning and food intoxications of microbial origin, bacterial food borne diseases; viral food borne diseases; protozoa animal parasite food borne diseases; mycotoxicoses; mushroom poisoning; investigation and management of food borne diseases.
Food spoilage: characteristic features, dynamics and significance of spoilage of different groups of foods - cereal and cereal products, vegetables and fruits, meat poultry and sea foods, milk and milk products, packed and canned foods.

Determination of microorganisms and their products in food: sampling, sample collection, transport and storage, sample preparation for analysis. microscopic and culture dependent

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

methods- direct microscopic observation, culture enumeration and isolation methods ; culture independent techniques – PCR Based, DGGE, metagenomics, etc.; chemical, physical, immunological methods for microbial metabolites- microbial metabolites.

Suggested Readings:

1. Pelczar, M.I., and Reid, R.D. (2009) Microbiology, 5th Ed., McGraw Hill Inc., New York.
2. James, M.J. (2007) Modern Food Microbiology, 2nd Ed., CBS Publisher, New Delhi
3. Adams, M.R., and Moss, M.G., (2005) Food Microbiology, 1st Ed., New Age International (P) Ltd., NewDelhi.
4. Frazier, W.C. (2008) Food Microbiology, 4th Ed., McGraw Hill Inc., NewYork.
5. Doyle, P., Bonehat, L.R. and Mantville, T.J. (2007) Food Microbiology, Fundamentals and Frontiers, ASM Press, WashingtonDC.

Or

DSE-1: Food Sanitation and Hygiene **Credits 06**

DSE1T: Food Sanitation and Hygiene **Credits 04**

Course Contents:

1. The relationship of micro organisms to sanitation. Role of microbiology – Environmental effects of microbial growth. Effects of micro- organisms on food degradation and food borne illnesses- bacteria, virus, molds, yeasts, and parasites.

2. Other food hazards – chemicals, antibiotics, hormones, metal contamination poisonous foods.

3. Food contamination- sources and transmissions. Water, air, sewage and soil as reservoirs of infection and ways of spread. Other agents of contamination - Humans, domestic animals, vermins, birds.

4. Importance of personal hygiene of food handler - habits -clothes, illness. Education of food handler in handling and serving food.

5. Safety in food procurement, storage, handling and preparation – control of spoilage – safety of left over foods.

6. Cleaning methods – sterilization, and disinfection –products and methods –use of detergents, heat, chemicals, and tests for sanitizer strength.

7. Control of infestation: rodent control- rats, mice; vector control- use of pesticides

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

8. Food sanitation, control and inspection-planning and implementation of training programme for health personnel.

DSE1P: Food Sanitation and Hygiene (Lab) **Credits 02**

Practical:

1. Study of personal and environmental hygiene habits of street food handlers. Intervention and result analysis. Project submission and presentation.
2. Preservation of fruits and vegetables for later use-peas, carrots, cauliflower, chutney, soup, pickle, jam, jelly, marmalade, squash.

Suggested Readings:

1. Textbook of Food and Beverage Management by Sudhir Andrews, Tata Mc Graw Hill, New Delhi.
2. Food Hygiene and Sanitation by S. Roday
3. Essentials of food safety and sanitation by David Ms Swane, Nancy Rue and Richard Linton
4. Essentials of Food Sanitation by Marriott**,** Norman
5. Food Safety, Sanitation and Personal Hygiene by BC Cook Articulation Committee and the BC Cook Articulation Committee.

DSE-2: Quality Assurance in Food Sectors **Credits 06**

DSE2T: Quality Assurance in Food Sectors **Credits 06**

Course Contents:

Food laboratories : need for food analysis, accreditation of food laboratory, referral laboratories, functions of food analysts, hierarchy of food safety authorities, analysis of food samples and reports, other regulatory provisions pertaining to analysis of food

Validation of analytical methods: Good Laboratory Practices (GLP)- history of GLP, areas of application, facilities, test systems, test and reference items, Standard Operating Procedure (SOP), study performance and reporting.

Analytical method used for quality determination: chemical and physical, microbiological, biochemical and sensory analysis.

Analytical methods of determination of basic food components: protein, saccharides, lipids, vitamins, water, minerals and trace elements, sensory active compounds, anti-nutritive and natural toxic compounds, food additives and food contaminants.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

Advanced laboratory techniques: principle, working and application of GC, HPLC, HPTLC, LC/MS, inductively coupled Plasma Mass Spectroscopy and PCR, real time PCR, ELISA, Triple Quadra pole system.

Suggested Readings:

1. The training manual for Food Safety Regulators. Vol. II- Food Safety regulations and food safety management. (2011) Food safety and Standards Authority of India. New Delhi.

Or

DSE-2: Quality Control and Food Standards **Credits 06**

DSE2T: Quality Control and Food Standards **Credits 06**

Course Contents:

Principal aspects of sampling of food: Importance of sample collection, sampling tools and containers, sample collection techniques, sampling for microbiological analysis of food, routine versus investigational sampling, quantity of sample to be collected, packaging and sealing of sample, dispatch of sample, documentation and commodity specific sampling procedure.

Codex Alimentarius Commission (CODEX): Introduction, standards, codex of practice, guidelines and recommendations, applying codex standards, Codex India, core functions of National Codex Contact Point, National Codex Committee of India

International Organization of Standardization (ISO): Overview, structure, interpretation and case studies of food safety and Quality management including ISO-22000, ISO-9001:2000, ISO22000:2005, ISO 17025/CODES/GLP, Retailers standards: BRC food and BRC IOP standards, IFS, SQF: 1000, SQF: 2000.

Hazard Analysis Critical Control Point (HACCP): History, structure, pre- requites and principles, HACCP applications, HACCP based SOPs.

Good Manufacturing Practices (GMP), Good Hygienic Practices (GHP), Good Agricultural Practice(GAP), Good Veterinary Practice (GVP),Storage and distribution of food, sanitation and safety in food services.

Suggested Readings:

1. The Training Manual for Food Safety Regulators. Vol. II- Food Safety regulations and food safety management. (2011) Food safety and Standards Authority of India. New Delhi

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

2. Mortimre, S., and Wallace, C., (2005) HACCP: A practical approach, 2nd Ed, Aspen Publication

3. Surak, J.G., and Wilson, S. (2007) American Society for Quality, 2nd Ed., Quality Press

Or

DSE-2: Food Quality and Sensory Evaluation **Credits 06**

DSE2T: Food Quality and Sensory Evaluation **Credits 04**

Course Contents:

UNIT- 1: Introduction to quality attributes of food
- Appearance, flavour, textural factors and additional quality factors.

UNIT- 2: Gustation

- Introduction and importance of gustation.
- Structure and physiology of taste organs- tongue, papillae, taste buds, salivary glands.
- Mechanism of taste perception.
- Chemical dimensions of basic tastes- sweet, salt, sour, bitter and umami.
- Factors affecting taste quality, reaction time, taste modification, absolute and recognition threshold.
- Taste measurement- Electronic Tongue.
- Taste abnormalities.

UNIT- 3: Olfaction
- Introduction, definition and importance of odour and flavor.
- Anatomy of nose, physiology of odour perception.
- Mechanism of odour perception.
- Theories of odour classification, chemical specificity of odour.
- Odour measurement techniques – historical perspective and emphasis on recent techniques-e-nose,etc .Merits and Demerits of each methods.
- Olfactory abnormalities.

UNIT- 4: Colour
- Introduction and importance of colour.
- Dimensions of colour and attributes of colour;appearance factors, gloss etc.
- Perception of colour.
- Colour Measurement: Munsell colour system, CIE colour system, Hunter colour system, spectrophotometry and colorimetry etc.
- Colour abnormalities.

UNIT- 5: Texture
- Introduction, definition and importance of texture.
- Phases of oral processing.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

- Texture perception, receptors involved in texture perception.
- Rheology of foods.
- Texture classification.
- Texture measurement – basic rheological models, forces involved in texture measurement and recent advances in texture evaluation.
- Application of texture measurement in cereals, fruits and vegetables, dairy, meat and meat products.

DSE2P: Food Quality and Sensory Evaluation (Lab) **Credits 02**

Practical:

Content

1. Training of sensory panel.
2. To perform recognition and sensitivity tests for four basic tastes.
3. To perform analytical and affective tests of sensory evaluation.
4. Recognition tests for various food flavors.
5. Sensory evaluation of milk and milk products.
6. Flavor defects in milk
7. Extraction of pigments from various fruits and vegetables and study the effect of temperature and pH.
8. Texture evaluation of various food samples- crispies / cookies/ biscuits/ snack foods.
9. Textural measurement of various food products using Texture Analyzer.
10. Measurement of colour by using Tintometer/ Hunter Colour Lab etc.
11. Qualitative tests for hydrogenated fats, butter, ghee
12. Platform tests for milk.
13. Quality evaluation of various food stuffs- cereals, pulses, honey, jaggery, sugar, tea, coffee, etc

Suggested Readings:

1. Rao E. S. (2013). Food Quality Evaluation. Variety Books.
2. Pomeranz Y and Meloan CE (2002). Food Analysis – Theory and Practice, CBS Publishers and Distributors, New Delhi.
3. deMan J. (2007). Principles of Food Chemistry, 3rd ed., Springer.
4. Meilgard (1999). Sensory Evaluation Techniques, 3rd ed. CRC Press LLC, 1999.
5. Amerine, Pangborn & Roessler (1965). Principles of Sensory Evaluation of food, Academic Press, London.

Downloaded from Vidyasagar University by 106.196.5.139 on 27 October 2022 : 18:18:51; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons5.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Nutrition [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 13		**C13T:** Dietetics and Counselling	Core Course-13	4	0	0	6	75
		- Lab		0	0	4		
CC- 14		**C14T:** Entrepreneurship development, Enterprise management and Entrepreneurship for small catering units	Core Course-14	4	0	0	6	75
		- Lab		0	0	4		
DSE-3		TBD	Discipline Specific Elective - 3	4	0	0	6	75
				0	0	4		
DSE-4		TBD	Discipline Specific Elective - 4	4	0	0	6	75
				0	0	4		
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Semester-VI

List of Core Course (CC)

CC-13: Dietetics and Counselling

CC-14: Entrepreneurship development, Enterprise management and Entrepreneurship for small catering units

Discipline Specific Electives (DSE)

DSE-3: Geriatric Nutrition
Or
DSE-3: Nutrition Communication for Health Promotion
Or
DSE-3: Personnel Management and Food Service Management

DSE-4: Methods for Epidemiological Data Analysis
Or
DSE-4: Food packaging
Or
DSE-4: Bakery Technology and Mushroom Culture
Or
DSE-4: Sea food and Dairy Technology

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Semester-VI

Core Course (CC)

CC-13: Dietetics and Counselling **Credits 06**

CT13: Dietetics and Counselling **Credits 04**

Course Contents:

Unit-I: Introduction to Psychology and counselling

Introduction to psychology – Definition , Nature and Scope. Attention and perception – Types of attention and factors influencing attention , principles of perceptual organization and abnormalities in perception. Learning and memory- Types of learning, Types of memory, Forgetting and its causes. Motivation and emotion- Types of motives, types of emotions, emotional expression. Personality- nature and definition , factors influencing personality, Psycho analytic theory of personality. Nature and goals of counselling. Principles of counselling. Characteristics of a good counsellor. Ethical principles of counselling. Special areas of counselling: Educational, family, health, community and counselling of alcoholic, and drug addicts.

Unit-II: Counselling Skills

Approaches to counselling – i. Psycho analytic approach, ii. Behaviouristic, iii. Humanistic approach.

Pre – Helping phase: i. Rapport building skills, ii. Attending and listening skills,

Stage I skills: Empathy, respect, Genuineness and concreteness,

Stage II skills: Advanced empathy, self disclosure, Immediacy and Confrontation.

Stage III skills: Goal setting, Action plan Programme and Brainstorming.

Unit-III: Basics of Diet Counceling

Diet Counselling - meaning, significance, process, types. Goals of counselling, individuals, group and family counselling. Basic sequence in counselling. Materials needed for counselling – models, charts, posters, AV aids, Hand outs etc. Communication process in counselling and linguistics in clinical dietary practices, problems in communication. Role of Counsellor & Counselee. Techniques of obtaining relevant information- 24 Hour Dietary recall, List of food likes and dislikes, Lifestyle. Dietician as a part of medical team and research team. Impact of counselling on health and disease of individuals – discussion of hospital case studies.

Processes involved in dietary counseling

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Managing resources of the communicator/counselor. Designing of counseling plans – goals & objectives, evaluation instruments. Implementation: facilitating self-management of disease condition. Evaluation: evaluating adherence to dietary changes. Counseling approaches after evaluation**.**

Unit-IV: Practical consideration in giving dietary advice and counselling

a) Factors affecting and individual food choice. b) Communication of dietary advice c) Consideration of behaviour modification d) Motivation.

Unit-V: Counselling and educating patient

a) Introduction to nutrition counselling, b) Determining the role of nutrition counsellor, c) Responsibilities of the nutrition counselor , d) Practitioner v/s client managed care, e) Conceptualizing entrepreneur skills and behavior , f) Communication and negotiation skills.

Unit-VI: Teaching aids used by dietitians

Charts, leaflets, posters etc., preparation of teaching material for patients suffering from Digestive disorders, Hypertension, Diabetes, Atherosclerosis & Hepatitis and cirrhosis.

Unit-VII: Diet Counselling at Hospital and Community level

Role of counselling in hospital. Role of counselling in community. Organizing health camps and patient feedback – at hospital level. Organizing health camps and patient feedback – at community level.
Dietary counseling through the life span - Diet counselling plans for obese people, Diabetics, CVD, dyslipidemia, cancer risk prevention, renal diseases, liver disorders mother and child care, Prenatal and pregnant women, Lactating women Childhood nutrition problems like, SAM, weight management, vitamin and mineral deficiencies, School children, adolescents, young adults, fitness, weight management, eating disorders. Geriatric counselling. Patient follow up / home visits,

Unit-VIII: Computer application

a) Execution of software packages.

b) Straight line, frequency table, bar diagram, pie chart, Preparation of dietary charts for patients.

c) Statistical computation- mean, median, standard deviation, conclusion and regression test.

Unit-IX: Computer application in dietetic management

a) Use of computers by dietician, b) Dietary computations, c) Dietetic management ,d) Education/ training , e) Information storage, f) Administrations , g) Research

Unit -X: Nutritional/medicinal role of traditional foods:

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Traditional food beliefs, role of Ayurveda, Naturopathy, Yoga and other traditional medicines in disease management.

C13P: Dietetics and Counselling (Practical) **Credits 02**

Practical

1. Computer application for collection of data of different diseases. Submitting computed data.

2. Preparations of teaching aids in the field of nutrition.

3. Preparation of case history of a patient and feeding of information in the hard disc.

4. Understanding the use of conventional and non-conventional methods of counseling

i. Face to face counseling. **ii.** Use of software for counseling e.g Dietcal. **iii.** Use of any one Diet App for counseling and assessing food intake.

5. Planning Nutrition counseling sessions and identifying ways to adhere to dietary changes for the following conditions:

Lactation counseling, SAM. Eating disorders. Overweight / Obesity in School children, adolescent and adults. Metabolic syndrome. Diabetes- Gestational Diabetes. Renal disease, Liver disorders.

6. Organizing health camps and patient feedback – both at hospital level and community level.

7. Project planning for any one disease.

CC- 14: Entrepreneurship development, Enterprise management and Entrepreneurship for small catering units Credits 06

C14T: Entrepreneurship development, Enterprise management and Entrepreneurship for small catering units Credits 04

Course Contents:

Unit-I: Entrepreneurship development

Entrepreneurship - concept, definition, need and significance of entrepreneurship development in India, entrepreneurship growth process, barriers, entrepreneurship education model.

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Entrepreneur- their characteristics, types, gender issues, role demands and challenges. Entrepreneurial motivation. Challenges faced by Women Entrepreneurs

Unit- II: Enterprise Planning and Launching

Types of enterprises classification based on capital, product, location, ownership pattern and process. Sensing business opportunities and assessing market potential; market research. Appraising of project and feasibility

Unit-III: Enterprise Management and Networking

a. Organization and Management - Principles of management. Functions of management/ manager.

b. Managing Production: Organizing Production; input- output cycle. Ensuring Quality

c. Managing marketing: Understanding markets and marketing. Functions of marketing. 4Ps of marketing (same as marketing mix).

d. Financial Management: Meaning of Finance. Types and sources of Finance. Estimation of project cost. Profit Assessment. Networking of Enterprises. Importance of Financial Management. Budgets and Budgeting process. Cost concepts

Unit - IV: Personnel management

Functions of a personnel manager, Factors to consider while planning the kind and number of personnel: Menu, type of operations, Type of service, Job description and job specification

Unit-V: Food service units, Menu planning, Food production process, Space and equipment

1. **Food service units:** Origin of Food Service units. Kinds of food service units.
2. **Menu Planning:** Importance of menu. Factors affecting menu planning, Types of menu.
3. **Food Production Process:** Food purchase and receiving, Storage. Quantity food production: Standardization of recipes, Recipe adjustments and portion control, Quantity food production techniques. Food service. Food hygiene and sanitation.
4. **Space and Equipment:** Types of kitchen areas, Flow of work and work area relationship. Equipment a) Factors affecting selection of equipment, b) Equipment needs for different situations

Unit VI: Planning of a small food service unit

a. **Preliminary Planning:** Survey of types of units, identifying clientele, menu, operations and delivery.
b. **Planning the set up:** a) Identifying resources, b) Developing Project plan, c) Determining investments

Unit-VII: Development of a business plan

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

CC14P: Entrepreneurship development, Enterprise management and Entrepreneurship for small catering units (Practical) **Credits 02**

Practical

1. SWOT analysis with respect to entrepreneurial competencies through case profiling of successful entrepreneurs and enterprises.
2. Achievement Motivation lab-development of entrepreneurial competencies.
3. Survey of an institution facilitating entrepreneurship development in India.
4. Preparation of business plan.
5. Market survey for food items both raw and processed. Survey of food service units.
6. Standardization of a recipe.
7. Preparing Quick Foods for scaling up for quantity production.
8. Planning menus for the following:
    a. Packed meals for office employees.
    b. Nutritious Tiffin for school children.
    c. School/college canteens.
9. Demonstration of a specialized cuisine.
10. Develop a checklist for good hygiene practices.

Discipline Specific Electives (DSE)

DSE-3: Geriatric Nutrition **Credits 06**

DSE3T: Geriatric Nutrition **Credits 04**

Course Contents:

Unit-I: Introduction to ageing

Definition of ageing, senescence, old age or aged people, gerontology, geriatrics, and Geriatric nutrition. Classification of old population.
Introduction to geriatric care- concept of gerontology. Ageing - Biology of ageing. Theories of ageing – disengagement theory, activity theory, selective theory and continuity. Microscopic theories, changes in ageing scenario. Interaction between biological and psychological in ageing. Interaction between physiological and social processes in ageing. Drug, food, and nutrient reaction. Dietetics of Geriatric care-Nutritional requirement. Food requirement, dietary modification.
Implication of ageing population for rehabilitation: Demography, mortality and morbidity.

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Unit-II: Issues and challenges of ageing

Issues and challenges of ageing – economic dependence/ poverty, elderly in rural/ urban area. Abuse, neglect, abandonment, physical, health and sensory problems. Crime against elderly, retirement and related issues. Ageing sensory system and issues with falling. Common complaints during ageing. Geriatric guidance and counselling. Depression in old age. Exercise- yoga, meditation .

Behavior therapy: rational- emotive behavior therapy (REBT), horticultural therapy. Music therapy, Art therapy, Bibliotherapy

Unit-III: Clinical Geriatric

Physiological and biochemical changes during old age. Nutritional requirements and general dietary guidelines for elderly. Major nutritional and health problems during old age - osteoporosis ,obesity, neurological dysfunction. Anaemia. Malnutrition and constipation. Infection and Immunity. Degenerative disorders in elderly- Dementia, Alzheimer, Parkinson's disease. Disorders of upper GIT. Disorders of lower GIT. Disorders of Liver. Disorders of Billiary system and pancreas. Infection of Respiratory system. Coronary heart disease.

Assessment of nutritional status of older adults.

Unit – IV: Social Geriatric

Types of family – Joint family System, Role of Elders and Younger generation. Isolation, Loneliness and Dependency – Dependency Ratio – Generational equality. Financial aspects – Sources of income, Old age pension. Role of Govt. and NGOs in Socio – economic status of the elderly. Geriatric service for the elderly in western countries and India. Structure of geriatric service, family as basic unit- models of geriatric service. Day hospital, day care centre, long stay care institution. Home for the aged, function of the day hospital staff and patients of day hospital. Ethical issues in geriatric medicine- age limits on health care. Life sustaining measures.

DSE-3: Geriatric Nutrition (practical) **Credits 02**

1. Visit to old- age homes- assessment of nutritional status of old people, diet counselling.
2. Preparation of dishes suitable for older person- soft, semisolid, easily digestible, nutritious and calorie dense balanced diet.

Or

DSE-3: Nutrition communication for Health promotion Credits 06

DSE3T: Nutrition communication for Health promotion **Credits 04**

Course Contents:

Unit-I: Dietary guidelines for nutrition and health related concerns

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

National and international guidelines and their role in nutrition promotion. Critical appraisal of the current guidelines.

Unit-II: Nutrition and behaviour inter-relationship

Food and health behaviour, models/ theories of health behaviour, food choices, strategies for intervention at the ecological and individual level.

Unit-III: Social and Behaviour Change Communication for nutrition and health promotion

a. Concept and objectives of communication for behaviour change
b. Planning of communication strategies for social and behaviour change programme,
c. Communication needs analysis, stakeholders in nutrition promotion, developing nutrition education plan, identifying communication strategies/ approaches for nutrition and health promotion (e.g. social marketing), designing nutrition and health messages, selecting communication channels, developing and field testing of communication materials, designing training strategies for trainers and their capacity building.
d. Implementing social and behaviour change communication intervention: an overview
e. Evaluation of social and behaviour change communication programmes

Unit-IV: Nutrition Advocacy

a. Meaning, types, tools and techniques and advocacy planning.
b. Role of advocacy in nutrition policy formulation, preparation of policy briefs.

Unit V Ethics in nutrition and health communication

a. Significance of ethics in nutrition and health communication.
b. Ethical Principles and concerns

DSE3P: Nutrition communication for Health promotion (Practical) Credits 02

1. Planning of communication strategies for public health nutrition problems among vulnerable groups in the community -field testing of messages, materials and methods.

2. Review of communication strategies being used in any one public health nutrition programme in the community.

Or

DSE-3: Personnel management and Food service management Credits 06

DSE3T: Personnel management and Food service management Credits 04

Course Contents:

Personnel Management

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Unit-I: Organization and management: a) Definition and types of organization. b) Definition-functions and tools of management. c) Technique of effective management and its application to food preparation and science.

Unit-II: Food material management: a) Meaning, definition, and importance. b) Food selection, purchasing, receiving and storeroom management. c) Control in relation to the above operations (material planning, budgeting, material identification, modification and standardization, inventory control, store keeping, definition, objectives, functions, factors underlying successful storekeeping, duties and responsibilities of a storekeeper, purchasing, organization, principle, procedure, systems and quality control).

Unit-III: Personnel Management: Recruitment, selection and training of personalities, work standards, productivity, supervision, and performance appraisal and motivation incentives for effective performances.

Unit-IV: Labour policies and legislation: (Personnel policies related to salaries, other emoluments, allowances, leave, uniform and other prize benefit, laws and organization)- Laws affecting food service institution to study the following: (hospital, flight kitchen, hotel, Restaurant, canteen, Industrial) - a. Organization, b. Physical plan and layout. c. Food and silver equipment, d. Sanitation and hygiene.

Food Service Management

Unit-V: Foundations: The Foodservice Industry, The Systems Approach, The Fundamentals, Food Safety, Cleaning, Sanitation, and Environmental Safety, The Menu.

Unit-VI: Operational Functions: Purchasing, Receiving, Storage, and Inventory, Production, Beverage Provision, Food and Beverage Service, Events Conferencing & Banqueting, Apprising Performance, Strategic Decisions.

Unit-VII: Facilities: Facilities Planning and Design, Equipment and Furnishings, Environmental Management.

Unit-VIII: Management Functions: Organizational Design, Leadership, Human Resource Management, Performance Improvement, Financial Management, Marketing.

DSE3P: Personnel management and Food service management (Practical) Credits 02

Visit and appraisal of any two medical organizations.

1. Work simplification: food preparation, Calculating work unit, time norms etc.
2. Costing, accounting, budgeting, purchase.
3. Storekeeping: Listing and management of food items in the store.
4. Personnel recruitment: Preparations of a project and report making.

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

5. Maintenance of the clothing for persons and staff involved in kitchen area.
6. Prepare an inventory for evaluating staffs personal hygiene.

Food service Management:

1. Layout of Food Service Outlets & Organisations
2. Food Service Operations
3. Conferencing & Banqueting
4. Equipment and Furnishings, Environmental Management in Food Service Operations
5. Visit to a professional Food Service Outlet

Note: An Event may be planned to supplement learning of students and practical may be conducted in view of theory syllabus to provide practical inputs to learners.

DSE- 4: Methods for Epidemiological Data Analysis Credits 06

DSE4T: Methods for Epidemiological Data Analysis Credits 04

Course Contents:

Unit I: Understanding Epidemiological Data
Components of epidemiology: disease frequency, distribution of disease and determinants of disease. Epidemiological approach and measurements- vital statistics (rates, ratios and proportions), measurements of health indicators (morbidity, mortality and fertility rates).

Unit II: Epidemiologic Methods and Survey
Data collection: observational (descriptive and analytical) and experimental studies. Epidemiology study designs - case control and cohort studies (prospective and retrospective), techniques of sampling and matching, sources of bias.

Unit III: Data Organization and Presentation
Basic principles of 'R' software for tabulation and graphical representations (bar diagrams, histograms, pie charts, box plot, etc.), measures of central tendency (mean, mode, median and partition values), dispersion (range, standard deviation, coefficient of variance and covariance) and skewness.

Unit IV: Statistical Modeling and Analysis using 'R' on NCRP data and survey conducted by the students

Correlation analysis (scatter diagrams and Karl Pearsons coefficient of determination, standard and probable errors) and regression analysis. Inferential statistics: sampling distributions and standard error null and alternate hypothesis, basic concept and illustrations of type I and type II

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

errors, concept of confidence interval estimation, large sample tests for single mean and difference of means, single proportion and difference of proportions, students t-distribution (test for single mean, difference of means and paired t-test), chi-square distribution, F-distribution, one-way and two-way ANOVA, non parametric analysis (sign and rank tests), p-value.

DSE4P: Methods for epidemiological data analysis (Practical) Credits 02

List of Practical

1. Analysis of data from National Cancer Registry Program (NCRP). Understanding incidence, mortality (rates, ratios and proportions).
2. Designing a questionnaire for survey of prevalence diabetes/ hypertension/ allergy/ respiratory disorders/etc. Determining the target and control populations
3. Surveying the population for the diseases mentioned above.
4. Introduction to 'R' software. Analysis of data from NCRP data and survey conducted by the students.
5. Correlation studies. Regression studies. Probabilistic distribution studies. Comparison of groups and ascertaining statistical significance of differences.

Or

DSE-4: Food packaging Credits 06

DSE4T: Food packaging Credits 04

Course Contents:

Unit 1: Introduction to Food Packaging -Packaging Functions and Requirements,, Printing of packages .Barcodes & other marking, Labeling Laws

Unit 2: Food Packaging Materials -Paper and paper-based materials, corrugated fiber board (CFB). Plastics, formation- Injection molding, Blow molding, Types of plastics, Lamination, Biodegradable plastics, Edible packaging and Bio-composites. Environmental Concerns recycling and disposal of plastic waste Metal packaging- Metals: Tinplate, tinning process, components of tinplate, tin free can (TFC) types of can, metallic films, lacquers Glass: Composition, Properties, Methods of bottle making, Types of closures.

Unit 3: Package Designing for Foods - Package design for fresh horticultural produce and animal foods, dry and moisture sensitive foods, frozen foods, fats and oils, thermally processed foods and beverages.

Unit 4: Testing and Regulatory Aspects of Food Packaging- Testing Procedures for Packaging Materials- thickness, tensile strength, puncture resistance, bursting strength, seal strength, water

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

vapor permeability, CO_2 permeability, oxygen permeability, grease resistance, Testing Procedures for Packaged Foods - Compatibility and shelf life studies, evaluation of transport worthiness of filled packages. Food Packaging Laws and Regulations.

Unit 5: Packaging Machinery and Systems - Bottling machines, Cartoning systems, Seal and Shrink packaging machine; Form, Fill and Sealing machine (FFS). Vacuum, Controlled and Modified atmosphere packaging systems; Aseptic packaging systems; Retort packaging, Active and Intelligent packaging systems

DSE4P: Food Packaging (Practical) **Credits 02**

List of Practical:

1. Testing of physical/mechanical properties of food packaging material.

2. Testing of thermal shock resistance of glass.

3. Gas/Vacuum packaging of foods and shelf life studies.

5. Edible packaging of Food Samples.

6. Packaged food cut-out analysis.

Demonstration:

1. Study of Sorption Isotherm for Food Package Design **(Demonstration)**.

2. Determination of Water Vapor Transmission rate of Packaging Material **(Demonstration)**.

3. Study the operation of FFS machine **(Demonstration**).

Or

DSE-3: Bakery Technology and Mushroom Culture **Credits 06**

DSE3T: Bakery Technology and Mushroom Culture **Credits 04**

Course Contents:

Unit- I: Bakery industry: Current status, growth rate, and economic importance of Bakery Industry in India. Product types, nutritional quality and safety of products, pertinent standards & regulations.

Unit- II: Bread, Buns and Pizza base - Ingredients & processes for breads, buns, pizza base, Equipments used, product quality characteristics, faults and corrective measures

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Unit- III: Cakes - Ingredients & processes for cakes, Equipments used, product quality characteristics, faults and corrective measures. Different types of icings.

Unit- IV: Biscuits, Cookies & Crackers - Ingredients & processes, Equipments used, product quality characteristics, faults and corrective measures.

Unit- V: Modified Bakery Products - Modification of bakery products for people with special nutritional requirements e.g. high fibre, low sugar, low fat, and gluten free bakery products.

Unit- VI: Breakfast Cereals, Macaroni Products and Malt - Production and quality of breakfast cereals, macaroni products and malt.

Unit- VI:

Mushroom Culture: 1. Definition and characteristics of mushroom. **2.** Morphology and life cycle of Mushroom**. 3.** Identification and classification of mushroom **4** Nutritional and medicinal value of edible mushrooms; poisonous mushrooms. **5.** Types of edible mushrooms available in India- Volvariella volvacea, Pleurotus citrinopileatus, Agaricus bisporus. **6.** Process of mushroom cultivation. **7.** Storage and nutrition: short term storage (Refrigeration- upto 24 hours), long term storage (canning, pickles, papads), drying, storage in salt solutions.

DSEP: Bakery Technology and Mushroom Culture (Practical) Credits 02

List of Practical:

1. Preparation of pizza base and assessment of its quality

2. Preparation of bread and assessment of its quality

3. Preparation of buns and assessment of quality

4. Preparation of butter cake and assessment of its quality.

5. Preparation of sponge cake with icing and assessment of its quality.

6. Preparation of cookies and assessment of quality.

7. Preparation of biscuits and assessment of quality.

8. Visit to Mushroom Culture Centres/ Farms for:

    Process involved in mushroom cultivation Types and varieties of mushroom. Visual Identification of edible and poisonous mushroom Marketing.

9. Different Food preparation from mushroom.

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Or

DSE-4: Sea food and Dairy Technology — Credits 06

DSE4T: Sea food and Dairy Technology — Credits 04

Course Contents:

Technology of Sea food:

Unit-I: Introduction. Status of fishery industry in India.

Unit-II: Chilling and Freezing of fish. Relationship between chilling and storage life, MAP, general aspects of freezing, freezing systems (air blast freezing, plate or contact freezing spray or immersion freezing, freezing on board, onshore processing, changes in quality in chilled and frozen storage, thawing.

Unit-III: Fish Curing and Smoking - Drying and salting of fish, water activity and shelf-life , salting process, salting methods (brining, pickling, kench curing, gaspe curing), types of salts, dried and salted fish products- pindang, fishwood, dried shrimp. Preservation by smoking, smoke production , smoke components, quality, safety and nutritive value of smoked fish, processing and equipment, pre-smoking processes, smoking process control. Traditional chimney kiln, modern mechanical fish smoking kiln, examples of smoked and dried products.

Unit-IV: Canning of fish: Principles of canning, classification based on pH groupings, effect of heat processing on fish, storage of canned fish, pre-process operations, post process operations, cannery operations for specific canned products.(Tuna,Mackerel,Sardine).

Unit-V: Fishery by-products - Surimi- Introduction, fish muscle proteins, the surimi process, traditional and modern surimi production lines, quality of surimi products, comparision of surimi and fish mince products. Fish protein concentrates (FPC), fish protein extracts (FPE), fish protein hydrolysis (FPH)

Unit-VI: Fermented fish- Flowchart of Indigenous products- Fish sauce and Paste

Unit-VII: Concept of other Sea foods - Crabs, lobsters, prawns, shrimps, shell- fish.

Technology of milk and milk products

Unit-VIII: Physical properties of milk : Color, taste, pH and buffering capacity, refractive index, viscosity, surface tension, freezing, boiling point, specific heat, OR, electrical conductivity.

Unit-IX: Lactose - Lactose (alpha and beta forms and their differences) Significances of lactose in dairy industry.

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

Unit-X: Milk fat: Composition and structure, factors affecting melting point, boiling point, solubility and Refractive Index, fat constants (saponification value, iodine value, RM value, Polenske value, peroxide value). Chemical reactions of fat (hydrolysis, auto-oxidation), condition favouring autooxidation, prevention, measurement of auto-oxidation.

Unit-XI: Protein and Enzymes - General structure, amphoteric nature, difference between casein and serum protein, different types of casein (acid and rennet), uses of casein, fractionation of protein. Enzymes- catalase, alkaline phosphatase, lipases and proteases.

Unit-XII: Market milk industry and milk products: Systems of collection of milk Reception, Platform testing- Various stages of processing, Filtration, Clarification • Homogenization • Pasteurization • Description and working of clarifier, cream separator, homogenizer and plate heat exchanger. Flow diagram of following milk products - Butter, ghee, flavored milk, yoghurt, dahi, shrikhand, ice-cream, condensed milk, milk powder, channa, paneer, cheese (cheddar).

DSE4P: Sea food and Dairy Technology (Practical) Credits 02

List of Practical:

1. Perform platform tests in milk.(Acidity, COB, MBRT, specific gravity, SNF)
2. Estimate milk protein by Folin method.
3. Estimate milk fat by Gerber method.
4. Preparation of flavoured milk. Pasteurization of milk.
5. Prepare casein and calculate its yield.
6. Quality evaluation of fish/prawn.
7. Subjective evaluation of Fresh Fish.
8. Cut out examination of canned fish.(Sardine, Mackerel, Tuna)
9. Fish product formulation/canning.

******

Downloaded from Vidyasagar University by 47.11.142.18 on 14 January 2020 : 17:57:57; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Nutrition_Hons6.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year BSc (General)
in

Nutrition

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

VIDYASAGAR UNIVERSITY

B Sc (General) in Nutrition

[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	I	SEMESTER-I					CA	ESE	TOTAL
		Core-1 (DSC-1A)		Nutritional aspect of food items. . - **Lab**	6	4-0-4	15	60	75
		Core-2 (DSC-2A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-3 (DSC-3A)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
	II	SEMESTER-II							
		Core-4 (DSC-1B)		Nutrients and its physiological role - **Lab**	6	4-0-4	15	60	75
		Core-5 (DSC-2B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-6 (DSC-3B)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	100
		Semester - 2 : Total			**22**				**325**

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	III	SEMESTER-III					CA	ESE	TOTAL
		Core-7 (DSC-1C)		Nutrition: Infancy to old age - **Lab**	6	4-0-4	15	60	75
		Core-8 (DSC-2C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-9 (DSC-3C)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-1		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 3 : Total			**20**				**275**
	IV	SEMESTER-IV							
		Core-10 (DSC-1D)		Nutritional Surveillance and programme - **Lab**	6	4-0-4	15	60	75
		Core-11 (DSC-2D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		Core-12 (DSC-3D)		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-2		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 4 : Total			**20**				**275**

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Discipline-1(Nutrition)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3A		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-3		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 5 : Total			**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Discipline-1(Nutrition)	6	4-0-4/ 5-1-0	15	60	75
		DSE-2B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		DSE-3B		Other Discipline/TBD	6	4-0-4/ 5-1-0	15	60	75
		SEC-4		TBD	2	1-1-0/ 1-0-2	10	40	50
		Semester - 6 : Total			**20**				**275**
	Total in all semester				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

LIST OF CORE & ELECTIVES

CORE COURSE (CC)

DSC-1A: Nutritional aspect of food items.
DSC-1B: Nutrients and its physiological role
DSC-1C: Nutrition: Infancy to old age
DSC-1D: Nutritional Surveillance and programme

DISCIPLINE SPECIFIC ELECTIVE (DSE)

DSE- 1: Food Microbiology and Food Borne Illness
Or
DSE- 1: Food Standard and Food Safety Guidelines
Or
DSE-1: Dietetics and Counselling

DSE- 2: Community Nutrition and Epidemiology
Or
DSE-2: Personnel Management
Or
DSE-2: Computer Application and Research Methodology

SKILL ENHANCEMENT COURSE (SEC)

SEC- 1: Diet Therapy – 1

SEC- 2: Diet Therapy-II

SEC-3: Basic Molecular Biology and Immunology
Or
SEC- 3: Toxicology and Public Health

SEC- 4: Biostatistics and Bioinformatics
Or
SEC-4: Nutrition and Fitness
Or
SEC-4: Women Health and Nutrition

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

CORE COURSE (CC)

DSC-1A (CC- 1): Nutritional aspect of food items. **Credits 06**

DSC1AT : Nutritional aspect of food items. **Credits 04**

Course Contents:

1. Concept and definition of terms:

- Food, Food Groups, Food Pyramid, Functions of food.
- Nutrient and Nutritive value, Concept of Balanced Diet.

2. Cereals, **Pulses and legumes:**

- Nutritional aspects of wheat, rice and oat.
- Types of pulses and legumes, uses, and nutritional aspects.

3. Milk and milk Products:

- Nutritive value of milk, composition of milk,
- Types of processed milk, milk products (butter, curd, paneer and cheese), Pasteurization.

4. Egg, **Fish and meat:**

- Nutritional aspects and uses.
- Nutritional aspects of edible fish and meat, concept of red and white meat.

5. Vegetables and fruits:

- Uses and nutritional aspect of commonly available vegetables.
- Fresh fruits and dry fruits– raw and processed product.

6. Salts, **Fats and oils:**

- Uses and nutritional aspects of various salts.
- Types, sources, use and nutritional aspects of fats and oils.

7. Methods of cooking:

- Dry, moist, frying and microwave cooking.
- Effect of various methods of cooking on foods, nutrient losses in cooking.

DSC1AP: Practical **Credits 02**

Food preparation and nutritive value as per portion size wherever applicable -

1. **Beverages:** Lassi

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

2. **Cereals:** Fried Rice
3. **Milk and milk products:** Payasam
4. **Eggs:** Egg pudding
5. **Snacks:** Sandwiches

Suggested Readings:

1. Hughes O, Bennion M (1970). Introductory Foods, Macrnillan & Co. New York.
2. Lavies S (1998). Food Commodities.
3. Pomeranz Y (Ed) (1991). Functional Properties of Food Components, (2nd edition), Academic Press, New York.
4. Tindall HD (1983). Vegetables in the Tropics, MacMillan Press, London.
5. Winton AL, Winton KB (1999). Techniques of Food Analysis. Allied Scientific Publishers.
6. Winton AL, Winton KB (1999). Techniques of Food Analysis. Allied Scientific Publishers.

DSC-1B (CC- 2): Nutrients and its physiological role **Credits 06**

DSC1BT: Nutrients and its physiological role **Credits 04**

Course Contents:

1. Concept and definition of terms:
Growth, Development, Nutrition, Malnutrition and Health, Scope of Nutrition.

2. Introduce of protein, carbohydrate and fats
Dietary sources, physiological role and deficiency disorders.

3. Role of Vitamins and Minerals:

- Fat soluble vitamin-Physiological role, dietary sources and deficiency disorders.
- Water soluble vitamin- Physiological role, dietary sources and deficiency disorders.
- Minerals-Physiological role, dietary sources and deficiency disorders in special references to calcium, iron, sodium and potassium.

4. Principles of meal planning:

- Food exchange list, Factors affecting meal planning and food related behavior.
- Dietary guidelines for Indians.

5. Minimum nutritional requirement and RDA:

- Formulation of RDA, dietary guidelines with reference to man and woman.

6. Energy in human nutrition:

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

• Energy and its unit, Energy assessment and balance, Factors of energy requirement, BMR and its regulation, SDA of food**.**

DSC1BP: Practical **Credits 02**

1. Growth chart: Plotting and Interpretation using primary or secondary data in accordance with both ICMR and WHO Chart.
2. Clinical assessment and sign of nutrient deficiency disorders: Protein energy malnutrition (PEM), Anemia, Rickets, Goiter (Slide/Photography).
3. Clinical assessment and sign of vitamin deficiency disorders: Vitamin A, Vitamin C and Vitamin B-complex (Slide/Photography).
4. Clinical assessment and sign of obesity and metabolic disorders risk factors.

Suggested Readings:

1. Gopalan C (198). Nutritive value of Indian Foods. Indian Council of Medical Research.
2. Guthrie AH (1986). Introductory Nutrition, 6th Ed. The C.V. Mesby Company.
3. Indian Council of Medical Research (2003). Nutrient Requirements and Recommended-Dietary Allowance for Indians. New Delhi.
4. WHO (1979). A growth chart for International use in Maternal and Children Health Care, Geneva.
5. Winword (1988). Sear's Anatomy and Physiology for Nurses. London, Edward Arno ll.
6. Swaminathan M (2009). Essentials of Foods and Nutrition, Vols -1 and II. Ganesh and Co. Madras.

DSC-1C (CC- 3): Nutrition: Infancy to old age **Credits 06**

DSC1CT : Nutrition: Infancy to old age **Credits 04**

Course Contents:

1. Nutrition during infancy:
• Breast feeding, Formula feeding, Weaning, Supplementary foods, Nutritional management of Preterm baby.

2. Nutrition for children:
• Diet in early childhood, elementary school age, high school age.

3. Nutrition during pregnancy and lactation:
• Nutritional demands of Pregnancy, Food selection during Pregnancy, Complications of pregnancy and dietary management, Diet during Lactation.

4. Geriatric nutrition:
• Planning of meals for older people, Nutrition of aged persons, Physiological complications in geriatric group and dietary modifications required.

DSC1CP: Practical **Credits 02**

1. Preparation of normal diets for infant (Dahl soup).

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

2. Preparation of normal diets for preschool children (Dalia).
3. Preparation of normal diets for pregnant lady and lactating mother (Khicheri with mixed vegetables).

Note: In laboratory note book, calculation of nutritive value should be recorded according to portion size of specific diet for particular individual.

Suggested readings:

1. Hoar WS (1984). General and comparative Physiology. 3rd ed. Prentice-Hall of India.
2. Indian Council of Medical Research (2003). Nutrient Requirements and Recommended-Dietary Allowance for Indians. New Delhi.
3. Sherwood L (2004). Human Physiology: From cells to systems. 5th ed. Thomson Brooks Cole.
4. Swaminathan M (2009). Essentials of Foods and Nutrition, Vols -1 and II. Ganesh and Co. Madras.
5. Walker WA and Watkins JB (Ed.) (1985). Nutrition in Pediatrics, Boston, Little Brown & Co.
6. WHO (1979). A growth chart for International use in Material and Children Health Care. Geneva.
7. Wilson (1989). Anatomy and Physiology in Health and Illness. Edinburgh, Churchill Livingstone.

DSC-1D (CC- 4): Nutritional Surveillance and Programme **Credits 06**

DSC1DT : Nutritional Surveillance and Programme **Credits 04**

Course Contents:

1. Assessment of Nutritional Status and Surveillance:
- Direct Nutritional status assessment of human groups - Biochemical, Biophysical and anthropometric methods.
- Indirect assessment: Secondary sources of community health data.

2. Concept of surveillance systems:
- Role of international and national organizations and agencies (WHO, FAO, UNICEF, CARE, NIN, CFTRI, ICMR).

3. Communication in Nutrition and Health Education:
- Type, process and media of communication.
- Importance and relevance of Information, Education and communication (IEC) in Nutrition and Public Health..

4. National Nutritional Intervention Programmes:
- Objective, Target group, Scheme details - Integrated Child Development Services (ICDS), Mid Day Meal Programme (MDMP), Vit A prophylaxis Prophylaxis programme, Anemia prophylaxis programme.

5. Immunization Programme:

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

- Immunization: National Immunization schedule for children and adults, Immunization for foreign travelers.

DSC1DP: Practical **Credits 02**

1. Anthropometric measurement of Weight for age, height for age, weight for height and its comparison with reference value.
2. Determination of BMI and comments on results.
3. Measurement of circumference of chest, upper arm, waist - hip ratio.

Suggested Readings:

1. Jelliffe DB and Jelliffe EFP (1989). Community Nutritional Assessment, Oxford University Press
2. WHO. The growth chart: A tool for use in infant and child health care. Geneva: WHO; 1986.
3. Gopalan C (1992). Growth charts in Primary Health Care – Time for Reassessment. NFI Bulletin.
4. Ghosh S (1997). Nutrition and child care – A practical guide. 1st ed. Jaypee Brothers; New Delhi.
5. NIPCCD. Growth Monitoring Manual. 1st ed. Deptt. Of Women and child development. Ministry of HRD: 1988.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

DISCIPLINE SPECIFIC ELECTIVE (DSE)

DSE- 1: Food Microbiology and Food borne Illness **Credits 06**

DSE1T: Food Microbiology and Food borne Illness **Credits 04**

Course Contents:

1. Introduction of Microbiology:

Introduction of microbiology and its relevance to everyday life. General characteristics of bacteria, fungi, virus, protozoa and algae.

Growth of microorganisms : Growth curve, effects of environment factors in growth of microorganisms –pH, water activity, oxygen availability, temperature and others.

Microorganisms involved in food fermentation and their role.

2. Microbiology of deficient food: Spoilage. Contamination sources, types, effect on the following:

a. Cereal and cereal products. **b.** Sugar and sugar products**. c.** Vegetables and fruits **d.** Meat and meat products. **e.** Fish, egg and poultry, Milk and milk products. **f.** Canned foods.

3. Environmental microbiology:

a. Water and water borne diseases. **b.** Air and air borne diseases. **c.** Soil and soil borne diseases. **d.** Sewage and diseases.

4. Beneficial effect of microorganisms.

5. Waste product handling:

a. planning for waste disposal. **b.** Solid wastes and liquid wastes.

6. Microbial intoxication and infections: Sources of contamination of food, toxin production and physiological action, sources of infection of food by pathogenic organisms, symptoms and method of control.

7. Control of microorganisms:

1. Physical and chemical methods used in sterilization and disinfection.
2. Uses of high and low temperature, dehydration, freezing, freeze drying, irradiation and use of preservatives.

8. Nutrition and culture of microorganisms:

1. Microbial nutrition-Types of culture media, Methods of pure culture and sub culture.
2. Bacterial growth-Extrinsic and intrinsic factors affecting growth.

9. Food contamination:

Primary sources of food contamination

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

10. Food infections:

1. Bacterial food infections-Salmonellosis, Shigellosis and Listeriosis.
2. Food poisoning (Staphylococcal & Botulism) - Symptoms, mode of transmission and methods of prevention, Concept of aflatoxin intoxication.
3. Relevance of microbial standards for food safety.

DSE1P: Practical **Credits 02**

1. Study of equipments in a microbiology lab.
2. Preparation of laboratory media and special media, liquid (broth) and solid media Slant and Stab.
3. Microbiological pure culture technique: Spread plate, Pour plate and Streak plate. Cultivation of yeasts and moulds.
4. Microbial Staining: Simple stain, Differential stain (Gram stain).
5. Cultivation and identifications of important molds and yeast in food items.
6. Demonstration of available rapid methods and diagnostic kits used in identification of microorganisms or their products.
7. Visits (at least two) to food processing units or any other organization dealing with advanced methods in food microbiology.

Suggested Readings:

1. Pelczar MJ, Chan ECS, and Krieg NR (2004). Microbiology. 5th edition Tata McGraw Hill.
2. Prazier WC and Westhoff DC (1988). 4th edition, Food Microbiology, MaGraw Hill Inc.
3. Prescott SC, Dunn CG (2009). Industrial Microbiology.
4. Roday S (1999). Food Hygiene and Sanitation, 1st Edition, Tata McGraw Hill, New Delhi.
5. Stanier RY, Ingraham JL, Wheelis ML, and Painter PR (2005). General Microbiology. 5th edition. McMillan.
6. Talaro K and Talaro A (2011). Foundations in Microbiology, 8th ed. McGraw-Hill
7. Tortora GJ, Funke BR, Case CL (2008). Microbiology. An Introduction. 9th ed. Benjamin/Cummings Publishing.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

Or

DSE 1: Food Standards and Food Safety Guidelines Credits 06

DSE1T: Food Standards and Food Safety Guidelines Credits 04

Course Contents:

1. **Microorganisms and Sanitation:**

   - The relationship of microorganisms to sanitation. Effects of microorganisms on food degradation and food – borne illness.
   - Importance of personal hygiene of food handlers: Habits, cloths, illness, education of food handler in handling and serving food. Concepts of food contamination.

2. **Food additive and food safety:**

   • Concept of food safety, definition and factors affecting food safety.
   • Food additives-various types and their effects on health.

3. **Food processing** – Definition, types, enzyme of importance in food processing – Proteases, lipases, oxidoreductase and hydrolase.

4. **Food security:** Concept of food security**,** factors affecting food security.

5. **Food adjuncts and preserved products:**
   - Elementary idea on food preservation: principles and different methods – drying, freezing, frying, canning,etc.
   - Spices (Chilies, Turmeric, Garlic and Ginger), use and nutritional aspect.
   - Jams, Jellies, Squashes–uses and nutritional aspects.

6. **Food adulteration:**
   - Definition, Reasons and types.
   - PFA definition of food adulteration, Common adulterants in food and their effects on health.
   - Common household methods to detect adulterants in food,

7. Food laws and Regulatory authority:

- Food Laws, Consumerisms: Definition, consumer protection, Consumer education, Legal mode of protection, Machinery for redresal of consumer grievances.
- Prevention of Food Adulteration (PFA) Act.
- Regulating authority - Codex Alimentarius, ISI, Agmark, Fruit Products Order (FPO), Meat Products Order (MPO), Bureau of Indian Standards (BIS), Food Standards and Safety Authority of India (FSSAI).

DSE1P: Practical Credits 02

<u>Detection of common adulterants in foods:</u>

1. Detection of vanaspati in ghee/ butter.
2. Detection of khesari flour in besan.
3. Detection of argemone oil in edible oil.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

4. Detection of metanil yellow in turmeric or colour sweet products.
5. Detection of dried papya seeds in black pepper.
6. Detection of artificially foreign matter in tea (dust/leaves).
7. Visit to food preservation centre/industry and demonstration of preparation and packaging of jam, jelly, chilli sauce, tomato ketchup, squash, pickles, etc.

Suggested readings:

1. Gopalan C and Kaur S (Eds.) (1993). Towards Better Nutrition, Problems and Policies, Nutrition Foundation of India.
2. Tovel AP (1984). Standardising Food Service for Quality and Efficiency. AVI Publishing Company INC.
3. Dept. of WCD, Govt. of India. (1993): National Nutrition Policy.
4. Food and Nutrition Board, Dept. of WCD, Govt. of India (1995): National Plan of Action on Nutrition.
5. Roday S (1999). Food Hygiene and Sanitation, 1st Edition, Tata McGraw Hill, New Delhi.
6. Diehl JF (1995). Safety of Irradiated Foods Marcel Dekker Inc, New York.
7. Raheena Begum: A textbook of food, nutrition and dietetics Sterling Publishers, New Delhi.
8. Joshi SA. Nutrition and Dietetics. Tata McGraw Hill, Publications, New Delhi.
9. Mahan LK and Escott-Stump S (2000). Krause's Food Nutrition and Diet Therapy, 10th edition, W.B. Saunders Ltd.

Or

DSE-1: Dietetics and Counseling — Credits 06

DSE1T: Dietetics and Counseling — Credits 04

Course Contents:

1. Practical consideration in giving dietary advice and counselling -
    a) Factors affecting and individual food choice.
    b) Communication of dietary advice
    c) Consideration of behaviour modification
    d) Motivation.
2. Counselling and educating patient
    a) Introduction to nutrition counselling
    b) Determining the role of nutrition counseller
    c) Responsibilities of the nutrition counseller
    d) Practitioner v/s client managed care
    e) Conceptualizing entrepreneur skills and behaviour
    f) Communication and negotiation skills.
3. Teaching aids used by dietitians- charts, leaflets, posters etc., preparation of teaching material for patients suffering from Digestive disorders, Hypertension, Diabetes, Atherosclerosis & Hepatitis and cirrhosis.

4. Computer application
    a) Use of computers by dietitian

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

b) Dietary computations
c) Dietetic management
d) Education/ training
e) Information storage
f) Administrations
g) Research

5. Computer application
   a) Execution of software packages
   b) Straight line, frequency table, bar diagram, pie chart, Preparation of dietary charts for patients
   c) Statistical computation- mean, median, standard deviation, conclusion and regression test.

DSE1P: Practical **Credit 02**

1. Project planning for any one disease.
2. Computer application for different diseases.
3. Submitting computed data.
4. Preparations of teaching aids in the field of nutrition.
5. Preparation of case history of a patient and feeding of information in the hard disc.

DSE-2: Community Nutrition and Epidemiology **Credits 06**

DSE-2P: Community Nutrition and Epidemiology **Credits 04**

Course Contents:

1. **Concept of population and Community:** Concept and characteristic features of population. Concepts and types of community. Concept of community nutrition. Factors affecting health of community – environmental, social, political, cultural and economical.

2. **Community water and waste management:** Source of water, safe drinking water, etiology and effects of toxic agents. Microbial examination of water, Water-Potability test (MPN Test). Sewage disposal and treatment.

3. **Nutritional problems in community:**
   a. Nutrition and health in National Development.
   b. Malnutrition – meaning, factors contributing to malnutrition, over nutrition.
   c. Nutritional disorders : Epidemiology, clinical features, prevention and dietary treatment for protein energy malnutrition, nutritional anaemias & vitamin deficiency disorders.
   d. Nutritional and infection relationship : Immunization and its importance, Food borne infection,and intoxication diseases, foods involved, methods of prevention, infestation of food borne diseases, outbreak, Prevention sign and control of infection.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

4. **Community nutrition programme planning** – identification of problem, analysis of causes, resources constraints, selection of interventions, setting a strategy, implementations and evaluation of the programme.

5. Nutritional status assessments and Nutritional intervention programmes :

a. Nutritional status assessment: Meaning, need, objectives and importance.

Methods of assessing nutritional status:

i. Sampling techniques, identification of risk groups.

ii. Direct assesement – Diet surveys, Nutritional anthropometry – height, weight, BMI, MUAC, head and chest circumference, Diet survey by recall method, Clinical assessment, biochemical assessments.

iii. Indirect assesement – Food balance sheet, ecological parameters and vital statistics.

b. National and International agencies in uplifting the nutritional status:

- FAO,WHO, UNICEF, CARE, ICMR, ICDS, ICAR, CSIR, CFTRI ANP,VHAI,NIN.
- Role of voluntary health organization in the improvement of community health.

c. Nutritional intervention programmes :

Nutritional intervention programme to combat malnutrition. Concept of food fortification and food enrichment.

6. Nutrition Education :

Definition, objectives of nutrition education. Methods of imparting nutrition education.

7. Concept of Disease:

Endemic, Epidemic and Pandemic, Acute and Chronic. Communicable and Non-communicable diseases, Zoonosis, Epizootic and Enzootic.

8. Principles of Epidemiology:

Epidemiological study-Descriptive and Analytical. Rate of Disease in a Population-Attack rate, Mortality and Morbidity rate, Prevalence and Incidence of a disease, The incubation period, Quarantine period. Factors that Influence the Epidemiology of Disease.

DSE2P: Practical **Credits 02**

1. Preparation of homemade ORS.
2. Identification of vulnerable and risk groups,
3. Preparation of weaning foods for infants.
4. Preparation of low cost and medium cost school tiffin.
5. Use of anthropometric measurements in children.
6. Diet survey by 24 Hours recall methods.
7. Preparation of visual aids.
8. Field visit to : a) Observe the working of nutrition and health oriented programmes (survey based results), b) Hospitals to observe nutritional deficiencies.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

9. Visit to old age home / ICDS Centre / Nutrition Rehabilitation Centre (NRC) / Slum area / any public place and Prepare a report on nutritional status and health concern (at least 10-15 case studies to be done).
10. Visit to a Rural Technology Centre/Community Welfare Centre and prepare a brief field report on Rural Technology and Community Development.

Suggested Readings:

1. Park K (2009). Park's Textbook of Preventive and Social Medicine, 20th Edition, M/s Banarasidas Bhanot, Jabalpur.
2. Gordis L (1996). Epidemiology, Saunders, Pennsylvania.
3. Norell SE (1998): Workbook of Epidemiology. Oxford: University Press, New York.
4. Owen AY and Frankle RT (1986). Nutrition in the Community, The Art of Delivering Services, 2nd Edition, Times Mirror/Mosby.
5. Roday, S. (1999) Food Hygiene and Sanitation. 1st Edition, Tata McGraw Hill, New Delhi.
6. Saha A, Shattock F, Mustafa T. Epidemology in Primary Health Care. The McGraw- Hill Companies.

Or

DSE-2: Personnel Management **Credits 06**

DSE2T: Personnel Management **Credits 04**

Course Contents:

1. Organization and management:
   a) Definition and types of organization.
   b) Definition- functions and tools of management.
   c) Technique of effective management and its application to food preparation and science.

2. Food material management:
   a) Meaning, definition, and importance.
   b) Food selection, purchasing, receiving and storeroom management.
   c) Control in relation to the above operations (material planning, budgeting, material identification, modification and standardization, inventory control, store keeping, definition, objectives, functions, factors underlying successful storekeeping, duties and responsibilities of a storekeeper, purchasing, organization, principle, procedure, systems and quality control).

3. Personnel Management: Recruitment, selection and training of personalities, work standards, productivity, supervision, performance appraisal and motivation incentives for effective performances.

4. Labour policies and legislation: (Personnel policies related to salaries, other emoluments, allowances, leave, uniform and other prize benefit, laws and organization)- Laws affecting food service institution to study the following: (hospital, flight kitchen, hotel, restaurant, canteen, Industrial) -

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

a. Organization
b. Physical plan and layout.
c. Food and silver equipment
d. Sanitation and hygiene.

DSE2P: Practical **Credits 02**

Visit and appraisal of any two medical organization.

1. Work simplification: food preparation, Calculating work unit, time norms etc.
2. Costing, accounting, budgeting, purchase.
3. Storekeeping: Listing and management of food items in the store.
4. Personnel recruitment: Preparations of a project and report making.
5. Maintenance of the clothing for persons and staff involved in kitchen area.
6. Prepare an inventory for evaluating staffs personal hygiene.

Or

DSE-2: Computer Application and Research Methodology Credit 06

DSE2T: Computer Application and Research Methodology Credit 04

Course Contents:

A. Computer

1. Computer fundamental – Basic anatomy of computer, generation of computer, application of computer.
2. Hardware and Software concept – Storage devices, system software, multi programming operating system, multi tasking operating system.
3. Computer viruses: Computer viruses, working of viruses, network viruses, antivirus, common antivirus software.
4. Data Processing – Types of data, types of data processing, step in data processing, application of data processing.
5. Principle of Programming – Programme language approaches.
6. Word Processing: Basic features of Text formatting; Creating documents; Heading Styles; Creating Reference Lists
7. Presentations: Creating Presentations; Pasting Charts etc in Presentations; Exporting Presentations as PDF

B. Research Methodology

1. General concept of research, types of research – Exp. Research, Action research, Historical research. Understanding the Nature of Research. Formulation of the Research Topic Approaches to Research and Research Strategy. Research Ethics.
2. Sampling – Criteria, Design, characteristics of good sampling, types of sampling. Sample Selection Methods

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

3. Data, data collection method, Criteria of good data, grouped data, ungrouped data. Using Secondary Data Using Primary Data – Collecting Data through Observations/ Interviews/ Questionnaire.
4. Experimental design –In brief.
5. Analysing Data. Writing Project Report - Referencing Styles. Review of Literature

DSE2P: Computer & Assignment Programme on Research Methodology Credit 02

1. Tabular form of data presentation in computer. File Creation and Management System. Word Processing.
2. Use of Microsoft Word and Excel with specific problem.
3. Assignment programme for Experimental design – covering any one of the following fields.
    i. Protein under nutrition and its recovery.
    ii. Vitamin or Mineral under nutrition and its recovery.
    iii. Dietary management of non-communicable disease.
    iv. Impact of nutrition education on awareness development in the field of personal health.

Suggested Readings:

1. Ranjit Kumar: Research Methodology - A Step by Step Guide for Beginners (Sage Publications, 4th Edn.)
2. Data Analysis using Microsoft Excel – Ash Narayan Sah, Excel Books India
3. Antia,F.P and Abraham,P Clinical Dietetics and Nutrition. Oxford University Press, New Delhi.
4. Joshi,SA. : Nutrition and Dietatics. Tata McGraw – Hill Publishing Co. Ltd., New Delhi.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

SKILL ENHANCEMENT COURSE (SEC)

SEC- 1: Diet Therapy - I **Credits 02**

SEC1T: Diet Therapy - I **Credits 01**

Course Contents:

1. Definition of Dietetics, dietitian, goals of diet therapy.

2. **Basic concepts of Diet therapy:** Therapeutic adaptations of normal diet, Classification of therapeutic diets (Progressive diets – Normal, Soft, Clear fluid diet and Full fluid).

3. **Dietitians and hospital basic diets:**
- Types of dietitians and role of dietitian in a hospital. Routin hospital diets. Specially modified therapeutic diet.
- Nutritional adequacy of hospital diets, Basic concept and methods of (i) Oral feeding (ii) Tube feeding (iii) Parenteral feeding.

4. Etiology, symptoms, diagnostic tests and dietary management of Gastro-intestinal tract and liver diseases - Diarrhoea, Constipation, Irritable Bowel Syndrome, Peptic ulcer , Jaundice and Cirrhosis of liver.

5. Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management: Diabetes mellitus, Diabetes insipidus

6. Etiology, symptoms, diagnostic tests and dietary management of Malabsorption syndrome, Lactose intolerance, Food allergy

7. Anemia: definition, causes, classification and dietary management of nutritional anaemia.

8. Fever: Definition, causes, types, symptoms and dietary management.

SEC1P: Practical **Credits 01**

Planning and preparation of therapeutic diets for the following diseases: Diabetes melilitus (case specific), Hepatitis (case specific), gastrointestinal diseases (case specific), anemia (case specific).

Suggested Readings:

1. Anderson L, Dibble MV, Tukki PR, Mitchall HS, and Rynbergin HJ. Nutrition in Health and Disease. 17th edition, JB Lipincott & Co. Philadelphia.
2. Anita FP. Clinical Dietetics and Nutrition. Second Edition, Oxford University Press, Delhi.
3. Davis J and Sherer K (1994). Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, WB Saunders Co.
4. Escott-Stump S (1998). Nutrition and Diagnosis Related Care, 4th Edition, Williams and Wilkinson
5. Garrow JS, James WPT and Ralph A (2000). Human Nutrition and Diabetics, 10th Edition, Churchill Livingstone.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

SEC- 2: Diet Therapy – II **Credits 02**

SEC2T: Diet Therapy –II **Credit 01**

Course Contents:

1. Etiology, clinical features, dietary and general management of Weight Imbalances**:** Underweight, Overweight and Obesity.

2. Eating disorder: Concept of Anorexia nervosa and bulimia.

3. Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management of Hypertension, Renal diseases in special reference to Glomereulo -nephritis, Uremia, and Nephrosis.

4. Diseases of the cardio vascular system:
a. Brief review of lipoproteins (TC, TG, LDL, HDL, VLDL),
b. Atherosclerosis – etiology, risk factor and dietary management.

5. Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management of Cancer

SEC2P: Practical **Credit 01**

1. Planning and preparation of therapeutic diet for obesity (Case Specific),
2. Planning and preparation of therapeutic diet for Hyper tension (Case Specific),
3. Planning and preparation of therapeutic diet for Renal Diseases (Case Specific),

Suggested Readings:

1. Anderson L, Dibble MV, Tukki PR, Mitchall HS, and Rynbergin HJ.: Nutrition in Health and Disease. 17th edition, J.B. Lipincott & Co. Philadelphia.
2. Anita FP. Clinical Dietetics and Nutrition. 2nd Edition, Oxford University Press, Delhi.
3. Davis J and Sherer K (1994). Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, W.B. Saunders Co.
4. Escott-Stump S (1998): Nutrition and Diagnosis Related Care, 4th Edition, Williams and Wilkinson.
5. Garrow JS, James WPT and Ralph A (2000). Human Nutrition and Diabetics, 10th Edition, Churchill Livingstone.
6. Srilakshmi B (2016). Dietetics. New Age International.

SEC 3: Basic Molecular Biology and Immunology **Credits 02**

SEC3T: Basic Molecular Biology and Immunology **Credit 02**

Course Contents:

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

Molecular Biology

1. Nucleic acid: Bases, nucleosides and nucleotides.
2. DNA structure: DNA double helix (Watson and Crick Model). Types of DNA and RNA, DNA and RNA as genetic material.
4. DNA replication: Semi-conservative replication, Basic mechanism of replication (Prokaryotes / Eukaryotes).
5. Transcriptional unit and basic concept of transcription (Prokaryotes / Eukaryotes).
6. Genetic code and basic mechanism of translation (Prokaryotes / Eukaryotes).
7. Basic concept of genomics, proteomics and metabolomics.

Immunology:

1. Introduction: Basic concept of immunity, Types of immunity-innate, acquired, active and passive immunity.
2. Humoral immune system: Mechanisms of humoral immunity, Immunoglobulin isotypes - IgG, IgM, IgA, IgD, and IgE.
3. Cell mediated immune system: Types of effector T cells, mechanisms of cell mediated immunity.

Suggested Readings:

1. Bolandar, M. (2001). Molecular Endocrinology. Elsevier Science.
2. Alberts, B. et al. (2008). Molecular Biology of the Cell. 5th Ed. Garland Publishing House.
3. Yoshinori Mine (Editor), Kazuo Miyashita (Editor), Fereidoon Shahidi (Editor): Nutrigenomics and Proteomics in Health and Disease: Food Factors and Gene Interactions.
4. Van Ommen, B. (2004). Nutrigenomics: Exploiting systems biology in the nutrition and health arenas. Nutrition.20:4-8.
5. Simopoulos, A.P. and Ordovas, J.M. (Editors)(2004). Nutrigenetics and Nutrigenomics.
6. Roche, H.M. (2004). Dietary lipids and gene expression. Biochem Soc Trans. 32(Pt 6):999-1002.
7. Mount, D. W. Bioinformatics. Sequence and Genome Analysis, CSHL Press.
8. Jones.N. C., Pevzner, P. A. (2004). An Introduction to Bioinformatics Algorithms, MPI Press.
9. Kaput J, Rodriguez RL. (2004)Nutritional genomics: The next frontier in the postgenomic era. Physiol Genomics.16:166-177.
10. Kaput J. and Rodriguez. R. L. (2006). Nutritional Genomics. John Wiley & Sons, Inc.
11. DeBusk RM, Fogarty CP, Ordovas JM, Kornman KS. (2005). Nutritional genomics in practice: Where do we begin? *J Am Diet Assoc*. 105:589-598.

Or

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

SEC- 3: Toxicology and Public Health **Credit 02**

SEC3T: Toxicology and Public Health **Credit 01**

Course Contents:

1. Toxic agents: Human exposure, Xenobiotics- Definition, types. Mechanism of action and resultant toxicities of the following xenobiotics: Metals: Lead, arsenic, Pesticides: Organophosphates, carbamates, organochlorine.

2. Eco-toxicology: Basic concepts, significances. Brief introduction to avian and aquatic toxicology. Movement and effect of toxic compounds in food chain (DDT, mercury). Bioaccumulation: Concept & significance. Biomagnification : Concepts and Significance. Concept of BOD and COD.

3. Concepts of health and community health. Factors affecting community health.

4. Maternal and Child mortality: Definition and causes. Role of health workers in the improvement of maternal and child health.

5. Immunization: Importance and immunization schedule for children and adults.

6. General idea about the contamination of food (chemical and microbial) – Sources and transmission, elementary ideas about food toxins,aflatoxins & food toxicology with reference to lead, cadmium & zinc.

7. Contamination of water and prevention of contaminations of diarrhea, dysentery,typhoid, hepatitis,preventive measures and dietary management of such diseases.

SEC3P: Practical **Credit 01**

1. Calculation of BMI of an individual and interpretation of results.
2. Growth charts – Plotting of growth charts for growth monitoring.
3. Formulation and demonstration of nutrition education tools such as charts, posters, and models related to health and nutrition education.

Suggested Reading:

1. Immunology, 8th edition, (2012), Male, D., Brostoff, J., Roth, D.B. and Roitt, I., Elseivier-Saunders.
2. An Introduction to Immunology, Immunochemistry and Immunobiology, 5th edition, (1988), Barrett, James T., Mosby Company, St. Louis..
3. Immunology: An Introduction, 4th edition, (1994), Tizard, I.R., Saunders College Publishing, Philadelphia.
4. Cassarett and Doull's Toxicology "The Basic Science of The Poisons" 7th edition (2008).
5. Cassarett and Doull's "Essentials of Toxicology" 2nd edition (2010), Klaassen and Whatkins, McGraw Hill Publisher.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

6. Introduction to Toxicology, 3rd edition (2001), John Timbrell, Taylor and Francis Publishers.
7. Principles of Toxicology, 2nd edition (2006), Stine Karen and Thomas M Brown, CRC press.
8. Lu's basic toxicology: Fundamentals target organ and risk assessment, 5th edition (2009), Frank C Lu and Sam Kacow, Informa Health care.

SEC - 4: Biostatistics and Bioinformatics **Credits 02**

SEC4T: Biostatistics and Bioinformatics

Course Contents:

Biostatistics

Introduction to Biostatistics: Variable and attribute; population vs sample; Census vs sample survey; Data and Data type. Primary and Secondary data. Arrangement of data; Frequency distribution. Graphical Representation of Data: Line diagram, Bar diagram, Pie Chart, Histogram.

Measures of Central Tendency.Arithmetic mean, Mode, Median.

Dispersion-Range,Variance, Standard deviation, Standard error of mean, standard score.

Testing Hypothesis and Goodness of fit- Null hypothesis, Level of significance, Probability, Normal distribution, Error of inference, Student's t-test, Paired t-test, Fisher's t-test, Chi-square test.Analysis of Variance(ANOVA)

Bioinformatics :

Introduction to bioinformatics : Computer Fundamentals – Programming languages in bioinformatics, Role of Super computer in biology. Historical background. Scope of bioinformatics – Genomics, Proteomics and Computer aided Drug Design (Structure based and ligand based approaches). Application of Bioinformatics. Bioinformatics and Health Informatics: Concept and applications.

Biological databases and data retrieval: Introduction to biological databases – Primary, secondary and composite databases, NCBI, nucleic acid databases (GenBank, EMBL,DDBJ,NDB), Protein databases (PIR, Swiss- Prot, TrEMBL, PDB). Nutrient data bases.

Suggested readings

1. Saxena Sanjay (2003) A First Course in Computers, Vikas Publishing House.
2. Pradeep and Sinha Preeti (2007) Foundations of Computing, 4th ed., BPB Publications.
3. Lesk M.A. (2008) Introduction to Bioinformatics. Oxford Publication, 3rd International Student Edition.
4. Rastogi S.C., Mendiratta N. and Rastogi P. (2007) Bioinformatics: methods and applications, genomics, proteomics and drug discovery, 2nd ed. Prentice Hall India Publication.
5. Primrose and Twyman (2003) Principles of Genome Analysis & Genomics. Blackwell.
6. Debjyoti Das (2012). Biostatistics.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

7. E. Batschelet : Introduction to Mathematics for Life Scientists,Springer Verlag, International Student Edition, Narosa Publishing House, New Delhi (1971, 1975).
8. W. Danial : Biostatistics : A foundation for Analysis in Health Sciences, John Wiley and Sons Inc; 2004.
9. A Edmondson and D. Druce : Advanced Biology Statistics, Oxford University Press; 1996.

Or

SEC4T: Nutrition and Fitness **Credits 02**

SEC4T: Nutrition and Fitness

Course Contents

1. Body composition, concept of fat free mass, lean body mass and related measurements.
2. Understanding Fitness: Definition of fitness, health and related terms. Assessment of fitness, Approaches for keeping fit.
3. Importance and benefits of physical activity: Physical Activity – frequency, intensity, time and type with examples Physical Activity, physical activity guidelines and physical activity pyramid.
4. Importance of nutrition Role of nutrition in fitness, Nutritional guidelines for health and fitness, Nutritional supplements.
5. Importance of diet and exercise for weight management.
6. Fitness in athletics and sports.
7. Role of nutrients on sports performance.
8. Doping and related hazards.

Suggested Readings:

1. Campbell BI. (2014). Sports Nutrition: Enhancing Athletic Performance, CRC Press, Taylor& Francis,
2. Haff GG. (2008). Essentials of Sports Nutrition Study Guide, Humana Press.
3. Dunford M and Doyle JA. (2008). Nutrition for Sport and Exercise, Thomson Wadsworth.
4. Srilakshmi B. (2018). Dietetics, New Delhi: New Age International.

Or

SEC-4: Women Health & Nutrition **Credits 02**

SEC4T: Women Health & Nutrition

Course Contents

1. Factors (non-nutritional) affecting pregnancy outcome, importance of adequate weight gain during pregnancy, antenatal care and its schedule, Nutritional requirements during pregnancy and modification of existing diet and supplementation, Deficiency of nutrients,

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

specially energy, iron folic acid, protein, calcium, iodine. Common problems of pregnancy and their managements, specially - nausea, vomiting, pica, food aversions, pregnancy induced hypertension, obesity, diabetes. Adolescent pregnancy.

2. Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation. Care and preparation of nipples during breast feeding.

Suggested Readings:

1. Ghosh, S: The Feeding and Care of Infants arid Young Children, VHAI. 6th Ed. Delhi.
2. WHO: A growth chart for International use In Maternal and Children Health Care, Geneva.
3. Mann and Truswell: Essentials of Human Nitration, Oxford University press.
4. Indian Council of Medical Research: Nutrient Requirements and Recommended- Dietary Allowance for Indians, New Delhi.

Downloaded from Vidyasagar University by 106.196.3.252 on 29 November 2022 : 09:22:59; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BSC_GENERAL/Nutrition_General.pdf

VIDYASAGAR UNIVERSITY

Curriculum for 3-Year B.A. (General)
in

Physical Education

Under Choice Based Credit System (CBCS)
[w.e.f 2018-2019]

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

VIDYASAGAR UNIVERSITY BA
(General) in Physical Education
[Choice Based Credit System]

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
1	**I**			**SEMESTER-I**			**CA**	**ESE**	**TOTAL**
		Core-1 (DSC-1A)		Foundation and History of Physical Education - **Practical**	6	4-0-4	15	60	75
		Core-2 (DSC-2A)		Other Discipline (Discipline-2)/TBD	6		15	60	75
		AECC-1 (Core)		English-I	6	5-1-0	15	60	75
		AECC-1 (Elective)		English/MIL	2	1-1-0	10	40	50
				Semester - I : Total	**20**				**275**
	II			**SEMESTER-II**					
		Core-3 (DSC-1B)		Management of Physical Education and Sports - **Practical**	6	4-0-4	15	60	75
		Core-4 (DSC-2B)		Other Discipline (Discipline-2) /TBD	6		15	60	75
		AECC-2 (Core)		MIL-I	6	5-1-0	15	60	75
		AECC-2 (Elective)		Environmental Studies	4		20	80	**100**
				Semester - 2 : Total	**22**				**325**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_revised.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
2	**III**	**SEMESTER-III**					**CA**	**ESE**	**TOTAL**
		Core-5 (DSC-1C)		Anatomy , Physiology and Exercise Physiology - **Practical**	6	4-0-4	15	60	75
		Core-6 (DSC-2C)		Other Discipline (Discipline-2) /TBD	6		15	60	75
		AECC-3 (Core)		English-II	6	5-1-0	15	60	75
		SEC-1		SEC- 1: Indian Games and Racket Sports	2	0-0-4	10	40	50
				Semester - 3 : Total	**20**				**275**
	IV	**SEMESTER-IV**							
		Core-7 (DSC-1D)		Health Education, Physical Fitness and Wellness - **Practical**	6	4-0-4	15	60	75
		Core-8 (DSC-2D)		Other Discipline (Discipline-2) /TBD	6		15	60	75
		AECC-4 (Core)		MIL- II	6	5-1-0	15	60	75
		SEC-2		SEC- 2: Ball Games	2	0-0-4	10	40	50
				Semester - 4 : Total	**20**				**275**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_revised.pdf

Year	Semester	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
3	V	SEMESTER-V					CA	ESE	TOTAL
		DSE-1A		Any one from Discipline -1(Physical Education)	6		15	60	75
		DSE-2A		Other Discipline (any one from Discipline -2) / TBD	6		15	60	75
		GE-1		TBD	6		15	60	75
		SEC-3		SEC- 3: Gymnastics and Yoga **Or** Computer application in education	2	0-0-4/ 1-1-0	10	40	50
				Semester - 5 : Total	**20**				**275**
	VI	SEMESTER-VI							
		DSE-1B		Any one from Discipline -1(Physical Education)	6		15	60	75
		DSE-2B		Other Discipline (any one from Discipline - 2) / TBD	6		15	60	75
		GE-2		TBD	6		15	60	75
		SEC-4		SEC-4: Track and Field	2	0-0-4	10	40	50
				Semester - 6 : Total	**20**				**275**
	Total in all Semester:				**122**				**1700**

CC = Core Course , **AECC** = Ability Enhancement Compulsory Course , **GE** = Generic Elective , **SEC** = Skill Enhancement Course , **DSE** = Discipline Specific Elective , **CA**= Continuous Assessment , **ESE**= End Semester Examination , **TBD**=To be decided , **CT** = Core Theory, **CP**=Core Practical , **L** = Lecture, **T** = Tutorial ,**P** = Practical , **MI**L = Modern Indian Language , **ENV**S = Environmental Studies ,

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_revised.pdf

List of Core Courses and Electives

Core Course (CC)

DSC- 1A: Foundation and History of Physical Education
DSC-1B: Management of Physical Education and Sports
DSC-1C: Anatomy, Physiology and Exercise Physiology
DSC-1D: Health Education, Physical Fitness and Wellness

Discipline Specific Electives (DSE)

DSE-1A: Tests, Measurements and Evaluation in Physical Education
Or
DSE-1A: Psychology in Physical Education and Sports
Or
DSE-1A: Environmental Education
DSE-1B: Sports Training
Or
DSE-1B: Project Work

Skill Enhancement Course (SEC)

SEC- 1: Indian Games and Racket Sports
SEC- 2: Ball Games
SEC- 3: Gymnastics and Yoga
Or
SEC-3: Computer Application in Education
SEC-4: Track and Field

Generic Elective (GE)
[Interdisciplinary for other Departments]

GE-1: Modern Trends and Practices in Physical Education & Exercise Sciences
Or
GE-1: Foundation and History of Physical Education
Or
GE-1: Management of Physical Education and Sports
GE-2: Health Education and Tests & Measurements in Physical Education
Or
GE-2: Anatomy, Physiology and Exercise Physiology
Or
GE-2: Yoga Education

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

Core Courses (CC)

DSC-1A (CC-1): Foundation and History of Physical Education **Credits 06**

DSC1AT: Foundation and History of Physical Education **Credits 04**

Course Contents:

Unit- I: Introduction

1.1. Meaning, definition and scope of Physical Education.
1.2. Aims and objectives of Physical Education.
1.3. Misconception and modern concept of Physical Education.
1.4. Needs and importance of Physical Education in modern society.

Unit- II: Biological and Sociological Foundations of Physical Education

2.1. Biological Foundation- Meaning and definition of growth and development. Factors affecting growth and development. Differences of growth and development. Principles of growth and development.
2.2. Age- Chronological age, anatomical age, physiological age and mental age.
2.3. Sociological Foundation- Meaning and definition of Sociology, Society, Socialization in Physical Education and Sports, Sports Ethics.
2.4. Role of games and sports in National and International integration.

Unit- III: History of Physical Education

3.1 Historical development of Physical Education and Sports in India- Pre-Independence period and Post-Independence period.
3.2 Olympic Movement- Ancient Olympic Games and Modern Olympic Games.
3.3 Brief historical background of Asian Games and Commonwealth Games.
3.4 National Sports Awards- Arjuna Award, Rajiv Gandhi Khel Ratna Award, Dronacharya Award, Dhyanchand Award.

Unit- IV: Yoga Education

4.1 Meaning and definition of the term Yoga, types, aims, objectives and importance of Yoga.
4.2 History of Yoga.
4.3 Astanga Yoga
4.4 Hatha Yoga

DSC1AP: Field Practical **Credits 02**

1. Marching- fall in attention, Stand at ease, stand easy, Eyes right, Eyes front, Right Turn, Left Turn, About Turn, Mark Time Mark, Forward Mark
2. Learn and demonstrate the technique of Suryanamaskar.
3. Development of physical fitness through Callisthenics and Aerobic activities.

Suggested Readings:

1. Graham, G. (2001) Teaching Children Physical Education: Becoming a Master Teacher. Human Kinetics, Champaign, Illinois, USA.
2. Kamlesh, M.L. & Singh, M.K. (2006) Physical Education (Naveen Publication).
3. Lau, S.K. (1999) Great Indian Players, New Delhi, Sports.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

4. Lumpkin, A. (2007) Introduction to Physical Education, Exercise Science and Sports Studies, McGraw Hill, New York, USA.
5. Siedentop, D. (2004) Introduction to Physical Education, Fitness and Sport, McGraw Hill Companies Inc., New York, USA.
6. Shaffer, D.R. (2002) Development Psychology: Childhood and Adolescence. Thomson, Sydney, Australia.
7. Shukla, (2000) Mother on Education, National Council of Teacher Education, New Delhi.
8. Singh, A. et al. (2000) Essential of Physical Education, Kalyani Publishers, Ludhiana, Punjab.
9. Wuest, D.A. & C.A. Bucher (2006) Foundation of Physical Education, Exercise Science, and Sports. McGraw Hill Companies Inc.; New York, USA.
10. Fahey, T.D., M.P. Insel and W.T. Rath (2006) Fit & Well: Core Concepts and Labs in Physical Fitness, McGraw Hill, New York.
11. Kansal, D.K. (2012) A Practical Approach to Test Measurement and Evaluation Sports and Spiritual Science Publication, New Delhi.

DSC-1B (CC- 2): Management of Physical Education and Sports Credits 06

DSC1BT: Management of Physical Education and Sports Credits 04

Course Contents:

Unit- I: Introduction

1.1. Concept and definition of Sports Management.
1.2. Purpose of Sports Management, Importantance of Sports Management,
1.3. Principles of Sports Management.
1.4. Sports Manager and his duties.

Unit- II: Tournaments

2.1. Tournaments: Meaning and definition, and types of tournaments (Knock-out, League, Combination, Challenge).
2.2. Procedure of drawing fixture.
2.3. Method of organizing Annual Athletic Meet and Play Day.
2.4. Method of organizing of Intramural and Extramural competition.

Unit- III: Facilities and Equipments

3.1 Method of calculation of Standard Athletic Track marking.
3.2 Care and maintenance of play ground and gymnasium.
3.3 Importance, care and maintenance of sports equipment.
3.4 Time Table: Meaning, importance and factors affecting school Physical Education Time Table.

Unit- IV: Leadership

4.1 Meaning and definition of leadership.
4.2 Qualities of good leader in Physical Education.
4.3 Types of Leadership.
4.4 Principles of leadership activities.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

DSC1BP: Practical **Credits 02**

1. Lay out knowledge and Officiating ability of Track and field events
2. Lay out knowledge and Officiating ability of Games: Football, Kabaddi, Kho-Kho,Volleyball, Hand Ball, Net Ball, Throw Ball, Badminton and Table Tennis.
3. Gymnastic and Yoga Scoring

Suggested Readings :

- Broyles, F. J. &Rober, H. D. (1979). Administration of sports, Athletic programme: A Managerial Approach. New York: Prentice hall Inc.
- Bucher, C. A. (1983). Administration of Physical Education and Athletic programme. St. Lolis: The C.V. Hosby Co.
- Kozman, H.C. Cassidly, R. & Jackson, C. (1960).Methods in Physical Education. London: W.B. Saunders Co.
- Pandy, L.K. (1977). Methods in Physical Education. Delhe: Metropolitan Book Depo.
- Sharma, V.M. & Tiwari, R.H.: (1979). Teaching Methods in Physical Education. Amaravati: Shakti Publication.
- Thomas, J. P. (1967). Organization & administration of Physical Education. Madras: Gyanodayal Press.
- Tirunarayanan, C. &Hariharan, S. (1969). Methods in Physical Education.Karaikudi: South India Press.
- Voltmer, E. F. & Esslinger, A. A. (1979).The organization and administration of Physical Education. New York: Prentice Hall Inc.
- Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

DSC-1C (CC- 3): Anatomy, Physiology and Exercise Physiology **Credits 06**

DSC1CT: Anatomy, Physiology and Exercise Physiology **Credits 04**

Course Contents:

Unit- I: Introduction

1.1. Meaning and definition of Human Anatomy, Physiology and Exercise Physiology.
1.2. Importance of Human Anatomy, Physiology and Exercise Physiology in Physical Education.
1.3. Cell- Structure and function.
1.4. Tissue- Types and functions.

Unit- II: Musculo-skeletal System

2.1. Skeletal System- Structure of Skeletal System. Classification and locations of bones and joints. Anatomical differences between male and female.
2.2. Muscular System- Type, location, function and structure of muscle.
2.3. Types of muscular contraction.
2.4. Effect of exercise and training on muscular system.

Unit- III: Circulatory System

3.1 Blood- Composition and function.
3.2 Heart- Structure and functions. Mechanism of blood circulation through heart.
3.3 Blood Pressure, Athletic Heart and Bradycardia.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

3.4 Effect of exercise and training on circulatory system.

Unit- IV: Respiratory System

4.1 Structure and function of Respiratory organs.
4.2 Mechanism of Respiration.
4.3 Vital Capacity, O_2 Debt and Second Wind.
4.4 Effect of exercise and training on respiratory system.

DSC1CP: Practical **Credits 02**

1. Assessment of BMI, and WHR.
2. Measurement of Blood Pressure, Vital Capacity, Respiratory rate, Heart Rate, Limb length, PEI, and Pick flow Rate.

Suggested Readings:

- Amrit Kumar, R, Moses. (1995). Introduction to Exercise Physiology. Madras: Poompugar Pathipagam.
- Clarke, D.H. (1975). Exercise Physiology. New Jersey: Prentice Hall Inc., Englewood Cliffs.
- David, L Costill. (2004). Physiology of Sports and Exercise. Human Kinetics.
- Fox, E.L., and Mathews, D.K. (1981). The Physiological Basis of Physical Education and Athletics. Philadelphia: Sanders College Publishing.
- Guyton, A.C. (1976). Textbook of Medical Physiology. Philadelphia: W.B. Sanders co. Richard, W. Bowers. (1989). Sports Physiology. WMC: Brown Publishers.
- Sandhya Tiwaji. (1999). Exercise Physiology. Sports Publishers.
- Shaver, L. (1981). Essentials of Exercise Physiology. New Delhi: Subject Publications.
- Vincent, T. Murche. (2007). Elementary Physiology. Hyderabad: Sports Publication.
- William, D. Mc Aradle. (1996). Exercise Physiology, Energy, Nutrition and Human Performance. Philadelphia: Lippincott Williams and Wilkins Company.

DSC-1D (CC- 4): Health Education, Physical Fitness and Wellness **Credits 06**

DSC1DT: Health Education, Physical Fitness and Wellness **Credits 04**

Course Contents:

Unit- I: Introduction

1.1. Concept, definition and dimension of Health.
1.2. Definition, aims, objectives and principles of Health Education.
1.3. Activities of Health Agencies- World Health Organization (WHO), United Nations Educational Scientific and Cultural Organization (UNESCO) and United Nations International Children's Emergency Fund (UNICEF)
1.4. School Health Program- Health Service, Health Instruction, Health Supervision, Health appraisal and Health Record, Personal hygiene.

Unit- II: Health Problems in India- Prevention and Control

2.1. Communicable Diseases- Malaria, Dengue and Chicken Pox and Diarrhea.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

2.2. Non-Communicable Diseases- Obesity, Diabetes and Asthma.
2.3. Nutrition- Nutritional requirements for daily living. Preparation and Principles of Balance Diet. Health disorders due to deficiencies of Protein, Vitamins and Minerals.
2.4. Postural deformities- Causes and corrective exercises of Kyphosis, Lordosis, Scoliosis, Knock Knee, Flat Foot and Bow Legs.

Unit- III: Physical Fitness and Wellness
3.1 Physical Fitness- Meaning, definition and importance of Physical Fitness.
3.2 Components of Physical Fitness- Health and performance related Physical Fitness.
3.3 Concept of Wellness. Relationship between physical activities and wellness.
3.4 Ageing- Physical activities and its importance.

Unit- IV: Health and First-aid Management
4.1 First aid- Meaning, definition, importance and golden rules of First-aid.
4.2 Concept of sports injuries- Sprain, Strain, Facture, Dislocation and Wound.
4.3 Management of sports injuries through the application of Hydro-therapy and Thermo-therapy.
4.4 Physiotherapy: Basic concept, types & principles. Management of sports injuries through the application of exercise and massage therapy.

DSC1DP: Practical **Credits 02**

1. First aid - Triangular Bandage: Slings (Arm Sling, Collar & Cuff Sling), Roller Bandages: Simple Spiral, Reverse Spiral, Figure of Eight, Spica.
2. Practical Knowledge of Hydro-therapy, Thermo-therapy and Cryo-therapy.

Suggested Readings:

- Bucher, Charles A. "Administration of Health and Physical Education Programme".
- Delbert, Oberteuffer, et. al." The School Health Education".
- Ghosh, B.N. "Treaties of Hygiene and Public Health".
- Hanlon, John J. "Principles of Public Health Administration" 2003.
- Turner, C.E. "The School Health and Health Education".
- Moss et. al. "Health Education" (National Education Association of U.T.A.).
- Nemir A. 'The School Health Education" (Harber and Brothers, New York).
- Nutrition Encyclopedia, edited by Delores C.S. James, The Gale Group, Inc.
- Boyd-Eaton S. et al (1989) The Stone Age Health Programme: Diet and Exercise as Nature Intended. Angus and Robertson.

Discipline Specific Electives (DSE)

DSE- 1A: Tests, Measurements and Evaluation in Physical Education **Credits 06**

DSE1AT: Tests, Measurements and Evaluation in Physical Education **Credits 04**

Course Contents:

Unit- I: Introduction
1.1. Concept of test, measurement & evaluation.
1.2. Criteria of good test.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

1.3. Principles of evaluation.
1.4. Importance of Test, Measurement and Evaluation in Physical Education and Sports.

Unit- II: Measurements of Body Compositions and Somatotype Assessment
2.1 Body Mass Index (BMI) - Concept and method of measurement.
2.2. Body Fat - Concept and method of measurement.
2.3. Lean Body Mass (LBM) - Concept and method of measurement.
2.4. Somatotype- Concept and method of measurement.

Unit- III: Fitness Test
3.1 Kraus-Weber Muscular Strength Test
3.2 AAHPER Youth Fitness Test
3.3 Queens College Step Test
3.4 Harvard Step Test

Unit- IV: Sports Skill Test
4.1 Lockhart and McPherson Badminton Skill Test
4.2 Johnson Basketball Test Battery
4.3 McDonald Soccer Test
4.4 Brady Volleyball Test

DSE1AP: Practical **Credits 02**
1. Assessment of somatotype and Body fat percentage (%)
2. Assessment of AAHPER Youth Fitness Test and Harvard Step Test.

Suggested Readings:

- Authors Guide (2013): ACSM's Health Related Physical Fitness Assessment Manual, USA: ACSM Publications.
- Collins, R.D., & Hodges P.B. (2001): A Comprehensive Guide to Sports Skills Tests and Measurement (2nd edition) Lanham: Scarecrow Press.
- Cureton T.K. (1947): Physical Fitness Appraisal and Guidance, St. Louis: The C. Mosby Company.
- Getchell B (1979): Physical Fitness A Way of Life, 2nd Edition New York.
- John Wiley and Sons, Inc Jenson, Clayne R and Cynt ha, C. Hirst (1980) Measurement in Physical Education and Athletics, New York, Macmillan Publising Co. Inc.
- Kansal D.K. (1996): "Test and Measurement in Sports and Physical Education, New Delhi: DVS Publications.
- Krishnamurthy (2007): Evaluation in Physical Education and Sports, New Delhi; Ajay Verma Publication.
- Vivian H. Heyward (2005): Advance Fitness Assessment and Exercise Prescription, 3rd Edition, Dallas TX: The Cooper Institute for Aerobics Research.
- Wilmore JH and Costill DL. (2005) : Physiology of Sport and Exercise: 3rd Edition. Champaigm IL: Human Kinetics.
- Yobu, A (2010): Test, Measurement and Evaluation in Physical Education in Physical Education and Sports. New Delhi; Friends Publications

Or

DSE- 1A: Psychology in Physical Education and Sports **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

DSE1AT: Psychology in Physical Education and Sports **Credits 04**

Course Contents:

Unit- I: Introduction

1.1. Meaning and definition Psychology.
1.2. Importance and scope of Psychology.
1.3. Meaning and definition Sports Psychology.
1.4. Need for knowledge of Sports Psychology in the field of Physical Education.

Unit- II: Learning

2.1. Meaning and definition of learning.
2.2. Theories of learning and laws of learning.
2.3. Learning curve: Meaning and types.
2.4. Transfer of learning- Meaning, definition type and factors affecting transfer of learning.

Unit- III: Psychological Factors

3.1 Motivation - Meaning, definition, type and importance of motivation in Physical Education and Sports.
3.2 Emotion- Meaning, definition, type and importance of emotion in Physical Education and Sports.
3.3 Personality- Meaning, definition and types, personality traits.
3.4 Role of physical activities in the development of personality.

Unit- IV: Stress and Anxiety

4.1 Stress- Meaning, definition and types of Stress.
4.2 Causes of Stress.
4.3 Anxiety- Meaning, definition and types of Anxiety.
4.4 Management of Stress and Anxiety through physical activity and sports.

DSE1AP: Practical **Credits 02**

1. Assessment of Personality, Stress and Anxiety.
2. Measurement of Reaction Time, Depth Perception and Mirror Drawing.

Suggested Readings:

- Authors Guide (2013): National Library of Educational and Psychological Test (NLEPT) Catalogue of Tests, New Delhi: National Council of Educational Research and Training Publication.
- Jain. (2002): Sports Sociology, Heal Sahety Kendre Publishers.
- Jay Coakley. (2001) Sports in Society – Issues and Controversies in International Education, Mc-Craw Seventh Ed.
- John D Lauther (2000): Psychology of Coaching. Ner Jersy: Prenticce Hall Inc.
- John D. Lauther (1998) Sports Psychology. Englewood, Prentice Hall Inc.
- Miroslaw Vauks & Bryant Cratty (1999): Psychology and the Superior Athlete. London: The Macmillan Co.
- Richard, J. Crisp. (2000): Essential Social Psychology. Sage Publications.
- Robert N. Singer (2001): Motor Learning and Human Performance. New York: The Macmillan Co.
- Robert N. Singer. (1989): The Psychology Domain Movement Behaviour. Philadelphia: Lea and Febiger.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

- Thelma Horn. (2002): Advances in Sports Psychology. Human Kinetic.
- Whiting, K, Karman, Hendry L.B & Jones M.G. (1999): Personality and Performance in Physical Education and Sports. London: Hendry Kimpton Publishers.

Or

DSE-1A: Environmental Education **Credits 06**

DSE1AT: Environmental Education

Course Contents:

Unit-I: Environmental Education

1. Environmental Education: Concept, Characteristics, Components and Scope
2. Historical Background of Environmental Education

Unit-II: Education of Environmental Concepts

1. Concept of Environment and Ecosystem
2. Disasters: Natural and Man Made

Unit III: Environmental Education and Social Issues

1. Education for Sustainable development: From Unsustainable to Sustainable development.
2. Education of Urban Environment: Problems related to energy and water

Unit-IV: Approaches and Methods of Environmental Education

Approaches to Environmental Education: Interdisciplinary and Multidisciplinary Methods: Discussion, Seminar, And Workshop, Problem solving and Field survey.

Suggested Readings:

- Environmental Analysis of Water, Soil, Air by Saxena.
- Environmental Pollution and Bhopal Killing.
- Environmental Pollution of Cadmium by Rohatgi.
- Our Planet Our Health – WHO, Oxford Publications, 1992.
- Perspectives on Environment by I. R. Manners, M.W.M. Micksell
- Soil and water Conservation Engineering by Schwab, S. D., Frevert, R. K., Edminster, T.W. and Earns K. K. John Wiley and Sons.
- Water Pollution and Management by C. F. Vershney.

DSE – 1B: Sports Training **Credits 06**

DSE1BT: Sports Training **Credits 04**

Course Contents:

Unit- I: Introduction

1.1. Meaning and definition of Sports Training.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

1.2. Aim and characteristics of Sports Training.
1.3. Principles of Sports Training.
1.4. Importance of Sports Training.

Unit- II: Principle of Training and Conditioning

2.1. Warming up and cooling down- Meaning, types and methods.
2.2. Conditioning - Concept of Conditioning and its principles.
2.3. Training Methods- Circuit Training, Interval Training, Weight Training.
2.4. Periodisation- Meaning, types, aim and contents of different periods.

Unit- III: Training Load and Adaptation

3.1 Training Load - Meaning, definition, types and factors of training load.
3.2 Components of training load.
3.3 Over Load - Meaning, causes, symptoms and tackling of over load.
3.4 Adaptation - Meaning and conditions of adaptation.

Unit- IV: Training Techniques

4.1 Strength - Means, types and methods of strength development.
4.2 Speed - Means, types and methods of speed development.
4.3 Endurance - Means, types and methods of endurance development.
4.4 Flexibility - Means, types and methods of flexibility development.

DSE1BP: PRACTICAL **Credits 02**

1. Practical Experience of Weight Training and Circuit Training.
2. Measurement of Speed, Strength (Grip/Leg), Explosive Strength (Leg) and Flexibility.

Suggested Readings:

- Bunn, J.N. (1998) Scientific Principles of Coaching, New Jersey Engle Wood Cliffs, Prentice Hall Inc.
- Cart, E. Klafs &Daniel, D. Arnheim (1999) Modern Principles of Athletic Training St. Louis C. V. Mosphy Company.
- Daniel, D. Arnheim (1991) Principles of Athletic Training, St. Luis, Mosby Year Book.
- David R. Mottram (1996) Drugs in Sport, School of Pharmacy, Liverpool: John Moore University.
- Gary, T. Moran (1997) – Cross Training for Sports, Canada : Human Kinetics Hardayal.
- Singh (1991) Science of Sports Training, New Delhi, DVS Publications.
- Jensen, C.R. & Fisher A.G. (2000) Scientific Basic of Athletic Conditioning, Philadelphia.
- Ronald, P. Pfeiffer (1998) Concepts of Athletics Training 2nd Edition, London: Jones and Bartlett Publications.
- Yograj Thani (2003), Sports Training, Delhi : Sports Publications

O
r

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

DSE – 1B: Project Work **Credits 06**

Guideline:

Assessment and Comparison of Body Composition and AAHPER Youth Fitness Components among Physical Education Students of Even Semesters in Under-Graduate Colleges affiliated to Vidyasagar University.

Outline of the Project Work:

- Introduction,
- Procedure,
- Results,
- Conclusions,
- Recommendations.

Body Composition Components:

1. Height,
2. Weight,
3. Body Mass Index (BMI),
4. Fat %,
5. Lean Body Mass (LBM).

AAHPER Youth Fitness Components:

1. Pull Ups (for boy) / Flexed Arm Hang (for girls),
2. Sit Ups,
3. 50 Yard Dash,
4. Standing Broad Jump,
5. Shuttle Run,
6. 600 Yard Run & Walk

Instructions:

1. Student group consisted of maximum four (04) members,
2. Number of students of both the college should be minimum 12 students each group,
3. Methodology of every test items should be written with Objective(s), Equipments, Test Administration and Scoring.
4. A group Photograph of all subjects of two college groups should be present on Project Work,
5. Every test item of all 11 components of individual subject should be present on Project Work,
6. Only average value of all eleven test items must have reflected on table,
7. Data should be presented on tabular form with unit,
8. Separate comparison table of all test items should be reflected,
9. Declaration and acknowledgement also be there.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

Skill Enhancement Courses (SEC)

SEC- 1: Indian Games and Racket Sports (Practical) **Credits 02**

Course Contents:

A. KABADDI

a. Fundamental skills

1. Skills in Raiding: Touching with hands, Use of leg-toe touch, squat leg thrust, side kick, mule kick, arrow fly kick, crossing of baulk line. Crossing of Bonus line.
2. Skills of holding the raider: Various formations, catching from particular position, different catches, catching formation and techniques.
3. Additional skills in raiding: Escaping from various holds, techniques of escaping from chain formation, offense and defence.
4. Game practice with application of Rules and Regulations.

b. Rules and their interpretations, and duties of the officials.

B. KHO-KHO

a. Fundamental skills

1. Skills in Chasing: Sit on the box (Parallel & Bullet toe method), Get up from the box (Proximal & Distyal foot method), Give Kho (Simple, Early, Late & Judgment), Pole Turn, Pole Dive, Tapping, Hammering, Rectification of foul.
2. Skills in running: Chain Play, Ring play and Chain & Ring mixed play.
3. Game practice with application of Rules and Regulations.

b. Rules and their interpretations and duties of the officials.

C. BADMINTON

a. Fundamental skills

1. Basic Knowledge: Various parts of the Racket and Grip.
2. Service: Short service, Long service, Long-high service.
3. Shots: Over head shot, Defensive clear shot, Attacking clear shot, Drop shot, Net shot, Smash.
4. Game practice with application of Rules and Regulations.

b. Rules and their interpretations and duties of the officials.

D. TABLE TENNIS

a. Fundamental skills

1. Basic Knowledge: Various parts of the Racket and Grip (Shake Hand & Pen Hold Grip).
2. Stance: Alternate & Parallel.
3. Push and Service: Backhand & Forehand.
4. Chop: Backhand & Forehand.
5. Receive: Push and Chop with both Backhand & Forehand.
6. Game practice with application of Rules and Regulations.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

B. Rules and their interpretations and duties of the officials.

SEC- 2: Ball Games (Practical) Credits 02

Course Contents:

A. FOOTBALL

a. Fundamental Skills

1. Kicking: Kicking the ball with inside of the foot, Kicking the ball with Full Instep of the foot, Kicking the ball with Inner Instep of the foot, Kicking the ball with Outer Instep of the foot and Lofted Kick.
2. Trapping: Trapping- the Rolling ball, and the Bouncing ball with sole of the foot.
3. Dribbling: Dribbling the ball with Instep of the foot, Dribbling the ball with Inner and Outer Instep of the foot.
4. Heading: In standing, running and jumping condition.
5. Throw-in: Standing throw-in and Running throw-in.
6. Feinting: With the lower limb and upper part of the body.
7. Tackling: Simple Tackling, Slide Tackling.
8. Goal Keeping: Collection of Ball, Ball clearance- kicking, throwing and deflecting.
9. Game practice with application of Rules and Regulations.

b. Rules and their interpretation and duties of officials.

B. HANDBALL

a. Fundamental Skills

1. Catching, Throwing and Ball control,
2. Goal Throws: Jump shot, Center shot, Dive shot, Reverse shot.
3. Dribbling: High and low.
4. Attack and counter attack, simple counter attack, counter attack from two wings and center.
5. Blocking, GoalKeeping and Defensive skills.
6. Game practice with application of Rules and Regulations.

b. Rules and their interpretation and duties of officials.

B. BASKETBALL

a. Fundamental Skills

1. Passing: Two hand Chest Pass, Two hands Bounce Pass, One hand Baseball Pass, Side arm Pass, Overhead Pass, Hook Pass.
2. Receiving: Two hand receiving, One hand receiving, Receiving in stationary position, Receiving while Jumping and Receiving while Running.
3. Dribbling: How to start dribble, drop dribble, High Dribble, Low Dribble, Reverse Dribble, Rolling Dribble.
4. Shooting: Lay-up shot and its variations, One hand set shot, Two hands jump shot, Hook shot, Free Throw.
5. Rebounding: Defensive rebound and Offensive rebound.
6. Individual Defence: Guarding the player with the ball and without the ball, Pivoting.
7. Game practice with application of Rules and Regulations.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

b. Rules and their interpretation and duties of officials.

C. VOLLEYBALL

a. Fundamental skills

1. Service: Under arm service, Side arm service, Tennis service, Floating service.
2. Pass: Under arm pass, Over head pass.
3. Spiking and Blocking.
4. Game practice with application of Rules and Regulations.

b. Rules and their interpretation and duties of officials.

D. NETBALL

a. Fundamental skills

1. Catching: one handed, two handed, with feet grounded and in flight.
2. Throwing (Different passes and their uses): One hand passes (shoulder, high shoulder, underarm, bounce, lob), two hand passes (Push, overhead and bounce).
3. Footwork: Landing on one foot, landing on two feet, Pivot, Running pass.
4. Shooting: One hand, forward step shot, and backward step shot.
5. Techniques of free dodge and sprint, sudden sprint, sprint and stop, sprinting with change at speed.
6. Defending: Marking the player, marking the ball, blocking, inside the circle, outside the circle. Defending the circle edge against the passing.
7. Intercepting: Pass and shot.
8. Game practice with application of Rules and Regulations.

b. Rules and their interpretation and duties of officials.

E. THROWBALL

a. Fundamental skills:

Overhand service, Side arm service, two hand catching, one hand overhead return, side arm return.

b. Rules and their interpretations and duties of official

SEC- 3: Gymnastics and Yoga (Practical) Credits 02

Course Contents:

GYMNASTICS

1. Compulsory

1.1. Forward Roll
1.2. T-Balance
1.3. Forward Roll with Split leg
1.4. Backward Roll
1.5. Cart-Wheel

[Note: Perform the above Gymnastic skills continuously in the same sequence]

2. Optional

2.1. Dive and Forward Roll

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

2.2. Hand Spring
2.3. Head Spring
2.4. Neck Spring
2.5. Hand Stand and Forward Roll
2.6. Summersault

3. YOGA
3.1 **Asanas**
3.1.1 Ardhachandrasana
3.1.2. Brikshasana
3.1.3. Padahastasana

3.2. **Sitting Position**
3.2.1. Ardhakurmasana
3.2.2. Paschimottanasana
3.2.3. Gomukhasana

3.3. **Supine Position**
3.3.1. Setubandhasana
3.3.2. Halasana
3.3.3. Matsyasana

3.4 **Prone Position**
3.4.1 Bhujangasana
3.4.2 Salvasana
3.4.3 Dhanurasana

3.5 **Inverted Position**
3.5.1 Sarbangasana
3.5.2 Shirsasana
3.5.3 Bhagrasana
[Note: One Asana is compulsory from each position]

4. Pranayama
4.1. Kapalbhati
4.2. Bhramri
4.3. Anulam Vilom.

Or

SEC-3: Computer Application in Education **Credits 02**

SEC3T: Computer Application in Education (Theory)

Course Contents:

Unit I:
MS office:

- MS Word

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

- MS Power Point
- MS Excel

Unit II:

- Concepts of information and communication technology; Universal access VS Digital Divide - issues and initiatives;
- Challenges of Integration of ICT in School; Aims and objectives of National Policy on Information and Communication Technology (ICT) in School Education in India.

Unit III:

- Components and Objectives of National Mission on Education, through ICT (NMEICT), Spoken Tutorials Gyan Darshan, Gyanvani, Sakshat Portal, e Gyan Kosh; Virtual laboratory and Haptic technology

Unit IV:
Internet

- Introduction to Internet
- E-mail, Search Engines, Info-Savvy Skills; Digital Age Skills, safe surfing mode

Unit V: Educational Resources

- Internet resources for different disciplines like natural sciences, social sciences, Humanities and Mathematics.
- General Introduction to E-learning, Mobile-learning, distance learning, On-line learning,
- Virtual University, Wikipedia, Massive Open Online Courses (MOOCs);
- Social networking

Unit VI: ICT Integrated Education

- On line Admissions
- Digital Lesson Designing
- Evaluation Rubrics
- E-Portfolios of Learners
- Time-Space-Personnel Management
- Learning Resources Management
- Web Based Instruction
- Office Automation
- E-guidance & counseling
- E-modules
- E-learning Resources

SEC- 4: Track and Field (Practical) **Credits 02**

Course Contents:

1. Track Events

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

1.1. Starting Techniques: Standing start and Crouch start (its variations) use of Block.
1.2. Acceleration with proper running techniques.
1.3. Finishing technique: Run Through, Forward Lunging and Shoulder Shrug.
1.4. Relay Race: Starting, Baton Holding/Carrying, Baton Exchange in between zone, and Finishing.

2. Field events

2.1. Long Jump: Approach Run, Take-off, Flight in the air (Hang Style/Hitch Kick) and Landing.
2.2. High jump: Approach Run, Take-off, Bar Clearance (Straddle) and Landing.
2.3. Shot put: Holding the Shot, Placement, Initial Stance, Glide, Delivery Stance and Recovery (Perry O'Brien Technique).
2.4. Discus Throw: Holding the Discus, Initial Stance, Primary Swing, Turn, Release and Recovery (Rotation in the circle).
2.5. Javelin Throw: Grip, Carry, Release and Recovery (3/5 Impulse stride).

Generic Elective (GE) [Interdisciplinary for other Departments]

GE- 1: Modern Trends and Practices in Physical Education & Exercise Sciences

Credits 06

GE1T: Modern Trends and Practices in Physical Education& Exercise Sciences

Course Contents:

Unit- I: Introduction

1.1. Meaning, definition and importance of physical Education and Sports.
1.2. Aims, objectives and scope of Physical Education.
1.3. Types of sports and their utility in physical education.
1.4. Meaning, definition and importance of Physical fitness and Motor fitness. Difference between Physical fitness and Motor fitness. Components of Physical fitness.

Unit- II: Biological, Psychological and Sociological Foundations of Physical Education

2.1. Biological Foundation- Meaning and definition of growth and development. Factors affecting growth and development. Differences between growth and development. Principles of growth and development.
2.2. Meaning and definition of Psychology. Importance of Psychology in Physical Education. Qualities of good leader in Physical Education. Principles of leadership activities.
2.3. Sociological Foundation- Meaning and definition of Sociology. Social values and their importance. Socialization through Sports
2.4. Role of games and sports in National and International integration.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

Unit- III: History of Physical Education

3.1 Historical development of Physical Education and Sports in India- Pre-Independence period and Post-Independence period.
3.2 Ancient Olympic Games
3.3 Modern Olympic Games.
3.4 Asian Games

Unit- IV: Exercise Sciences

4.1 Meaning, definition and importance Exercise and Exercise Physiology.
4.2 Effects of short and long term exercise on Muscular systems.
4.3 Effects of short and long term exercise on Circulatory System.
4.4 Effects of short and long term exercise on Respiratory System.

Suggested Readings :

- Kamlesh, M.L. & Singh, M.K. (2006) Physical Education (Naveen Publication).
- Lumpkin, A. (2007) Introduction to Physical Education, Exercise Science and Sports Studies, McGraw Hill, New York, USA.
- Siedentop, D. (2004) Introduction to Physical Education, Fitness and Sport, McGraw Hill Companies Inc., New York, USA.
- Shaffer, D.R. (2002) Development Psychology: Childhood and Adolescence. Thomson, Sydney, Australia.
- Shukla, (2000) Mother on Education, National Council of Teacher Education, New Delhi.
- Singh, A. et al. (2000) Essential of Physical Education, Kalyani Publishers, Ludhiana, Punjab.
- Wuest, D.A. & C.A. Bucher (2006) Foundation of Physical Education, Exercise Science, and Sports. McGraw Hill Companies Inc.; New York, USA.
- Fahey, T.D., M.P. Insel and W.T. Rath (2006) Fit & Well: Core Concepts and Labs in Physical Fitness, McGraw Hill, New York.
- Kansal, D.K. (2012) A Practical Approach to Test Measurement and Evaluation Sports and Spiritual Science Publication, New Delhi.
- Clarke, D.H. (1975). Exercise Physiology. New Jersey: Prentice Hall Inc., Englewood Cliffs.
- David, L Costill. (2004). Physiology of Sports and Exercise. Human Kinetics.

Or

GE-1: Foundation and History of Physical Education **Credits 06**

GE1T: Foundation and History of Physical Education **Credits 04**

Course Contents:

Unit- I: Introduction

1.1. Meaning, definition and scope of Physical Education.
1.2. Aim and objectives of Physical Education.
1.3. Misconception and Modern concept of Physical Education.
1.4. Need and Importance of Physical Education in modern society.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

Unit- II: Biological and Sociological Foundations of Physical Education

2.1. Biological Foundation- Meaning and definition of growth and development. Factors affecting growth and development. Differences of growth and development. Principles of growth and development.
2.2. Age- Chronological age, anatomical age, physiological age and mental age.
2.3. Sociological Foundation- Meaning and definition of Sociology, Society, Socialization in Physical Education and Sports, Sports Ethic.
2.4. Role of games and sports in National and International integration.

Unit- III: History of Physical Education

3.1 Historical development of Physical Education and Sports in India- Pre-Independence period and Post-Independence period.
3.2 Olympic Movement- Ancient Olympic Games and Modern Olympic Games.
3.3 Brief historical background of Asian Games and Commonwealth Games.
3.4 National Sports Awards- Arjuna Award, Rajiv Gandhi Khel Ratna Award, Dronacharya Award, Dhyanchand Award.

Unit- IV: Yoga Education

4.1 Meaning and definition of the term Yoga, types, aim, objectives and important of Yoga.
4.2 History of Yoga.
4.3 Astanga Yoga
4.4 Hatha Yoga

DSC1AP: Practical **Credits 02**

1. Marching- fall in attention, Stand at ease, stand easy, Eyes right, Eyes front, Right Turn, Left Turn, About Turn, Mark Time Mark, Forward Mark
2. Learn and demonstrate the technique of Suryanamaskar.
3. Development of physical fitness through Callisthenics and Aerobic activities.

Suggested Readings:

- Graham, G. (2001) Teaching Children Physical Education: Becoming a Master Teacher. Human Kinetics, Champaign, Illinois, USA.
- Kamlesh, M.L. & Singh, M.K. (2006) Physical Education (Naveen Publication).
- Lau, S.K. (1999) Great Indian Players, New Delhi, Sports.
- Lumpkin, A. (2007) Introduction to Physical Education, Exercise Science and Sports Studies, McGraw Hill, New York, USA.
- Siedentop, D. (2004) Introduction to Physical Education, Fitness and Sport, McGraw Hill Companies Inc., New York, USA.
- Shaffer, D.R. (2002) Development Psychology: Childhood and Adolescence. Thomson, Sydney, Australia.
- Shukla, (2000) Mother on Education, National Council of Teacher Education, New Delhi.
- Singh, A. et al. (2000) Essential of Physical Education, Kalyani Publishers, Ludhiana, Punjab.
- Wuest, D.A. & C.A. Bucher (2006) Foundation of Physical Education, Exercise Science, and Sports. McGraw Hill Companies Inc.; New York, USA.
- Fahey, T.D., M.P. Insel and W.T. Rath (2006) Fit & Well: Core Concepts and Labs in Physical Fitness, McGraw Hill, New York.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

Kansal, D.K. (2012) A Practical Approach to Test Measurement and Evaluation Sports and Spiritual Science Publication, New Delhi.

Or

GE-1: Management of Physical Education and Sports **Credits 06**

GE1T: Management of Physical Education and Sports **Credits 04**

Course Contents:

Unit- I: Introduction

1.1. Concept and definition of Sports Management.
1.2. Purpose of Sports Management, Important of Sports Management,
1.3. Principles of Sports Management.
1.4. Sports Manager and his duties.

Unit- II: Tournaments

2.1. Tournaments: Meaning and definition and types of tournaments (Knock-out, League, Combination, Challenge).
2.2. Procedure of drawing fixture.
2.3. Method of organising Annual Athletic Meet and Play Day.
2.4. Method of organising of Intramural and Extramural competition.

Unit- III: Facilities and Equipments

3.1 Method of calculation of Standard Athletic Track marking.
3.2 Care and maintenance of play ground and gymnasium.
3.3 Importance, care and maintenance of sports equipments.
3.4 Time Table: Meaning, importance and factors affecting school Physical Education Time Table.

Unit- IV: Leadership

4.1 Meaning and definition of leadership.
4.2 Qualities of good leader in Physical Education.
4.3 Types of Leadership.
4.4 Principles of leadership activities.

GE1P: Practical **Credits 02**

1. Lay out knowledge and Officiating ability of Track and field events
2. Lay out knowledge and Officiating ability of Games: Football, Kabaddi, Kho-Kho, Volleyball, Hand Ball, Net Ball, Throw Ball, Badminton, and Table Tennis.
3. Gymnastic and Yoga Scoring

Suggested Readings:

Broyles, F. J. &Rober, H. D. (1979). Administration of sports, Athletic programme: A Managerial Approach. New York: Prentice hall Inc.

Bucher, C. A. (1983). Administration of Physical Education and Athletic programme. St. Lolis: The C.V. Hosby Co.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

- Kozman, H.C. Cassidly, R. & Jackson, C. (1960).Methods in Physical Education. London: W.B. Saunders Co.
- Pandy, L.K. (1977). Methods in Physical Education. Delhe: Metropolitan Book Depo.
- Sharma, V.M. & Tiwari, R.H.: (1979). Teaching Methods in Physical Education. Amaravati: Shakti Publication.
- Thomas, J. P. (1967). Organization & administration of Physical Education. Madras: Gyanodayal Press.
- Tirunarayanan, C. &Hariharan, S. (1969). Methods in Physical Education.Karaikudi: South India Press.
- Voltmer, E. F. & Esslinger, A. A. (1979).The organization and administration of Physical Education. New York: Prentice Hall Inc.
- Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

GE-2: Health Education and Tests & Measurements in Physical Education

Credits 06

GE2T: Health Education and Tests & Measurements in Physical Education

Credits 04

Course Contents:

Unit- I: Introduction

1.1. Concept, definition and dimension of Health.
1.2. Definition, aim, objectives and principles of Health Education.
1.3. Health Agencies- World Health Organization (WHO), United Nations Educational Scientific and Cultural Organization (UNESCO).
1.4. Nutrition- Nutritional requirements for daily living. Balance Diet. Health disorders due to deficiencies of Vitamins and Minerals.

Unit- II: Health and First-aid Management

2.1 First aid- Meaning, definition, importance and golden rules of First-aid.
2.2 Concept of sports injuries- Sprain, Strain, Facture, Dislocation and Wound.
2.3. Postural deformities- Causes and corrective exercise of Kyphosis, Lordosis, Scoliosis, Knock Knees and Flat Foot.
2.4. Hypo-kinetic Diseases and Physical Activities- Obesity and Diabetes
2.5 Management of sports injuries through the application of Hydro-therapy and Thermo-therapy.
2.6 Physiotherapy: Basic Concept, Types & Principles. Management of sports injuries through the application of Exercise and Massage therapy.

Unit- III: Measurement of Body Compositions and Somatotype Assessment

3.1 Body Mass Index (BMI) - Concept and method of measurement.
3.2 Body Fat - Concept and method of measurement.
3.3 Lean Body Mass (LBM) - Concept and method of measurement.
3.4 Somatotype - Concept and method of Assessment

Unit- IV: Fitness Test

4.1 Kraus-Weber Muscular Strength Test
4.2 AAHPER Youth Fitness Test
4.3 Queens College Step Test
4.4 Harvard Step Test

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

GE2P: Practical **Credits 02**

1. First aid- Triangular Bandage: Slings (Arm Sling, Collar & Cuff sling), Roller Bandages: Simple spiral, Reverse Spiral, figure of Eight, Spica.
2. Practical Knowledge of Hydro -therapy, Thermo - therapy and Cryo-therapy.
3. Assessment of somatotype and % body fat.
4. Assessment of AAHPER Youth Fitness Test and Harvard Step Test.

Suggested Readings:

- Bucher, Charles A. "Administration of Health and Physical Education Programme".
- Hanlon, John J. "Principles of Public Health Administration" 2003.
- Turner, C.E. "The School Health and Health Education".
- Nutrition Encyclopedia, edited by Delores C.S. James, The Gale Group, Inc.
- Boyd-Eaton S. et al (1989) The Stone Age Health Programme: Diet and Exercise as Nature Intended. Angus and Robertson.
- Terras S. (1994) Stress, How Your Diet can Help: The Practical Guide to Positive Health Using Diet, Vitamins, Minerals, Herbs and Amino Acids, Thorons.
- Collins, R.D., & Hodges P.B. (2001) A Comprehensive Guide to Sports Skills Tests and Measurement (2nd edition) Lanham: Scarecrow Press.
- John Wiley and Sons, Inc Jenson, Clayne R and Cynt ha, C. Hirst (1980) Measurement in Physical Education and Athletics, New York, Macmillan Publising Co. Inc.
- Kansal D.K. (1996), "Test and Measurement in Sports and Physical Education, New Delhi: DVS Publications.
- Krishnamurthy (2007) Evaluation in Physical Education and Sports, New Delhi; Ajay Verma Publication.
- Vivian H. Heyward (2005) Advance Fitness Assessment and Exercise Prescription, 3rd Edition, Dallas TX: The Cooper Institute for Aerobics Research.
- Wilmore JH and Costill DL. (2005) Physiology of Sport and Exercise: 3rd Edition. Champaigm IL: Human Kinetics.
- Yobu, A (2010), Test, Measurement and Evaluation in Physical Education in Physical Education and Sports. New Delhi; Friends Publications

Or

GE-2: Anatomy, Physiology and Exercise Physiology **Credits 06**

GE2T: Anatomy, Physiology and Exercise Physiology **Credits 04**

Course Contents:

Unit- I: Introduction

1.1. Meaning and definition of Human Anatomy, Physiology and Exercise Physiology.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

1.2. Importance of Human Anatomy, Physiology and Exercise Physiology in Physical Education.
1.3. Human Cell- Structure and function.
1.4. Tissue- Types and functions.

Unit- II: Musculo-skeletal System

2.1. Skeletal System- Structure of Skeletal System. Classification and location of bones and joints. Anatomical differences between male and female.
2.2. Muscular System- Type, location, function and structure of muscle.
2.3. Types of muscular contraction.
2.4. Effect of exercise and training on muscular system.

Unit- III: Circulatory System

3.1 Blood- Composition and function.
3.2 Heart- Structure and functions. Mechanism of blood circulation through heart.
3.3 Blood Pressure, Athletic Heart and Bradycardia.
3.4 Effect of exercise and training on circulatory system.

Unit- IV: Respiratory System

4.1 Structure and function of Respiratory organs.
4.2 Mechanism of Respiration.
4.3 Vital Capacity, O_2 Debt and Second Wind.
4.4 Effect of exercise and training on respiratory system.

GE2P: Practical **Credits 02**

1. Assessment of BMI, and WHR.
2. Measurement of Blood pressure, Vital capacity, Respiratory rate, Heart rate, Limb length, PEI, and Pick flow Rate.

Suggested Readings:

- Amrit Kumar, R, Moses. (1995). Introduction to Exercise Physiology. Madras: Poompugar Pathipagam.
- Clarke, D.H. (1975). Exercise Physiology. New Jersey: Prentice Hall Inc., Englewood Cliffs.
- David, L Costill. (2004). Physiology of Sports and Exercise. Human Kinetics.
- Fox, E.L., and Mathews, D.K. (1981). The Physiological Basis of Physical Education and Athletics. Philadelphia: Sanders College Publishing.
- Guyton, A.C. (1976). Textbook of Medical Physiology. Philadelphia: W.B. Sanders co. Richard, W. Bowers. (1989). Sports Physiology. WMC: Brown Publishers.
- Sandhya Tiwaji. (1999). Exercise Physiology. Sports Publishers.
- Shaver, L. (1981). Essentials of Exercise Physiology. New Delhi: Subject Publications.
- Vincent, T. Murche. (2007). Elementary Physiology. Hyderabad: Sports Publication.
- William, D. Mc Aradle. (1996). Exercise Physiology, Energy, Nutrition and Human Performance. Philadelphia: Lippincott Williams and Wilkins Company.

Or

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

GE-2: Yoga Education **Credits 06**

GE-2T: Yoga Education

Course Contents:

Unit –I:

- Basis of Yoga Meaning and Concept.
- Patanjala Yogasutra.
- Hathayoga Pradipika.

Unit –II:

- Concept of Yoga.
- Streams of Yoga.
- Raja Yoga: Eight Fold Path.
- Anand Mimamsa.

Unit –III:

- Theories of Yoga Practices.
- Asana.
- Pranayama.
- Kriyas.
- Dhyana.

Unit –IV:

- Practical Eight Step Method: Single Group and Double Group Practice.
- Asana.
- Pranayama.
- Relaxation Techniques

Suggested Readings:

- Gore, M.M. –Anatomy and Physiology of Yogic Practices; New Age Books, New Delhi,
- Coulter.H.David- Anatomy of Hathayoga; MLBD, New Delhi,
- Gharote, Manmath M. and Others- Application in Yoga; Lonavla,
- Saraswati, Swami Satyananda- Asana Pranayama & Mudra Bandha; Bihar School of Yoga, Munger,
- Tiwari, O.P.- Asana Why and How?; Kaivalyadhama, Lonavla
- Iyengar, B.K.S. Astadal Yoga Mala, (Vol. I-VIII); Allied Publishers Pvt. Ltd., Lucknow,

GE2P: Yoga Education (Practical) **Credits 02**

Practicals: YOGA

1. Asanas

1 Ardhachandrasana
2. Brikshasana

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

3. Padahastasana

2. **Sitting Position**
   1. Ardhakurmasana
   .2. Paschimottanasana
   .3. Gomukhasana

3. **Supine Position**
   1. Setubandhasana
   2. Halasana
   3. Matsyasana

4**. Prone Position**
   1 Bhujangasana
   .2 Salvasana
   3 Dhanurasana

5**. Inverted Position**
. 1 Sarbangasana
   .2 Shirsasana
   3 Bhagrasana

[Note: One Asana is compulsory from each position]

6. **Pranayama**
   1. Kapalbhati
   2. Bhramri
   3. Anulam Vilom.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 12:07:21; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS_FULL/BA_GENERAL/Physical_Education_General_rev

Vidyasagar University

Curriculum for B.Sc. Honours in Physiology [Choice Based Credit System]

Semester-I

Sl. no.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C1	**C1T:** Cellular Basis of Physiology	Core Course-1		4	0	0	6	75
	C1P: Histology (Practical)	Core Course1 [Practical]		0	0	4		
C2	**C2T:** Biological Physics and Enzymes	Core Course-2		4	0	0	6	75
	C2P: Biological Physics and Enzymes (Practical)	Core Course-2 [Practical]		0	0	4		
GE-1	GE-1	GE					4/5	75
	GE-1	GE					2/1	
AECC	English	AECC					2	50
				Total Credits =20				

L=Lecture, T=Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: English /Modern Indian Language

Interdisciplinary/Generic Elective (GE) from other Department

[**Four papers are to be taken and each paper will be of 6 credits**]:

[Papers are to be taken from any of the following discipline]: **Physics/Chemistry/Statistics/Computer Sc /Microbiology/Bio Technology/Zoology/Botany/Nutrition**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Semester -1

Core Courses

CC-1: Cellular Basis of Physiology — Credits 06

C1T1 : Cellular Basis of Physiology — Credits 04

Cell Biology and Structural Units of Human System:

Cell Types – Eukaryotic, Prokaryotic. Electron microscopic structure and functions of the organ cells of eukarytotic cells: Structure of plasma membrane – Bio-chemical components, their arrangement, membrane asymmetry and fluidity; Functions; Fluid mosaic model. Membrane transport: active and carrier mediated transport: Mechanism of exocytosis and endocytosis. Structure functions and control of ion channels. Artificial membrane: Liposome and its functions. Endoplasmic reticulum: EM structure and function (Molecular basis) of smooth and rough ER. Microsomes: basic functional aspects. Golgi complex: structure, its functions, EM structure and functions of nucleus. Peroxisomes and its function. Mitochondria: EM structure and functions of nucleus. Ribosomes – cytoribosomes and mitoribosomes; their structure and functions. Cytoskeleton: structure and its role in stabilization of cell shape. Microtubules and their role in cellular movements and secretions. Events of Cell cycle; Apoptosis Cell differentiation; Gap junction, Tight junction (structure and functions): Cell adhesion molecule (brief), Cell division, mitosis, meiosis.

Structure, classification, distribution and functions of different tissues. Development and Organization of different organs and systems of the human body.

Development and organization of different organs and systems.

Basic principle and use of different microscopes - light, phase contrast. Electron microscopy, Atomic force microscopy and Fluorescence microscopy, Spectrophotometer.

C1P1 : Histology — Credits 02

Study and Identification of Stained Sections of different Mammalian Tissue and Organs.

Bone, Cartilage, Trachea, Lungs, Spleen, Lymph gland, Esophagus, Stomach, Duodenum, Ileum, Jejunum, Large Intestine, Liver, Kidney, Ureter, Salivary glands, Pancreas, Adrenal gland, Thyroid gland, Testes, Ovary, Spinal Cord, Cerebral cortex, Cerebellum, Skin, Cardiac muscle, Skeletal muscle, Smooth muscle, Artery, Vein, Tongue, Uterus.

CC-2: Biological Physics and Enzymes — Credits 06

C2T2: Biological Physics and Enzymes — Credits 04

- Units for measuring concentration of solutes: Moles, Equivalents, Osmoles
- Bonds and Forces in Bio-molecules

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Biophysical and Biochemical Principles: Law of mass action, orders of reactions, properties of water, Significance and physiological application of the following phenomena: diffusion, osmosis, dialysis, surface tension, viseosity, adsorption, absorption, Colloids: properties and significances, sol and gel, lyophilic and lyophobic sol, electrokinetic properties; Isoelectric pH and isoelectric precipitation. Gibbs-Donnan membrane equilibrium and its biological importance. Acids and bases as proton donors and acceptors. Conjugate acid-base pairs: pH: definition, explanation, determination and significance; Buffers: definition, types; functions of buffers. Role of kidney, erythrocyte and lungs for maintaining body pH. Indicators and its applications. First and second laws of themodynamis, closed and open system, living body as a thermodynamic system, entropy, enthalpy, maintenance of physiological steady state. Gibbs concept of free energy.

- Flow and Pressure and Ultracentrifugation

  Basic principle and use of light, phase contrast, election microscopy, atomic force microscopy and fluorescence microscopy. Spectrophotometer.
  Principle of chromatography, ion exchange, gel filtration, GLC, TLC and immune-affinity chromatography. Electrphoresis: SDS-PAGE and agarose gel. Cell fractionation: Homogenization and ultrasonication, Ultracentrifugation. Differential and density gradient centrifugation for separation of cell fractions. Radio activity – use of radio isotopes in physiological studies.

- Nanoparticles and its application in Physiology
- Laminar and Streamline flow

  Enzyme: Definition, chemical nature, classification and nomenclature. Mechanism of enzyme action – active site, specificity and enzyme-substrate complex formation. Enzyme kinetics: Hyperbolic kinetics and linear transformation (Lineweaver-Burk, Plot; *Elsenthal Cornish-Bowden Plot*). Michaelis – Menten constant. Effect of temperature, pH and metal ions on enzyme activity. Allosteric enzyme – Definition, properties, and types; Sigmoid kinetics. Regulation of enzyme activity – Allosteric modulation; Feedback and feed forward regulations; Covalent modification; Inhibition: Reversible-competitive, non-competitive and uncompetitive inhibition; Irreversible inhibition, Coenzyme and prosthetic groups; Activation of pro enzymes, Isoenzymes. Rate limiting enzymes. Ribozymes, Absymes, Antizymes, Fundamental ideas about immobilized enzyme. Enzymes in clinical diagnosis (amylase, acid and alkaline phosphatase, SGOT, SGPT, LDH and CPK)

C2P2: Biological Physics and Enzymes Credits 02

Demonstration of oncotic pressure of colloidal solutions by Oncometers; Determination of Systolic, Diastolic, Pulse and Mean Blood Pressure by non-invasive methods (Auscultatory Methods). Determination of enzyme actions (e.g. CAT, Amylase,)

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Generic Elective Syllabus

GE-1 [Interdisciplinary for other department]

GE-1: Blood and Immune System and Cardiovascular system Credits 06

GE-1T1: Blood and Immune System and Cardiovascular system Credits 04

A. Blood and Immune System

Blood – Composition and function, blood cell formation and related disorders, Blood groups, Blood transfusion and its hazards, Blood clotting and its disorders, Normal and abnormal hemoglobin.

Immunity-innate and acquired, Antigens, antibody-structure, classification and functions, Cytokines, Phagocytosis, Cytotoxicity, Allergy, Inflammation, Autoimmune diseases – Arthritis, Graves disease, Myasthenia Graves, Hashimoto's disease, Vaccine toxoids, HIV

B. Cardiovascular system

Structure of heart and blood vessels, Junctional tissues of the heart, Cardiac cycle and heart sounds, Cardiac output – factor affecting, Heart rate – regulation, bradicardia, tachycardia, Blood pressure -regulation, hypertension and hypotension, Athrosclerosis, ECG – principle, normal and abnormalities, Artifificial pacemaker, Angina pectoris, Cardiac hypertrophy, rheumatoid arthritis, Angiography.

GE-1P1: Practical Credits 02

A. TC of WBC, DC of WBC (with Leishman stain), Haemoglobin estimation by haematometer, Haemin crystal. BT, CT & Blood group.
B. Measurement of HR,PFI, Step Test. BP: systolic, diastolic, mean arterial blood pressure, pulse pressure by Riva- Royce mercury manometer

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Vidyasagar University

Curriculum for B.Sc. Honours in Physiology [Choice Based Credit System]

Semester-II

Sl. no.	Name of the Subject	Nature	Code	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
C3	**C3T:** Physiology of Nerves & Muscle cells	Core Course-3		4	0	0	6	75
	C3P: Histological Study, Experiment of Nerve and Muscle	Core Course-3 [Practical]		0	0	4		
C4	**C4T:** Chemistry of Bio-molecules	Core Course-4		4	0	0	6	75
	C4P: Biological Chemistry(Practical)	Core Course-4 [Practical]		0	0	4		
GE-2	GE-2	GE					4/5	75
	GE-2	GE					2/1	
AECC -2	Environmental Studies	AECC					4	100
				Total Credits =22				

L=Lecture, T=Tutorial, P=Practical

AECC- Ability Enhancement Compulsory Course: Environmental Studies.

Interdisciplinary/Generic Elective (GE) from other Department
[**Four papers are to be taken and each paper will be of 6 credits**]:
[Papers are to be taken from any of the following discipline]: **Physics/Chemistry/Statistics/Computer Sc/Microbiology/Bio Technology/Zoology /Botany/Nutrition**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Semester -II

Core Courses

Core – 3

CC-3: Physiology of Nerve & Muscle Cells **Credits 06**

C3T: Physiology of Nerve & Muscle Cells (Theory) **Credits 04**

1. **Excitable Tissue: Nerve**
   - Introduction
   - Nerve Cells
   - Excitation & Conduction
   - Measurement of Electrical Events
   - Ionic Basis of Excitation & Conduction
   - Properties of Mixed Nerves
   - Nerve Fiber Types & Function
   - Neurotrophins
   - Glia

2. **Excitable Tissue: Muscle**
   - Introduction
   - Skeletal Muscle
     - Morphology
     - Electrical Phenomena & Ionic Fluxes
     - Contractile Responses
     - Energy Sources & Metabolism
     - Properties of Muscle in the Intact Organism
   - Cardiac Muscle
     - Morphology
     - Electrical Properties
     - Mechanical Properties
     - Metabolism
     - Pacemaker Tissue
   - Smooth Muscle
     - Morphology
     - Visceral Smooth Muscle
     - Multi-Unit Smooth Muscle

3. **Synaptic & Junctional Transmission**
   - Introduction
   - Synaptic Transmission
     - Functional Anatomy
     - Electrical Events at Synapses
     - Inhibition & Facilitation at Synapses
     - Chemical Transmission of Synaptic Activity
     - Principal Neurotransmitter Systems
     - Synaptic Plasticity & Learning
   - Neuromuscular Transmission
     - Neuromuscular Junction

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Denervation Hypersensitivity

4. **Initiation of Impulses in Sense Organs**
   Introduction
   Sense Organs & Receptors
   The Senses
   Electrical & Ionic Events in Receptors
   "Coding" of Sensory Information

C3P: Histological Study, Experiment of Nerve and Muscle (Lab) Credits 02

Isolation and Staining of nerve fibres with node(s) of Ranvier ($AgNO_3$) and muscle fibres (H and E).
Preparation of sciatic nerve innervated gastrocnemius muscle of toad.
Study of Kymograph, Induction coil, Key and other instruments used to study mechanical responses of skeletal muscle.
Kymographic recording of mechanical responses of gastrocnemius muscle to a single stimulus and two successive stimuli.
Kymographic recording of the effects of variations of temperature and load (after-load) on single muscle twitch.
Calculation of work done by the muscle.
Determination of nerve conduction velocity.

Core – 4

CC-4: Chemistry of Bio-molecules Credits 06

C4T: Chemistry of Bio-molecules (Theory) Credits 04

Classification, structure, Properties and Functions of Carbohydrates, Proteins and lipids.
Structure, types and Function of DNAs and RNAs.

C4P: Biological Chemistry(Lab) Credits 02

Qualitative tests for the identification of physiologically important substances: Hydrochloric acid, lactic Acid, Uric Acid, Glucose, Galactose, Fructose, Sucrose, Lactose, Albumin, Gelatin, Peptone, Starch, Dextrin, Urea, Glycerol, Bile salts.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Generic Elective Syllabus

GE-2 [Interdisciplinary for other department]

GE- 2 : Developmental Biology / Embryology **Credits 06**

GE 2 T : Developmental Biology / Embryology **Credits 04**

Gametogenesis: Spermatogenesis & Oogenesis. ,Ultra structure: sperm and ovum in mammals. Egg Membranes,
Fertilization: In Sea-urchin and mammals
Cleavage: Cleavage plane, types, role of yolk in cleavage; cleavage process in mammals. Blastula formation: mammals Morphogenetic movements: Types and examples.
Gastrulation: Mammals Concept of induction, determination, and differentiation. Organogenesis: development of eye as an example of reciprocal and repeated inductive events.

GE2 P: Developmental Biology / Embryology (Lab) **Credits 02**

H & E staining of ovarian tissue sections and identification of Graafian follicle, Corpus Luteum, and demonstration of preserved mammalian embryo.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) inPhysiology

[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		**C5T:**Circulating Body Fluids	Core Course - 5	4	0	0	6	75
		C5P: Hematological Experiments		0	0	4		
CC-6		**C6T:**Circulation	Core Course - 6	4	0	0	6	75
		C6P: Cardiovascular Physiology Experimental		0	0	4		
CC-7		**C7T:** Functions of the Nervous System	Core Course - 7	4	0	0	6	75
		C7P: Neurological Experimental		0	0	4		
GE-3		**TBD**	Generic Elective -3				4/5	75
							2/1	
SEC-1		**SEC1T:** Detection of Food Additives / Adulterants **Or** **SEC1T:**Clinical Biochemistry	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P=**Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [**Four papers are to be taken and each paper will be of 6 credits**]: Papers are to be taken from any of the following discipline: **Physics/Chemistry/Statistics/Computer Sc/Microbiology/Bio Technology/Zoology/Botany/ Nutrition**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Semester-III
Core Course (CC)

CC-5: Circulating Body Fluids **Credits 06**
C5T: Circulating Body Fluids **Credits 04**

Introduction, Blood ,Bone Marrow,White Blood Cells, Immune Mechanisms, Platelets, Red Blood Cells, Blood Types, Plasma,Hemostasis, Lymph, Clinical implications

C5P: Hematological Experiments **Credits 02**

Practical:

Preparation and staining of blood film with Leishman's stain.
Identification of the blood corpuscles.
Differential count of WBC.
Total count of RBC and WBC.
Bleeding time and clotting time.
Hemoglobin estimation.
Preparation of haemin crystal.
Preparation and staining of bone marrow.
Measurement of diameter of megakaryocyte.
Reticulocyte staining.
Blood group determintation.

CC-6: Circulation **Credits 06**

C6T: Circulation **Credits 04**

1. **Origin of the Heartbeat & the Electrical Activity of the heart**
   Introduction
   Origin & Spread Of Cardiac Excitation
   The Electrocardiogram
   Cardiac Arrhythmias
   Electrocardiographic Findings in Other Cardiac & Systemic Diseases, hypertrophy and cardiac myopathy

2. **The Heart as a Pump**
   Introduction
   Mechanical Events of the Cardiac Cycle
   Cardiac Output

3. **Dynamics of Blood & Lymph Flow**
   Introduction
   Anatomic Considerations
   Biophysical Considerations
   Arterial & Arteriolar Circulation
   Capillary Circulation
   Lymphatic Circulation & Interstitial Fluid Volume

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Venous Circulation

4. **Cardiovascular regulatory Mechanisms**
   Introduction
   Local Regulatory Mechanisms
   Substances Secreted by the Endothelium
   Systemic Regulation by Hormones
   Systemic Regulation by the Nervous System

5. **Circulation Through special Regions**
   Introduction
   Cerebral Circulation
   Anatomic Considerations
   Cerebrospinal Fluid
   The Blood-Brain barrier
   Cerebral Blood Flow
   Regulation of Cerebral Circulation
   Brain Metabolism & Oxygen Requirements
   Coronary Circulation
   Splanchnic Circulation
   Circulation of the skin
   Placental & Fetal Circulation

6. **Cardiovascular Homeostasis in Health & Disease**
   Introduction
   Compensation for Gravitational Effects
   Exercise
   Inflammation & Wound Healing
   Shock
   Hypertension
   Heart Failure, stroke

C6P: Cardiovascular Physiology Experimental **Credits 02**

Practical:
Preparation of Amphibian Ringer solution.
Kymographic recording of the movements of perfused heart of toad.
Study of the effects of changes in perfusion fluid pressure, changes in temperature, excess calcium and potassium ion concentration, acetylcholine, adrenaline on the on the movement of heart.

CC-7: Functions of the Nervous System **Credits 06**

C7T: Functions of the Nervous System **Credits 04**

1. **Reflexes**
   Introduction
   Monosynaptic Reflexes: The Stretch Reflex

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Polysynaptic Reflexes: The Withdrawal Reflex
General Properties of Reflexes

2. **Cutaneous, Deep & Visceral Sensation**
   Introduction
   Pathways
   Touch
   Proprioception
   Temperature
   Pain
   Other Sensations

3. **Arousal Mechanisms, Sleep, & the Electrical Activity of the Brain**
   Introduction
   The Reticular Formation & the Reticular Activating System
   The Thalamus & the Cerebral Cortex
   Evoked Cortical Potentials
   The Electroencephalogram
   Physiological Basis of the EEG, Consciousness, & Sleep
   Interpretation of abnormal EEG pattern

4. **Control of Posture & Movement**
   Introduction
   General Principles
   Corticospinal & Corticobulbar System
   Anatomy & Function
   Posture and its regulation
   Basal Ganglia
   Cerebellum
   Movement disorders

5. **The Autonomic Nervous System**
   Introduction
   Anatomic Organization of Autonomic Outflow
   Chemical Transmission at autonomic Junctions
   Responses of Effector Organs to Autonomic Nerve Impulses
   Cholinergic and Adrenergic Discharge

6. **Central Regulation of Visceral Function**
   Introduction
   Medulla Oblongata
   Hypothalamus
   Anatomic Considerations
   Hypothalamic Function
   Relation to Autonomic Function
   Relation to Sleep
   Relation to Cyclic Phenomena
   Hunger

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Thirst
Control of Posterior Pituitary Secretion
Control of Anterior pituitary Secretion
Temperature Regulation, fever

7. **Neural Basis of Instinctual Behavior & Emotions**
   Introduction
   Anatomic Considerations
   Limbic Functions
   Sexual Behavior
   Fear & Rage
   Motivation

8. **" Higher Functions of the Nervous System": Conditioned Reflexes , Learning, & Related Phenomena**
   Introduction
   Methods
   Learning & Memory
   Functions of the Neocortex
   Disorders relating learning and memory

C7P: Neurological Experimental **Credits 02**

Practical:

Experiments on superficial (plantar) and deep (knee jerk) reflex
Measurement of grip strength
Reaction time by stick drop test
Short term memory test (shape, picture word)
Two point discrimination test

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Skill Enhancement Course (SEC)

SEC-1: Detection of Food Additives / Adulterants — Credits 02

SEC1T: Detection of Food Additives / Adulterants

Qualitative tests for identifying Food Adulterants in some food samples: Metanil yellow, Rhodamin B, Saccharin, Monosodium glutamate, Aluminium foil, Chicory, Bisphenol A and Bisphenol S, Chocolate Brown HT, Margarine, Pb, Hg, As, PCB, Dioxin etc in turmeric powder, besan, laddoo, noodles, chocolate and amriti.

OR

SEC-1: Clinical Biochemistry — Credits 02

SEC1T: Clinical Biochemistry

Photo-colorimetric estimation of blood constituents. Measurement of blood glucose by Nelson-Somogyi method, measurement of blood inorganic phosphate by Fiske - Subbarow method, measurement of serum total protein by Biuret method and determination albumin globulin ratio, determination of serum amylase by iodometric method.

Generic Elective Syllabus
GE-3 [Interdisciplinary for other department]

GE-3: Community and Public Health — Credits 06

GE3T: Community and Public Health — Credits 04

Basic idea about community health and public health issues, Malnutririon in a community, overnutrition, issues of obesity; possible remedial measures. Composition and nutritional value of common Indian foodstuffs, rice, wheat, pulses, egg, meat, fish and milk. Dietary fibers. Calorie requirement. Concept of ACU. Principles of formulation of balanced diets for growing child, adult man and woman, pregnant and lactating woman. Diet management of obese, diabetic, hypertensive person and athlete. Basic idea on PCM, marasmus, kwashiorkor and their prevention. Iron and iodine deficiency.
Sound pollution as a community health issue; definition, concept of noise, source of extraordinary sound, effects of sound pollution on human health, noise index (noise standards).

GE-3P: Community and Public Health — Credits 02

Qualitative assessment of noise, survey on the status of dietary intake in the surrounding area through visits, etc.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:58:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons.pdf

Vidyasagar University

Curriculum for B.Sc (Honours) in Physiology
[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-8		**C8T:** Energy Balance, Metabolism and Nutrition	Core Course - 8	4	0	0	6	75
		C8P: Energy Balance, Metabolism and Nutrition **(Lab)**		0	0	4		
CC-9		**C9T:** Gastrointestinal Function	Core Course - 9	4	0	0	6	75
		C9P: Gastrointestinal Function **(Lab)**		0	0	4		
CC-10		**C10T:**Respiratory Physiology	Core Course - 10	4	0	0	6	75
		C10P: Respiratory Physiology**(Lab)**		0	0	4		
GE-4		TBD	Generic Elective -4				4/5	75
							2/1	
SEC-2		TBD	Skill Enhancement Course-2	1-1-0/1-0-2			2	50
Semester Total							**26**	**350**

L=Lecture, **T=** Tutorial, **P=**Practical, **CC =** Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD =** to be decided
Generic Elective (GE) (Interdisciplinary) from other Department: Papers are to be taken from any of the following discipline: **Physics/Chemistry/Statistics/Computer Sc/Microbiology/Bio Technology/ Zoology/Botany/ Nutrition**

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

Semester-IV
Core Course (CC)

CC-8: Energy Balance, Metabolism and Nutrition **Credits 06**

C8T: Energy Balance, Metabolism and Nutrition **Credits 04**

Introduction
Energy metabolism
Carbohydrate metabolism
Biological oxidation
Protein metabolism
Fat and cholesterol metabolism
Integration of carbohydrate, fat and protein metabolism
Reactive Oxygen Species
Nutrition – Basic concepts of nutrients, nutraceutical, cosmoceutical, neutrigenomics.
Nutrition – BMR, RQ, RDA, SDA, NPU, Biological value of proteins, vitamins and minerals. Energy in Human nutrition.

C8P: Biochemical Estimation **Credits 02**

a. Quantitative estimation of glucose and sucrose by Benedict's method.
b. Quantitative estimation of amino nitrogen [Sorensen's formol titration method (percentage as well as total quantity to be done)].
c. Estimation of percentage quantity of lactose in milk by Benedict's method.

CC-9: Gastrointestinal Function **Credits 06**

C9T: Gastrointestinal Function **Credits 04**

1. **Digestion & Absorption**
   Introduction
   Carbohydrates
   Proteins & Nucleic Acids
   Lipids
   Absorption of Water & Electrolytes
   Absorption of Vitamins & Minerals
2. **Regulation of Gastrointestinal Function**
   Introduction
   General Considerations
   Gastrointestinal hormones
   Mouth & Esophagus

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

Stomach
Exocrine Portion of the Pancreas
Liver & Biliary System
Small Intestine, Colon
Mechanism, function and regulation of mastication, deglutition, movements of alimentary canal.

C9P: Gastrointestinal Function Lab **Credits 02**

Dale's Experimental

1. Kymographic recording of normal movements of rat's intestine in Dale's apparatus.
2. Effects of hypoxia, acetylcholine and adrenaline on normal intestinal movements.

CC-10: Respiratory Physiology **Credits 06**

CC10T: Respiratory Physiology **Credits 04**

1. **Pulmonary Function**
   Introduction, Properties of gases. Anatomy of the lungs. Mechanics of breathing. Gas exchange in the lungs. Pulmonary circulation. Other functions of the Respiratory System.

2. **Gas transport between the Lungs & the tissues**
   Introduction. Oxygen transport. Carbon Dioxide transport. Respiratory acidosis and alkalosis

3. **Regulation of Respiration**
   Introduction. Neural control of Breathing. Chemical Control of Breathing. Nonchemical influences on Respiration

4. **Respiratory adjustments in Health & Disease**
   Introduction. Effects of exercise. Other forms of Hypoxia. Oxygen treatment, O_2 toxicity. Hypercapnia & Hypocapnia. Other respiratory abnormalities. Sleep and Respiration. Effects of increased Barometric Pressure. Artificial respiration. Respiratory failure. High altitude sickness. Lung Function Tests.

CC10P: Respiratory Physiology Lab **Credits 02**

Practical:

Respiratory Human Experiments

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

a. Measurement of peak expiratory flow rate
b. Measurement of oxygen saturation by pulse oxymeter before and after exercise
c. Measurement of forced expiratory volume (FEV) in first second.

Skill Enhancement Course (SEC)

SEC-2: Computer application in Health science **Credits 02**

SEC2T: Computer application in Health science **Credits 01**

Course Contents:

Importance of computer application in biological sciences and medicine. Brief history of development of computer. Generation of Computer. Classification of computer – analogue, digital, hybrid, micro, mini, mainframe and super computers. Computer hardware: Different components of computer. Computer Software – types of software - monitor program and operating system, utility program, application program. Computation of data – mean, median, mode, SD, SEM & t-value. Graphical representation of data in pie, bar and line diagram using Microsoft excel, Power Point: Preparation of body text and table by sing MS word. Slide preparation for Physiological items. Presentation of study material by using power point. e-mail, internet- concepts.

Application of computer in physiology and medicine. Application of computer in physiological data analysis – M.S. Word, Excel. M.S. Excel**:** Basic application in physiology. Use of computer by dietitian and dietary computation.

Physiological Modeling: Concepts, Computer in physiological models. Human Brain and Computer. Computer and their use in medical field. Basics of computer assisted imaging. Computer assisted therapy in health science.

SEC2P: Computer application in Health science **Credit 01**

1. Basic operation of computer: Operations of WINDOWS; data entry.
2. Graphical presentation of data. Computer tabulation of physiological data. Making charts with Ms Excel - bar diagram, line diagram, pie diagram for representing physiological data.
3. Computation of frequency and percentage distribution of different physiological parameters in different age groups, in different communities, percentage distribution of blood groups.
4. Significance of testing by ‘t’ test with interpretation – Paired observation, standard/population mean.
5. Power point - making slide for any topic related to physiology or medicine, editing, slide show.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

6. Preparation of case history of a patient and feeding of information in the hard disc.

Or

SEC-2: Physiological Techniques and Public Health Assessments **Credits 02**

SEC2T: Physiological Techniques and Public Health Assessments **Credits 01**

Course Contents:

Physiological Techniques:

Audiometry, Perimetry, Visual Acuity, Colour Blindness, EMG, EEG ,ECG, Nerve Conduction velocity, Autonomic Status assessment (Valsalva maneuver), Deep breathing test, Reaction time (Choice), Stereotactic techniques.

Public Health assessment:

Nutritional status of children and adults: Growth curves (Height-for-age, Weight –for-age, weight-for-height, BMI-for-age) for detection of stunting, under weight, wasting, thinness, overweight and obesity. Somatotype for adult (Health – Carter method). Socioeconomic status assessment (Kuppuswamy's Socioeconomic scale)

SEC2P: Practical **Credit 01**

1. Growth charts – plotting growth charts for growth monitoring.
2. Calculation of BMI of an individual and interpretation of results.
3. Prepare growth curves for stunting, under weight, wasting and obese person.
4. To map the peripheral field of vision with perimeter(Perimetry)
5. Mapping of physiological blind spot and calculation of optic disc size.
6. Determination of visual acuity by Snellen's chart/Landolt's chart..
7. Determination of colour blindness by Ishihara Charts.
8. Recording of auditory and visual reaction time.
9. Somatotyping of Human subjects.
10. Survey of dietary status of people in the nearby area by students, analysis of survey results and formulation of diet charts.
11. Submit a socioeconomic status assessment report.
12. To study the phenomenon of fatigue by Mosso's ergograph.
13. Audiometry (Demonstration).
14. Recording of human electrocardiogram (ECG) (Demonstration).
15. Recording of electroencephalogram (EEG) (Demonstration).

Or

SEC-2: Histopathological Techniques **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

SEC2T: Histopathological Techniques **Credits 01**

Course Contents:

Unit-I

Introduction of histopathology: cellular physiology and Pathology. Evolution of histology. Quality control in histopathology. Histological laboratory organization, care & maintenance of equipments used in histopathology laboratory. Fixation and fixatives : Types and mechanism Microtome, its type. Staining theory: Stains and dyes, dye types. mordant, accelerators. silver impregnations. Haematoxylin and Eosin staining, Mounting and mounting media, Tissue processing and its steps. Decalcification. Embedding media - types and properties. Cryotomy, cryostat, impregnation techniques, frozen sections and staining for emergency diagnosis

Unit-II:

Histochemistry : General consideration, limitation to histochemistry. PAS reactions, Sudan Black, Perchloric acid/ Napthaquinone reaction(PAN). Histochemistry of Nuclic acids, proteins and enzymes – basic concept, process, and quantitation of enzyme activity. Histochemistry of Pigments.

Unit-III:

Immunological Techniques : Principles, types, application. Antibody as histological reagents, autoradioactivity. Exfoliative cytology – advantage and disadvantage, Gynaecological smear, fluid sample, thick fluid sample.

Unit -IV:

Cytogenetics & Molecular Techniques: Cytogenetics , chromosomal studies. Karyotyping, growth of cells in tissue cultures. DNA hybridization techniques.

Microscopy : Light Microscopy – types, procedure, tissue preparations, photomicrography. Electron Microscopy : Types, Principle, tissue preparation & techniques.

SEC2P: Histopathological Techniques **Credits 01**

Practical:

1. Glass wares and equipment used in histopathology lab.To prepare alcohol of different concentration. To prepare formalin from stock solution.
2. Preparation of tissue sections, To perform section cutting of paraffin embedded tissue.
3. H&E staining of tissue sections,

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

4. Preparation and staining of bone marrow smear,
5. Measurement of diameter of megakaryocyte,
6. Reticulocyte staining,
7. Staining of collagen in tissue sections.
8. PAP staining techniques.
9. Staining carbohydrates with PAS reaction.
10. Sudan Black staining (Demonstration)

Or

SEC-2: Sports Medicine & Nutritional Physiology Credits 02

SEC2T: Sports Medicine & Nutritional Physiology

Course Contents:

Introduction: Concept of Sports medicine. Aims and objectives of sports medicine. Need and Scope of Sports Medicine. Role of Sports Physician, Physical Educator / Sports Coaches in Sports Medicine.

Basic kinesiology: Meaning and definition of Kinesiology. Importance of Kinesiology for games and sports. Kinesiological classification of muscle. Role of muscles. Joints and their Movements.

Sports Injuries: Introduction. Types of Sports injuries. Reasons of sports injuries. Prevention and management of Sports injuries.

Therapeutic modalities: Brief description of therapeutic modalities. Role of ice in treatment of sports injuries. Clinical application of heat modalities. Brief concepts of Short wave Diathermy (SWD), Whirlpool Bath, Transcutaneous Electrical Nerve Stimulation (TENS). Interferential Stimulation..

Nutritional Physiology & Athlete:
Nutritional parameters of athletics performances including intervention planning, energy production, energy nutrients, vitamins and minerals, Timing and composition of intakes. Planning and preparation of diets for younger and older athletics of various categories – age group, gender and sports type. Weight management strategies for sports persons. Planning and preparation of diets for sports persons suffering from anemia and osteoporosis.

Suggested Readings:

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

1. Steven Ray, Irvin Richer. Sports Medicine, Prentice Hall,1983.
2. Vinger and Roerner. Sports Injuries, PSG Publishing Co., Inc.,
3. Williams, JGP. Sports Medicine . London Edward Arnold Pub.
4. Morehouse and Rash, Sports Medicine for Trainer, WB Saunders.
5. Armstrong and Trucker, Injuries and Sports, London Scampless Press.

Generic Elective (GE)
[Interdisciplinary for other department]

GE-4: Nerve -Muscle Physiology, Nervous system and Sensory Physiology Credits 06

GE4T: Nerve -Muscle Physiology, Nervous system and Sensory Physiology Credits 04

Course Contents:

A. Nerve - Muscle Physiology

1. Excitable Tissue: Nerve Introduction, Nerve Cells, Excitation & Conduction, Measurement of Electrical Events, Ionic Basis of Excitation & Conduction, Properties of Mixed Nerves, Nerve Fiber Types. Neurotropin. Regeneration and Degeneration of nerve fibers.

2. Excitable Tissue: Muscle: Introduction, Skeletal Muscle: Morphology, Electrical Phenomena & Ionic Fluxes, Contractile Responses, Properties. Cardiac Muscle: Morphology, Electrical Properties, Mechanical Properties Pacemaker Tissue, Smooth Muscle: Morphology.

3. Synapse and Neuro muscular Junction: Introduction, Synaptic Transmission: Functional Anatomy, Electrical Events at Synapses, Inhibition & Facilitation at Synapses, Chemical Transmission of synaptic activity. Neurotransmitter. EPSP,IPSP.
Neuro muscular Junction: Introduction, structure, transmission of impulse. Electromyography.

4. Initiation of Impulses in Sense Organs Introduction, Sense Organs & Receptors, The Senses, Electrical & Ionic Events in Receptors, "Coding" of Sensory Information.

B. Nervous system

1. **Reflexes** Introduction, Monosynaptic Reflexes: The Stretch Reflex, Polysynaptic Reflexes: The Withdrawal Reflex, General Properties of Reflexes.

2. Cutaneous, Deep & Visceral Sensation Introduction, Pathways Touch, Proprioception, Temperature, Pain.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

3. Arousal Mechanisms, Sleep, & the Electrical Activity of the Brain The Reticular Formation & the Reticular Activating System, The Thalamus & the Cerebral Cortex: structure & functions. The Electroencephalogram, Physiological Basis of the EEG & Sleep, Interpretation of abnormal EEG pattern.

4. **Control of Posture & Movement** Introduction, General Principles, Basal Ganglia & Cerebellum: Structure & functions. Movement disorders.

5. The Autonomic Nervous System Introduction, Anatomic Organization of Autonomic Outflow, Chemical Transmission at autonomic Junctions.

6. Central Regulation of Visceral Function Introduction, Hypothalamus: Anatomic Considerations, Hypothalamic Function, Relation to Autonomic Function, Relation to Sleep, Hunger, Thirst, Control of Posterior Pituitary Secretion, Control of Anterior pituitary Secretion, Temperature Regulation, fever.

7. Neural Basis of Instinctual Behavior & Emotions Introduction, Limbic system: Anatomic Considerations, Functions - Sexual Behavior, Fear & Rage, Motivation,

C. Special sense

Vision: Anatomic Considerations, The Image-Forming Mechanism (accommodation and visual acuity), The Photoreceptor Mechanism: Genesis of Electrical Responses, Visual Pathways and effects of lesions of these pathways, Color Vision, Errors in visual process.

Hearing & Equilibrium: Introduction, Anatomic considerations, Hair cells, Mechanism of hearing, Vestibular function.

Smell & Taste: Introduction, Smell: Receptors & Pathways. Taste: Receptor Organs & Pathways.

GE4P: Histological Study and Experiments of Nerve and Muscle **Credit 02**

Practical:

1. Isolation and Staining of nerve fibers with node(s) of Ranvier (AgNO3) and muscle fibers (Haematoxylin and Eosin).
2. Measurement of grip strength.
3. Determination of visual acuity by Snellen's chart / Landolt's C chart.
4. Determination of colour blindness by Ishihara chart.

Demonstration:

Study of Kymograph, Induction coil, Key and other instruments used to study mechanical responses of skeletal muscle.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

Kymographic recording of mechanical responses of gastrocnemius muscle to a single stimulus and two successive stimuli.

Kymographic recording of the effects of variations of temperature and load (after-load) on single muscle twitch.

Calculation of work done by the muscle.

Determination of nerve conduction velocity.

Neurological experiments:

Experiments on superficial (plantar) and deep (knee jerk) reflex.

Reaction time by stick drop test.

Short term memory test (shape, picture word).

Two point discrimination test.

Principles of fixation and staining, Staining and identification of fixed endocrine glands and nervous tissue.

Or

GE-4: Excretory System & Body Temperature Regulation **Credits 06**

GE4T: Excretory System & Body Temperature Regulation **Credits 04**

Course Contents:

Renal Function & Micturition:

Introduction, Juxta Glomerular Apparatus, Function of Malpighian corpuscles and renal tubule, counter-current mechanism, Water Excretion, Acidification of the Urine & Bicarbonate Excretion, Regulation of Na^+ & Cl^- Excretion, Renal Circulation, Disorders of Renal Functions, Filling of the Bladder, Emptying of the Bladder, Non-excretory function of kidney. Diuretics.

Skin and Body temperature regulation:

Histological structure of skin. Colour of the skin. Organization of sweat gland. Composition and function of the sweat. Regulation of sweat secretion. Insensible and sensible perspiration. Composition and function of sebum. Triple response.

Normal body temperature. Channels of heat loss and heat gain process. Regulation of body temperature: Higher centre and mechanism of regulation. Hypothermia and Hyperthermia. Physiological basis of fever. Cold sress. Insulating effects. Acclimatization to colds.

GE4P: Excretory System & Body temperature regulation (Lab) **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

Practical

1. Identification of normal constituents of urine.
2. Identification of abnormal constituents of urine.
3. Tests for Urinary deposits.
4. Estimation of albumin in urine.
5. Detection of specific gravity of urine.
6. Quantitative estimation of Urea in Urine.
7. Recording of Body Temperature.
8. To study the response of the skin to blunt injury (triple response)(Demonstration).

Or

GE-4: Environmental pollution and Human health **Credits 06**

GE4T: Environmental pollution and Human health **Credits 04**

Course Contents:

Environment & Health : Definition concepts, components. Major environmental health problems in industrialized and developing countries. Occupational Health. Occupational diseases. Occupational safety.

Environmental Pollution and its impacts on Human health : Air Pollution: definition, sources, air pollutants, effects of air pollution on human health, concept of ozone hole, green house effects and global warming. **Water Pollution:** definition, types, health hazards, water pollutants, biochemical oxygen demand (BOD), thermal pollution, concept of safe drinking water standards. **Soil Pollution:** causes, health hazards, solid waste management - bioremediation, phytoremediation. **Sound Pollution:** definition, concept of noise, source of sound pollution, effects of sound pollution on human health, noise index (noise standards). **Radionuclide Pollution:** ionizing radiations, effects of ionizing radiation on human health, permissible doses. **Arsenic Pollution:** sources, sources of arsenic in ground water, drinking water standard for arsenic (WHO, USEPA), health effects of chronic arsenic poisoning.

Source, health problems and preventions of Bio- medical waste & e-waste.

Environment and Health impacts assessment – Concept, Steps and application.

GE4P: Environmental pollution and human health **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

I. **Physiological (experimental) Experiments:**
Kymographic recordind of the effects of Hg, Pb and As compounds on: The contraction of perfused heart of toad. The intestinal movements of rats in Dale's bath.

II. **Histo-chemical Experiments:** Histochemical studies: chronic effects of food additives and arsenic compounds on liver, kidney, intestine, brain, muscle and lung tissues in rat.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:48:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons4.pdf

Vidyasagar University

Curriculum for B.Sc. (Honours) in Physiology [Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 11		C11T: Sensory Physiology	Core Course - 11	4	0	0	6	75
		- Lab		0	0	4		
CC- 12		C12T: Endocrinology	Core Course - 12	4	0	0	6	75
		- Lab		0	0	4		
DSE-1		TBD	Discipline Specific Electives -1	4	0	0	6	75
				0	0	4		
DSE-2		**TBD**	Discipline Specific Electives -2	4	0	0	6	75
				0	0	4		
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

Semester-V

List of Core Course (CC)

CC-11: Sensory Physiology

CC-12: Endocrinology

Discipline Specific Electives (DSE)

DSE-1: Human nutrition and dietetics
Or
DSE-1: Community nutrition and Public health
Or
DSE-1: Clinical Hematology
Or
DSE-1: Biostatistics

DSE-2: Environmental Physiology
Or
DSE-2: Pharmacology & Toxicology
Or
DSE-2: Sports Physiology, Work Physiology and Ergonomics
Or
DSE-2: Ergonomics and Occupational Health

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

Semester-V

Core Course (CC)

CC-11: Sensory Physiology **Credits 06**

C11T: Sensory Physiology **Credits 04**

Course Contents:

Classification of general and special senses and their receptors. Muller's law of specific nerve energies. Weber-Fechner law. Mechanism of transduction of stimuli from sensory receptors. Adaptation of receptors- phasic and tonic adaptations.

General Sense: Classification, distribution, function and neural pathway of touch, pressure, pain, thermal and kinesthetic sensation.

Vision: Introduction. Anatomic considerations. The structures of lens. Errors of refraction and their corrections. Contact Lens. Pupillary reflexes, light reflex, near response. Argyll Robertson pupil. Histological details of retina. Photopic and Scotopic vision. The Photoreceptor Mechanism: Genesis of Electrical Responses. Chemical and electrical changes in retina on exposure to light. Visual Pathway and effects of lesion of these path ways. Colour visions and its modem concept. Colour blindness. Other aspects of Visual Function. Visual field, Perimetry. The Image-Forming Mechanism (accommodation and visual acuity) Factors affecting Visual Acuity. Visual acuity and its measurement. Binocular vision and depth perception. Eye Movements. Errors in visual process. Electroretinogram.

Hearing & Equilibrium: Introduction, Sound waves, decibel, Anatomic considerations, structure and functional significance of auditory apparatus – external, middle and internal ears. Structure of Organ of Corti. Hair cells. Mechanism of hearing and its modern theories. Discrimination of sound frequency and loudness. Auditory pathway and centers. Vestibular function. Loss of hearing. Deafness & tests of deafness. Audiometry.

Smell & Taste: Introduction, Smell: Receptors & Pathways - Structure and function of the receptor organs, nerve pathways, centers. Physiology of Olfaction. Olfactometer. Taste: Receptor Organs & Pathways- Structure and functions of the receptor organs, nerve pathways, centers. Physiology of Taste. Features of Taste sensation.

C11P: Histological and Human Experiments **Credits 02**

Practical

1. Principles of fixation and staining, staining and identification of fixed nervous tissue.
2. Silver nitrate preparation of corneal cell space.
3. Determination of visual acuity by Snellen's chart / Landolt's C chart.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

1. Determination of colour blindness by Ishihara chart.
2. To map the peripheral field of vision with perimeter(Perimetry)
3. Mapping of physiological blind spot and calculation of optic disc size.
4. Recording of auditory and visual reaction time.
4. Exploration of conductive and perceptive deafness by tuning fork method.
5. Audiometry (Demonstration).

CC-12: Endocrinology **Credits 06**

C12T: Endocrinology **Credits 04**

Course Contents:

General Consideration: Concept of endocrine systems, glands and hormones. Types of endocrine glands. Experimental and clinical methods of study of endocrine glands. General classification of hormones on chemical basis. Concepts of hormone receptors and cell signalling. Mechanisms and Modern Concept of hormone actions: G-protein, Cyclic AMP, cyclic GMP, IP3-DAG, Ca2+, Tyrosine Kinase, JAK-STAT pathway and nuclear receptor mediated action. Hypothalamo - hypophysial axis: Feedback regulation, Hypothalamus as a neuroendocrine organ, Releasing Factors, Tropic hormones of hypothalamus. Vascular and neural connections between the hypothalamus and the pituitary, role of median eminence.

The Pituitary Gland: Introduction. Morphology. Histological structures, functions, and regulation of anterior, middle and posterior lobes of pituitary. Posterior pituitary hormones. Growth Hormone: Chemistry, modes of action and functions of growth hormone. Physiology of Growth & factors influencing growth. TSH, ACTH, FSH, LH, Prolactin, MSH, Vasopressin and Oxytocin. Pituitary Insufficiency Pituitary Hyperfunction in Humans. Cushing's disease, gigantism, acromegaly, dwarfism, Simmond's diseases, Frolich's syndrome, diabetes insipidus.

Thyroid Gland: Introduction. Anatomical considerations. Electron microscopic structure of thyroid gland. Thyroid hormone: Chemistry, Biosynthesis, Storage and Transport of thyroid hormones. Effects of thyroid hormones. Functions of T4 (Thyroxin) and T3 (Triiodothyronine). Regulation of Thyroid hormone secretion. Clinical feature of Cretinism. Myxedema, Grave's disease. Hashimoto's disease, iodine deficiency goiter.

Hormonal Control of Calcium Metabolism & the Physiology of Bone

Introduction, Calcium & Phosphate Metabolism, Bone Physiology, Vitamin D & the Hydroxy cholecalciferols. Parathyroid Gland: Histological Structure, Parathyroid hormone: Role in calcium metabolism. Relation of parathyroid hormone with bone formation and bone resorption, fragile bone and aging process, Concept of Vitamin D3 treatment. Calcitonin: its source, functions and regulation. Hormonal control of calcium homeostasis. Effects of Other Hormones & Humoral Agents on Calcium Metabolism

Endocrine Functions of the Pancreas & the Regulation of Carbohydrate Metabolism:

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

Pancreas: Introduction. Histological structure of pancreatic islets Cell. Structure, Biosynthesis & secretion of Insulin. Sources, modes of action and functions of insulin. Insulin Excess**.** Regulation of Insulin Secretion. Glucagon. Other Islets Cell Hormones. Hypoglycemia & Diabetes Mellitus in Humans.

The Adrenal Medulla & Adrenal Cortex:

Introduction. Adrenal Cortex: histological structure. Structure & Biosynthesis of Adrenocortical Hormones. Regulation different types of hormones and functions of adrenal cortex, Effects of Adrenal androgens & estrogens. Physiologic effects of glucocorticoids. Pharmacologic & Pathologic effects of Glucocorticoids. Regulation of glucocorticoid secretion. Effects of Mineralocorticoids Regulation of aldosterone secretion. Cushing's syndrome, Addison's disease, Hyperaldosteronism. Adrenal Medulla: Histological structure, hormonal function of adrenal medulla. Synthesis and metabolism of catecholamine hormones. Regulation of adrenal Medullary secretion. Actions of adrenaline and nor-adrenaline on different organs and their effect. Pheochromocytoma. Summary of the effects of Adrenocortical Hyper & Hypofunction in humans

Endocrine Functions of the Kidneys, Heart, & Pineal Gland

Introduction. The Renin- Angiotensin System. Erythropoietin. The Endocrine Function of the Heart: Atrial Natriuretic Peptide.

Pineal Gland - Histological structure. Chemical nature, biosynthesis, molecular mechanism of action, functions and regulation of secretion of melatonin.

C12P: Endocrinology (Lab) **Credits 02**

1. Fixation, staining and identification of endocrine glands.
2. Study of the effects of oxytocin on uterine contraction of albino rat.
3. Study of the effects of adrenaline on uterine movements of albino rat.
4. Estimation of estrogen by spectrophotometric method.
5. Estimation of plasma level of any hormone using ELISA (Demonstration)

Discipline Specific Electives (DSE)

DSE-1: Human nutrition and dietetics **Credits 06**

DSE1T: Human nutrition and dietetics **Credits 04**

Course Contents:

Basic concept: Nutrition, Nutrients, Nutraceutical, Cosmoceutical, Nutrigenomics. Constituents of food and their significance. Composition and nutritional value of common food stuffs. Calorific value of foods. Dietary requirements of carbohydrate, protein, lipid and other nutrients.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

Nutritional evaluation of carbohydrates: Glycemic Index (GI), Classification of dietary fibers with potential of health benefit, Resistant starch as prebiotics - Fructo - oligosaccharide, Galacto-oligosaccharide, soy - oligosaccharide, Nutritive value of major carbohydrates like rice, wheat, roots, tubers, leafy vegetables, red-yellow vegetables and fruits.

Nutritional evaluation of proteins: Essential and Non essential amino acids, Protein Efficiency ratio (PER), nitrogen balance, Net protein utilization (NPU), Biological value(BV) of protein, protein spares, Nutritive value of protein food stuffs like pulses, egg, fish, meat, milk, soybeans.

Nutritional evaluation of fats: essential fatty acids, saturated and unsaturated fatty acids, Dietary requirement of fat, Non-glyceride edible oil, Nutritive value of fat food stuffs like egg, fish, milk, edible oils, and nuts.

Vitamins: Water soluble vitamins (Vit - B complex, Vit - C, Folic acid) and fat soluble vitamins (Vit-A, D, E and K): source, brief chemistry, dietary requirements, functions, deficiency, hyper-vitaminosis, and antioxidant. Physiological significances of minerals.

Dietary fibers: Concepts and physiological significance.

Energy in human nutrition: Basic concept of energy and units, calorific and physiological fuel value, Body calorie requirements – adult consumption unit. Respiratory quotient (RQ), Total energy expenditure (TEE), Basal metabolic rate (BMR) and Resting energy expenditure (REE), Specific dynamic action (SDA), physical activity ratio (PAR), Determination of BMR by Benedict Roth apparatus and WHO/ICMR prediction equation, Factors affecting BMR, adult consumption unit (ACU), determination of energy requirements of Indians in different age groups by doubly labeled water (DLW) method and prediction equation method.

Physiology of starvation and obesity.

Formulation of diet chart: Basic principle of diet chart. ICMR specified food groups (Five Group Plans, Nine Group Plan and 11-Group Plan), Food guide pyramid. Balanced diet and principles of formulation of balanced diets for vegetarian and non vegetarian, infant, growing child, sedentary adults, moderate working adults, college students, pregnant and lactating mothers and athletes in low and moderate socioeconomic status. Principles of Diet Survey.

Space Nutrition: change of body composition, energy recommendation for space flights, space food system, types of space foods.

DSE1P: Human Nutrition and Dietetics (Lab) **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

a. Food analysis:

1. Estimation of lactose and calcium from milk.

2. Determination of total carbohydrate by phenol-sulphuric acid method from cereals.

3. Estimation of free amino acids by ninhydrin method and total protein by quantitative biurette reagent method from pulses.

4. Determination of acid value and iodine number of fat.

5. Estimation of Vit-C from lemon juice.

b. **Identification of food adulterants:**

Starch from milk, dalda from butter, saw dust and colouring agents from spices, saccharine in sugar.

c. **Planning and preparation of therapeutic diets :**

Planning and preparation of therapeutic diets for the following diseases: Hypertension, Obesity, Anemia, Diabetes melilitus, Hepatitis , Gastrointestinal diseases.

d. Diet survey (Field study record):

1. Diet survey report (hand-written) of a family (as per ICMR specification) (Steps- Introduction, Diet History, Methodology, Diet Survey, Clinical Examinations, Remarks, Recommendation and Conclusion) : Each student has to submit a report on his/her own family.

2. A report (hand-written) on the basis of field survey from one of the followings:

(1). Physiological parameters of human (at least three parameters).

(2). Anthropometric measurements on human (at least three parameters).

(3). Epidemiological studies on human.

Or

DSE-1: Community nutrition and Public health **Credits 06**

DSE1T: Community nutrition and Public health **Credits 04**

Course contents:

Population, society, community and community health: concepts. Nutrition - Introduction. Food as source of nutrients, functions of food, definition of nutrition, nutrients & energy. Adequate,

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

optimum & good nutrition. Malnutrition and under nutrition, over nutrition. Human nutrition-principle, interrelationship between nutrition, health & diseases. Visible symptoms of good health. Nutrition - fitness, athletics & sports.

Food guide - basic food groups. Use of food guide (according to R.D.A.). Use of food in body - digestion, absorption, transport & utilization. ACU- concept.

Balanced diet. Diet Survey – Principles. Composition and nutritional value of common Indian food stuff - rice, wheat, pulses, egg, meat, fish and milk. Dietary fibres - role of fibers in human nutrition. Calorie requirement. Vitamins and minerals. Malnutrition and under nutrition.
Principles of formulation of balanced diets for growing child, adult man and woman, pregnant and lactating woman. Diet management of obese, diabetic, hypertensive person and athlete. Basic idea on PCM, marasmus, kwashiorkor and their prevention. Iron and iodine deficiency. Recommended dietary allowances, malnutrition and chronic energy, LBW, PEM, xerophthalmia, micronutrient disorders. Physiology of starvation and obesity. Food toxicity. Effect of processing on nutritive values of foods.
Socioecology of nutrition, habitual diets in India and their adequacy. Nutritional assessment of human and community. Malnutrition in a community. National nutrition related health program.

Epidemiology : Concepts. Public health and public health issues: Basic ideas. Etiology, epidemiology and prevention of malaria, dengue, filaria, hepatitis, AIDS, nutritional anemia, atherosclerotic disorders. Causes and management of thalassemia, gout, obesity, endemic goiter, dental carries.

Population problem – principles and methods of family planning and assisted reproductive technology. Sound pollution as a community health issue; definition, concept of noise, source of extraordinary sound, effects of sound pollution on human health, noise index (noise standards).

DSE1P: Practical **Credits 02**

Practical:

1. Quantitative estimation of glucose, sucrose by Benedict’s method.
2. Estimation of lactose from milk by Benedict’s methods.
3. Estimation of Chloride by Mohr’s methods.
4. Estimation of amino nitrogen through formol titration methods.
5. Qualitative analysis of pulse, rice, milk to test the presence of carbohydrates, protein, fat.
6. Qualitative identification of lipids and cholesterol.
7. Qualitative assessment of noise by sound level meter.

Field Survey Report:

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

1. Survey on the status of dietary intake in the surrounding area through visits, etc.
2. Diet survey report of a family (as per ICMR specification). Each student has to submit a report on his/her own family. [Report should be as per ICMR specification. Report should be hand written].
3. A report (hand-written) on the basis of field survey from one of the followings:
   (1) Physiological parameters of human (at least three parameters).
   (2) Anthropometric measurements on human (at least three parameters).

Or

DSE-1: Clinical Hematology **Credits 06**

DSE-1T: Clinical Hematology **Credits 04**

Course Contents:

Anemia and its classification. Laboratory investigation and management of anemia. Iron deficiency anemia, megaloblastic anemia, pernicious anemia- pathogenesis and laboratory investigation. Reticulocytes. Aplastic anemia- laboratory diagnosis. Bone marrow examination. Aspiration techniques.

Hemoglobin - abnormal hemoglobin. Hemolytic anemia and its laboratory investigation. Haemoglobinopathies. Hemoglobin electrophoresis. Sickle cell anemia , Thalassemia- laboratory diagnosis.

Blast cell. Causes and significances of leucocytosis, leucopenia, neutrophilia, eosinophilia, basophilia, monocytosis, lymphocytosis, neutropenia, lymphopenia. Toxic granulation. Leukemia and its classification. HIV on blood cell parameters. LE cells and its significances. Blood parasites.

Hemostasis and Coagulation: Platelet development. Qualitative and quantitative disorders of platelets. Secondary hemostasis. Hemophilia, Willebrand diseases. Disorder of fibrinogen. Fibrinolysis. Bleeding and coagulation disorders.

Blood groups: Immunological basis of identification of ABO and RH blood groups. Biochemical basis of ABO system and Bombay phenotyping. Others blood groups : Kell, Kidd, Duffy, etc. Blood transfusion. Blood banking.

Definition determination and significance of TC, DC ,ESR, Arnth count, PCV, MCV, MHC, MCHC. bleeding time, clotting time, prothrombin time.

DSE 1P: Practical **Credits 02**

1. General blood picture

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

2. Differential Leucocute Count. Absolute leucocyte count
3. Determination of haemoglobin by various methods.
4. Determination of total RBC count and WBC count.
5. Determination of PCV
6. Determination of red cell indices
7. Determination of ESR.
8. Determination of reticulocyte count.
9. Staining of bone marrow
10. Determination of blood groups.
11. Determination of toxic granulation of neutrophil
12. Determination of total platelet count.
13. Demonstration of thrombin time.**(Demonstration)**
14. Perform sickling test (**Demonstration**)
15. Perform Heinz bodies(**Demonstration**)
16. Demonstration of leukemic slides (**Demonstration**).
17. Determine fibrinogen conc.(**Demonstration**)
18. Demonstrate malarial slide(**Demonstration**)
19. Haemoglobin electrophoresis(**Demonstration**).

Or

DSE-1: Biostatistics **Credits 06**

DSE1T: Biostatistics **Credits 04**

Course Contents:

Scope of statistics– utility and misuse. Principles of statistical analysis of biological data. Basic concepts – variable. Population and sampling -- parameter, statistic. Presentation of data, frequency distribution, frequency polygon, histogram, bar diagram and pie diagram. Different classes of statistics - mean, median, mode, mean deviation, variance, standard deviation, standard error of the mean, standard score. Degrees of freedom, probability. Normal distribution. Student's t- distribution. Testing of hypothesis - Null hypothesis, errors of inference, levels of significance, t- test and z score for significance of difference. Distribution-free test - Chi-square test. Linear correlation and linear regression

DSE1P: Biostatistics (Practical) **Credits 02**

Practical:

1. Computation of mean, median, mode, standard deviation and standard error of the mean with physiological data like body temperature, pulse rate, respiratory rate, height and weight of human subjects.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

2. Graphical representation of data in frequency polygon and histogram.

3. Student's t test for significance of difference between means.

4. Demonstration: Statistical analysis and graphical representation of biological data with computer application program one way ANOVA .

DSE-2: Environmental Physiology **Credits 06**

DSE2T: Environmental Physiology **Credits 04**

Course Contents:

Ecosystem – Structure and function, different types of ecosystem, food chains, food webs and energy flow and mineral cycling in ecosystems; primary production and decomposition , biogeochemical cycle. Global environmental problems: global climate change, ozone layer depletion, concept of ozone hole, green house effect, global warming and its consequences.

Environment – Physical and biological aspects. Effects of exposure to hot and cold environment. Acclimatization to hot and cold environment. Heat disorders and its preventive measures. Effects of hypobaric and hyperbaric environment. Caisson disease. Mountain sickness. Acclimatization to high altitudes. Preventive measure for hypobaric and hyperbaric effects. Physiological effects and preventive measures against G force, noise, vibration and radiation. Types of pollutants (Primary, secondary and tertiary).

Environment and human health: Definition: hygiene, health and public health. Air, Water, Food Borne Diseases: causes, symptoms and control. Food Additives and Adulterants: definition, examples and human health hazards.Vector borne epidemic diseases: Malaria and Plague-etiology and control. Environmental Pollution and Health Hazards: Air Pollution: Definition, sources, air pollutants, effects of air pollution on human health, Water Pollution: Definition, types, health hazards, water pollutants, biological oxygen demand (BOD), thermal pollution, concept of safe drinking water standards. Soil Pollution: causes, health hazards, solid waste management - bioremediation, phytoremediation. Sound pollution: Definition, concept of noise, source of sound pollution, effects of sound pollution on human health, noise index (noise standards). Radionuclide Pollution: ionizing radiations, effects of ionizing radiation on human health, permissible doses. Arsenic Pollution: sources, sources of arsenic in ground water, drinking water standard for arsenic (WHO, USEPA), health effects of chronic arsenic poisoning. Climate change, health impact.

Environmental management: Environmental ethics**.** Conservation of topsoil, ground water and wild lives; rain water harvesting; sanctuary, national park, biosphere reserve, wildlife (conservation) Act, 1992.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

Toxicology: Toxins and Toxicology. Factors Affecting toxicity. LD_{50}, LOD_{50}, ED_{50}, NOEL, LOEL. Concept of acute and chronic Effects. Birth defects and teratogens. Concepts of bio-magnification and bio-concentration. Popular food additives and Food adulterants. Prevention of food adulteration Act, 1954. Other food toxicants: BPA, BPS, Pesticides, PAH, Dioxin, PCB, Heavy Metals: Pb, Hg, Cd, As etc.

DSE2P: Environmental Physiology **Credits 02**

Practical:

A:

1. Determination of O_2, CO_2, BOD & COD.
2. Determination of total alkalinity and chlorine in water.
3. Determination of dissolve oxygen in the supplied water samples-supplied water, ground water extracted by shallow and deep tube wells, stream waters, pond water etc.
4. Detection of food additives in different food samples.
5. Biochemical estimation of serum glucose, total proteins, SGPT and SGOT
6. Measurement of environmental temperature – dry bulb and wet bulb, relative humidity, air velocity.
7. Determination of light intensity (at library, laboratory, and class room) by lux meter.
8. Determination of sound levels by sound level meter and noise index.

B: Physiological (experimental) Experiments

1. Kymographic recording of the effects of Hg, Pb , As compounds and food additives on the movements of perfused heart of toad.

2. Kymographic recording of the effects of Hg, Pb , As compounds and food additives on the intestinal movements of rats in Dale's bath.

C: Histo-chemical Experiments

Histochemical studies: chronic effects of food additives and arsenic compounds on liver, kidney, intestine, brain, muscle and lung tissues in rat.

Or

DSE-2: Pharmacology & Toxicology **Credits 06**

DSE2T: Pharmacology & Toxicology **Credits 02**

Course Contents:

1. **Pharmacology: General Pharmacology:** The importance of pharmacology in the study of physiological processes. Definition of drug, agonist and antagonist.. Nature and source of drugs, routes of drug administration and their advantages, receptor and receptor subtypes. Drug-receptor

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

interaction, desensitization of receptors. Drug delivery. **Pharmacokinetics**: Drug absorption, distribution, metabolism, and excretion, bioavailability, first pass metabolism, excretion and kinetics of elimination, Biological half life of drug and its significance, Drug-drug interactions. **Pharmacodynamics:** Beneficial versus toxic effects of drugs. Principles and mechanism of drug action, factors affecting drug action. Drug biotransformation. Bioavailability. Drug accumulation. Dose – Response Curve.Adverse drug reaction. Gene therapy.

General considerations, pharmacological classification, mechanism of action and uses of following classes of drugs acting on various systems.

Drugs acting on nervous system: a) General anaesthetics (Nitric oxide, halothane), b) sedative and hypnotic drugs (Phenobarbitone, diazepam), c) Opioid analgesics (Morphine), d) CNS stimulants (strychnine, amphetamine). Neuromuscular blockers : Tubocurarine and succinyl choline. E)Adrenergic stimulants : Amphetamine and ephedrine. α- adrenergic stimulants – Methaxomine and clonidine. β- adrenergic stimulants – Metaproterenol and salbutamol. Adrenergic antagonists :Labetelol. α- adrenergic blockers – Phenoxybenzamine andphentolamine. β- adrenergic blockers – Propranolol and atenolol.

Autacoids & chemotherapy of microbial diseases: Brief introduction to autacoids : drug therapy of inflammation, NSAID and other drugs (aspirin, celecoxib). Chemotherapy of microbial diseases: Antibacterial (sulfonamides), antifungal (amphotericin B).

Hormones and hormone antagonists: Insulin and oral hypoglycaemic agents (tolbutamide, rosiglitazone), thyroid and anti-thyroid drugs (eltroxin, carbimazole), estrogen and progestins (progesterone, hydroxyprogesteronecaproate).

Diuretics - Carbonic anhydrase inhibitor, loop diuretic, potassium sparing and osmotic diuretics.

Antianginal drugs :Nitroglycerine and calcium-channel blocker – Nifedipine and verapamil.

2. **Toxicology: a. Introduction**: Brief history, Different areas of modern toxicology, classification of toxic substances. Toxins and toxicology. Factors affecting toxicity. **b. Toxic agents, toxic exposure and response:** Toxic agents: Human exposure, mechanism of action and resultant toxicities of the following xenobiotics: Metals: lead, arsenic, Pesticides: organophosphtes, carbamates, organochlorine, bipyridyl compounds and anticoagulant pesticides. Toxic exposure and response: Effect of duration, frequency, route and site of exposure of xenobiotics on its toxicity. Characteristic and types of toxic response. Interactions between two and more xenobiotics exposure in humans. Tolerance and addiction. **c. Eco-toxicology:** Brief introduction to avian and aquatic toxicology, movements and effects of toxic compounds in food chain (DDT, mercury), bioaccumulation, biomagnification, acid rain and its effect on ecosystems, concept of BOD and COD. **d. Mechanism of toxicity & evaluation of toxicity:** Mechanism of toxicity: Delivery of the toxicant, mechanisms involved in formation of ultimate toxicant, detoxification of ultimate toxicant. Evaluation of toxicity: various types of dose response relationships, LD_{50}, LC_{50}, LOD_{50}, ED_{50}, NOEL, LOEL, TD_{50} and therapeutic index. **e. Fate of xenobiotics in human body:** Absorption, distribution, excretion and metabolism of xenobiotics (biotransformation, Phase- I reactions including oxidations, hydrolysis, reductions and phase II conjugation reactions).Toxic insult to liver, its susceptibility to toxicants with reference to any two hepatotoxicants.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

3. **Clinical toxicology:** Management of poisoned patients, clinical methods to decrease absorption and enhance excretion of toxicants from the body use of antidotes.

DSE2P: Pharmacology & Toxicology **Credits 02**

Pharmacology

1. Handling of laboratory animals. Routes of drug administration (Oral, I.M.)
2. To study the presence of acetaminophen/ aspirin in given sample.
3. Effect of analgesic (Tail-flick test).
4. Pharmacodynamics: dose- response curve**.**
5. Kymographic recording of the effects of atropine and propranonol on the perfused heart of toad.
6. Setting of organ bath and kymograph. To record the effects of acetylcholine using guinea pig ileum / rat intestine.
7. Anti-anxiety effect of valium (Plus maze test) **(Demonstration)**
8. To study the stages of general anesthesia **(Demonstration).**
9. To determine partition coefficient of general anesthetics **(Demonstration).**
10. Study of competitive antagonism using acetylcholine and atropine **(Demonstration).**

Toxicology

1. Determination of Dissolved Oxygen (DO) using Winkler's method.
2. Determination of Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) of water.
3. To perform quantitative estimation of residual chlorine in water samples.
4. To determine the total hardness of water by complexo-metric method using EDTA.
5. To determine acid value of the given oil sample.
6. Calculation of LD_{50} value of an insecticide from the data provided.
7. Separation of a mixture of benzoic acid, beta- napthol and napthelene by solvent extraction and identification of their functional Groups **(Demonstration).**
8. To estimate formaldehyde content of given sample **(Demonstration).**

Suggested Readings:

1. Essentials of Medical Pharmacology, 7th edition (2010), K.D. Tripathi, Jaypee Brothers,
2. Pharmacology, 7th edition (2011), H.P. Rang, M.M. Dale, J.M. Ritter and P.K. Moore, Churchill Livingstone.
3. Hand book of Experimental Pharmacology, 4th edition (2012), S.K. Kulkarni, Vallabh Prakashan, 2012.
4. Cassarett and Doull's "Essentials of Toxicology" 2nd edition (2010), Klaassen and Whatkins, McGraw Hill Publisher.
5. Introduction to Toxicology, 3rd edition (2001), John Timbrell, Taylor and Francis Publishers.
6. Principles of Toxicology, 2nd edition (2006), Stine Karen and Thomas M Brown, CRC press.

Or

DSE -2: Sports Physiology, Work Physiology and Ergonomics Credits 06

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

DSE2T: Sports Physiology, Work Physiology and Ergonomics **Credits 04**

Course Contents:

Sports & work Physiology: Concepts of physical work and physiological work. Physical work: Definition and units of measurement. Classification of physical work. Classification of workloads. Differences between work and sports. Energetic of muscular works. Measurement of energy cost for various physical work. Cardiovascular and respiratory changes during graded exercise. Aerobic and anaerobic capacity. Maximum aerobic power.
Exercise Physiology. Exercise & Performance. Exercise Physiology & Gender. Environmental Exercise Physiology. Maximal oxygen consumption and post exercise oxygen consumption – definition, factors affecting, measurement and significance. Muscle fatigue and recovery. Tests for Physical work capacity – measurement with Bicycle Ergometer, Tread Mill and Harvard Step Test. Work rest cycle and importance of rest pause.
Physical Training: General principles and different methods. Effects of overtraining and detraining. Nutrition in sports – neutrient and caloric requirements for different kinds of sports. Sports injury and its management. Sports rehabilitation and sports medicine. Role of sports in emotion and social factors. Basic concepts of sports psychology. Sports Biochemistry. Ergogenic aids. Ergogenic aids & Dietary supplement.

Ergonomics – Basic concepts and its application in industry to improve efficiency. Ergonomics-importance of ergonomics in occupational health and well beings. Physical work environment. Occupational hazards- Physical, biochemical hazards. Occupational diseases – Silicosis, Asbestosis, Farmer's Lung. Industrial safety.

Anthropometry : Anthropometry and its implication in general. Different body dimension measures in anthropometry and their significances. Sports Anthropometry.

DSE2P: Practical **Credits 02**

1. Measurements of resting and working heart rate using thirty beats and ten beats methods respectively.
2. Measurement of blood pressure before and after different graded exercise.
3. Determination of Physical Fitness Index (PFI) of an individual and recording of recovery heart rate after standard exercise.
4. Determination of cardiac cost of specific work.
5. Determination of $VO_{2\ max}$ by Queens College step test.
6. Determination of endurance time by hand gripdynamometer..
7. Six minutes walk tests.
8. Measurement of some common anthropometric parameters – stature, weight, eye height(standing), shoulder height, sitting height, knee height (sitting), arm reach from wall, mid upper arm circumference, waist

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

circumference, hip circumference, neck circumference, head circumference, chest circumference.

9. Determination of body surface area (using a nomogram) and Body Mass Index (BMI) for an anthropometric measurement.
10. Measurement of body fat percentage.

Or

DSE-2: Ergonomics and Occupational Health **Credits 06**

DSE2T: Ergonomics and Occupational Health **Credits 04**

Course Contents:

Ergonomics: Genesis and concept of ergonomics, significance and growth. Importance of ergonomics in occupational health and well being. Application of ergonomics in design and work efficiency. Human machine interaction- concepts, fundamentals of human computer interaction, fundamental idea of display and control. The bio-mechanism of work as related to the user, the work and the environment. Classification of physiological work load. Concept of work rest cycle.

Work environment – Work place components, functional design and arrangements of workplaces, work study, indices of indoor comfort – ventilation, lighting, temperature, noise. Work place stressors and work place risk factors.

Physical work environment: (a) Thermal environment, its' effects, Heat stress indices, (b) Noise and vibration, it's effects on workers. Occupational deafness, (c) Illumination level and it's effect on visual performances, (d) Ergonomic principles of control of physical hazards.

Ergonomic principles of reducing work place stressors and improving work efficiency

Anthropometry and ergonomics: Definition , terminology used in anthropometry. Different body dimensions measured in anthropometry. Anthropometric measurements and its applications in interior designing for different work areas and workers. Concept of percentile and its calculation, and use of percentile values in anthropometry. Static anthropometry, applications of anthropometric data in design. User interface and control display compatibility. Components of worker input – affective, cognitive, temporal and physical (Physical, Physiological, Psycho – physiological aspects of work).

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

Occupational Health: Concept. The occupational medical history, workers compensations, disability prevention and management. Occupational health risk. Occupational Injury: Musculoskeletal injury, peripheral nervous injury, eye injuries, facial injuries, hearing loss, injury caused by physical hazards, Ergonomics and the prevention of occupational injuries. Occupational exposures: Metals, chemicals, solvents, gasses & airborne toxicants, pesticides. Occupational illness: Brief idea on : Clinical toxicology & immunology, cardiovascular toxicology, liver, renal & neurotoxicology. Occupational hematology, infection, skin disorders & lung disease. Reproductive toxicology. Occupational Diseases: Human diseases associated with occupational exposure. Brief idea on pneumoconiosis, asbestosis, silicosis, farmer's lung and work-related musculoskeletal disorders.

Program management: Occupational stress, substances abuse & employee assistance programs. Occupational safety, industrial hygiene, biological monitoring. Prevention of accidents. Concept of industrial safety.

DSE2P: Ergonomics and Occupational Health **Credits 02**

1. Measurement of working heart rate by ten beats methods.
2. Determination cardiac cost of specific work.
3. Measurement of blood pressure before and after different grades of exercise.
4. Measurement of some common anthropometric parameters. Calculation of BSA and BMI from anthropometric data.
5. Measurement of WBGT indices.
6. Measurement of noise level by noise level meter.
7. Assessment of illumination.
8. Determination of strength by hand grip dynamometer.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:46:12; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons5.pdf

Vidyasagar University

Curriculum for B. Sc. (Honours) in Physiology [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 13		**C13T:** Reproductive Physiology, Embryology and Chronobiology	Core Course-13	4	0	0	6	75
		- Lab		0	0	4		
CC- 14		**C14T**: Renal Physiology, Skin and Body Temperature Regulation, Biomedical Instrumentation	Core Course-14	4	0	0	6	75
		- Lab		0	0	4		
DSE-3		TBD	Discipline Specific Elective - 3	4	0	0	6	75
				0	0	4		
DSE-4		TBD	Discipline Specific Elective - 4	4	0	0	6	75
				0	0	4		
Semester Total							**24**	**300**

L= Lecture, **T=** Tutorial, **P =** Practical, **CC -** Core Course, **TBD -** To be decided, **DSE:** Discipline Specific Elective.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Semester-VI

List of Core Course (CC)

CC-13: Reproductive Physiology, Embryology and Chronobiology

CC-14: Renal Physiology, Skin and Body Temperature Regulation, Biomedical Instrumentation.

Discipline Specific Electives (DSE)

DSE-3: Medical Biochemistry
Or
DSE-3: Microbiology and Biotechnology
Or
DSE-3: Medical Microbiology and Immunology
Or
DSE-3: Genetics, Molecular Biology and Bioinformatics

DSE-4: Cognitive Science
Or
DSE-4: Community Medicine, Epidemiological Data Analysis
Or
DSE-4: Patho -Physiological logical Basis of Diseases
Or
DSE-4: Research methodology and Design

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Semester-VI

Core Course (CC)

CC-13: Reproductive Physiology, Embryology and Chronobiology Credits 06

C13T: Reproductive Physiology, Embryology and Chronobiology Credits 04

Course Contents:

Reproductive Physiology:

Reproductive physiology - introduction. Sex Differentiation & Development - Chromosomal Sex. Reproductive genetics. Aberrant Sexual Differentiation. Phenotypic sex differentiation. Gonadal development in the embryo. Pituitary Gonadotropins & Prolactin. Puberty in boys and girls and its control, onset of puberty. Secondary sexual characters, Human sexual response. Menopause.

The Male Reproductive System- Gross anatomy and microscopical anatomy of the male reproductive tract. Histoarchitecture of male reproductive system, testis , seminiferous tubules and interstitial cells of Leydig. Male Reproductive Physiology : gametogenesis - spermatogenesis, spermiogenesis & epididymal function, sperm maturation and ejaculation. Endocrine function of the testes. Control of testicular function, prostate and seminal vesicle. Abnormalities of testicular function.

The Female Reproductive system- Gross anatomy and microscopical anatomy of the female reproductive tract. Histological structure of ovary, Graafian follicle and Corpus luteum, Formation and maturation of ovum. Ovarian Hormones - Chemical nature and function. Steriodogenesis. Control of ovarian function. Physiological mechanism and control of ovulation. Abnormalities of ovarian function. Reproductive cycles: Menstrual Cycle – duration, description and hormonal control, Estrous cycle.

Pregnancy: Transport of ovum and sperm in female reproductive tract. Fertilization and the establishment of pregnancy. Hormones in pregnancy. Placenta - formation, structure, functions and fate of placenta. Placental hormones. Maternal adaptation to pregnancy : changes during pregnancy and its hormonal control. Pregnancy diagnosis : Pregnancy tests (immunological). Foeto-maternal relationship, faeto-placental unit. Ectopic pregnancy. Labour . Parturition: mechanisms and hormonal regulation.

Lactation and Mammary gland: Anatomical and histological structure of mammary gland. Phases of mammary development and their hormonal control. Hormonal control of lactation and milk ejection reflex.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Reproductive Health - Physiological concepts for a planned family. Demographic terminology of family planning. Infertility in male and female: causes, diagnosis and management. Assisted Reproductive Technology (ART): sex selection, sperm banks, frozen embryos, in vitro fertilization. Contraception- Concepts, methods, Process, modern contraceptive technologies. Stem cell biology- concept, characterization and application. Exfoliative cytology on gynecological smear –Use of exfoliative cytology on gynecological screening, sample type, fixation & staining, normal constituents, cytology of menstrual cycle, hormonal assessment of smear, inflammatory changes of smear, malignancy.

Reproductive Genetics, Human Genetics and Human Reproductive Disorders: Reproductive Genetics, Human Genetics: Principle of molecular genetics: Gene expression, Gene Structures. Medical genetics: General concepts, Genetic diseases, Population genetics, Pharmacogenetics and pharmacogenomics. Human Genetic Architecture and diseases - Human genetic architecture. Genes and Human diseases. Mendelian disorders. Complex multigenic disorders. Chromosomal disorders: Normal karyotype – concept, significance, techniques-staining, banding, FISH. Structural abnormalities of chromosomes, Cytogenetic disorders involving autosomes and sex chromosomes. Single gene disorders with non-classic inheritance. Mosaicism. Molecular diagnosis of genetic diseases.
Human reproductive disorders: Abnormalities of male and female sexual differentiation and development. Puberty: Precocious, delayed or absent puberty, Amenorrhoea: Primary and Secondary. Hyper-prolactinaemia, Sexual dysfunction, infertility, Pregnancy: multifoetal pregnancy and spontaneous pregnancy loss, Pre- eclampsia, eclampsia, endometriosis. Basic concepts of ovarian cysts. Genetic imprinting and reproductive tumors.

Embryology:

Cleavage: cleavage plane, types, role of yolk in cleavage; cleavage process in mammals. Embryogenesis, morula, blastula, gastrula and blastocyst. Formation of trilaminar germ disc. Gastrulation, organogenesis. Development of alimentary system, heart and urogenital system. Development of eye as an example of reciprocal and repeated inductive events. Foetal circulation and its changes after birth.

Chronobiology:

Introduction to Chronobiology. Historical developments in chronobiology; Biological oscillation: the concept of average, amplitude, phase and period.

Biological Rhythm – Definition, terminology of biorhythm, significance. Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms. Circannual rhythms; Photoperiod and regulation of seasonal reproduction of vertebrates. Different types of physiological rhythms - ultradian, circadian, infradian. Circadian rythms - concepts, types, explanation and experimental evidences.

Concept of synchronization and masking; Photic and non-photic zeitgebers. Importance of environmental synchronization (Zeitgeber or Synchronizer) on Circadian rhythms. Different

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

zeitgebers and their relation with circadian rhythm. Circadian rhythms in human. Biorhythms of LH, FSH, Prolactin, Estrogen, Progesterone, ACTH, GH, Cortisol. Light dark cycle and regulation of penial hormone.

Biological clock, physiological clock: Concepts, biological clock and environmental changes, classification and function of biological clock. Location and origin of biological clock. Fundamental nature of biological clock. Mechanism of biological clock. Master clock or central clock – types, location and mechanisms. Neural basis of biological clock and the role of suprachiasrnatic nuclei. Adaptive significance of biological clocks. Sleep – wakefulness cycle. Body temperature rhythm. Time keeping Genes. Brief idea of jet-lag and shift work. Chronobiology in health. Biological clock and medicine.

C13P: Reproductive Physiology, Embryology and Chronobiology (Practical) Credits 02

List of Practical:

1. Study of estrous cycle.
2. Tissue fixation, embedding in paraffin, microtomy , slide preparation and identification of uterus, testis, ovary.
3. Examination of histological sections of permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive system; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.
4. Pregnancy test from human urine by kit method.
5. Sperm count, sperm motility test in rat. Sperm viability test by using eosin - Y.
6. Determination of diurnal and /or circalunar rhythm of body temperature of college going students.
7. Study of circadian functions in humans (daily eating, sleep and temperature patterns).
8. Project work on assessment of individual differences in human circadian rhythms (chronotype in human population) by questionnaire method among school children and college students.

Demonstration:

1. Surgical techniques: Principles of surgery in endocrinology and Reproductive Physiology.
2. Overectomy, Histerectomy, Castration and Vasectomy in rats.
3. Human vaginal exfoliate cytology.

CC-14: Renal Physiology, Skin and Body Temperature Regulation, Biomedical Instrumentation Credits 06

C14T: Renal Physiology, Skin and Body Temperature Regulation, Biomedical Instrumentation Credits 04

Course Content:

Renal Physiology:

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Renal Physiology- introduction. Gross structure of kidney. Microanatomy (including electron microscopy) of a nephron and structural differences between cortical and juxtamedullary nephrons. Juxtaglomerular apparatus. Function of Malpighian corpuscle and renal tubule. Renal circulation- peculiarities and autoregulation.

Mechanism of urine formation: Concept of ultrafiltration, glomerular filtration rate, reabsorption by passive and active tubular transport. Concept of counter current system, counter-current mechanism countercurrent multiplier, exchanger and mechanism of concentrated urine formation. Water excretion, acidification of the urine & bicarbonate excretion. Regulation of Na^+ & Cl^- excretion. Non-excretory function of kidney. Constituents of urine - normal and abnormal constituents of urine and their clinical significance. Concept of renal threshold. Renal Function Tests. Renal stone formation. Dialysis and artificial kidney. Diuretics. Disorders of Renal Functions.

Physiology of Urinary bladder, urine storage and micturation. Innervations of urinary bladder. Filling of the Bladder and emptying of the bladder. Micturition reflexes and its regulation by higher centers.

Skin and Body Temperature Regulation:

Histological structure of skin. Colour of the skin. Organization of sweat gland. Composition and functions of sweat. Regulation of sweat secretion. Insensible and sensible perspiration. Composition and functions of sebum. Triple response.

Normal body temperature. Channels of heat loss and heat gain process. Regulation of body temperature in homeotherms : physical and physiological processes, roles of neural and hormonal processes, higher centers and mechanism of regulation.
Pyrexia, Hypothermia and hyperthermia, physiological basis of fever. Cold stress. Insulating effects. Acclimatization to heat and cold.

Biomedical Instrumentation and Techniques:

Biomedical basis of Diseases: Basic concepts, pathogenesis to symptoms and diagnosis of infectious diseases, inherited/genetic diseases; immunological diseases, cancer.

Basics of Biomedical Instrumentation: Development of biomedical instrumentation, components of man-instrument system. Biomedical systems, design factors and limitations of biomedical instruments. Transducer, Biosensors - concept, classification. Bioelectric potentials, Bio potential electrodes – concepts, significance and application .Electric current - physiological effects. Shock hazards, safety. Measurement system and errors.

Medical diagnostic techniques related equipment: Principles of microscopy including Fluorescence microscopy, Atomic Force Microscopy, Transmission and Scanning Electron Microscopy. Flow Cytometry (FACS). Karyotyping – Chromosome banding, FISH. Spectroscopic Techniques - Principle, different types, instrumentation. Histopathology, Histochemistry, Cytogenetics – staining techniques. Chromatography – Principle and application of different chromatography including TLC, GLC, HPLC, Ion-exchange chromatography,

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

molecular sieve chromatography, affinity chromatography. Electrophoresis - Principle, instrumentation and medical significances of AGE, PAGE, SDS-PAGE. Centrifugation - Principle and physiological significances.

Biomedical instruments – Biomedical instruments and cardiovascular monitoring systems: Basic concepts, instrumentation of Cardiac monitor, ECG, Blood flow meters, Oximeter, equipments for blood pressure, cardiac output and heart sounds. Methods of monitoring fatal heart rate. Cardiac pacemakers, cardiac defibrillators. Clinical Laboratory Instruments: General principle and instrumentation of Blood Gases Analyzer, Auto-analyzer, Blood Cell Counters, ELISA reader, spectrophotometer, flame photometer. Auto analyzer. Biomedical Instruments for Respiratory measurement systems: Basic principles and instrumentation of pneumograph, Spirometer, pneumotachometers, Respiratory therapy equipment, apparatus for anaesthesia. Biomedical Instruments and Nervous system: Concept and basic principles of Psycho-physiological measurement techniques, instruments for measurements of nervous system, motor response, sensory response. EEG. Imaging systems: Basic principles, instrumentation of X-Ray machine, Mammography, X-ray computed tomography (CT Scanner) and computer-aided tomography (CAT), Fluoroscopy. Ultrasound Imaging - Ultrasonic imaging system. Echocardiography, Doppler effects, three dimensional ultrasound. Radioactivity : Radiation, Radio isotopes-concepts, Scintillation counter, Gamma camera & Gamma camera imaging , Radio nucleotide scan, Emission Tomography- ECT Emission Coupled Tomography, SPECT & PET - concept. Magnetic Resonance Imaging- Magnetism and nuclear magnetism, Magnetic Resonance Imaging (MRI) system, MRI Maps of body, Sports medicine, Breast imaging and Brain Mapping. **Optics, Fiber Optics, Diathermy equipment, Audiometer and Laser :** Optics: science of life. Fiber Optics - Endoscopes and Laparoscope - principles and applications. Diathermy: principles, types and biomedical significance. Audiometers: principle and methods. Laser- formation, mechanisms and medical application. Significances. **Application of computer in Biomedical field, Biotelemetry, Physiological modeling-** Computer: basic components, imaging techniques, database, web design, automation for instruments used for clinical laboratory, use of microprocessor in medical instruments, PC- based medical instruments, computerized critical care unit. Biotelemetry: concepts, components, application. Physiological modeling: biological modeling - modeling process, methods, equation. Deterministic & stochastic model. Compartmental model- concept. Physiological modeling software.

C14P: Renal Physiology, Skin and Body Temperature Regulation, Biomedical Instrumentation (Practical) **Credits 02**

List of Practical:

1. Tissue fixation, embedding in paraffin, microtomy, slide preparation and identification of kidney and ureter.
2. Identification for normal constituents of urine.
3. Identification for abnormal or pathological constituents of urine.
4. Tests for urinary deposits.
5. Detection of specific gravity of urine.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

6. Estimation of albumin in urine.
7. Estimation of urea in urine.
8. Estimation of total phosphates in urine.
9. Routine clinical tests of urine.
10. Recording of body temperature.
11. Study the skin to blunt injury (triple response).
12. Measurement of heart sound using electronic stethoscope.

Demonstration

1. SDS – PAGE electrophoresis for protein (**Demonstration)**
2. Physiological data acquisition by ECG, EEG **(Demonstration)**
3. Study of X ray/CT machine (**through demonstration**).
4. Study of mammograms and CT scan images (**Demonstration**).
5. Estimation of sodium and potassium in blood serum or urine sample by using auto analyzer **(Demonstration).**
6. Determination pulmonary function using spirometer (using mechanical system) (**Demonstration**).

Discipline Specific Electives (DSE)

DSE-3: Medical Biochemistry — Credits 06

DSE3T: Medical Biochemistry — **Credits 04**

Course Contents:

Unit-I: Basic Concepts and scope. Clinical Biochemistry - Organization of clinical laboratory, Introduction to instrumentation and automation in clinical biochemistry laboratories safety regulations and first aid. General comments on specimen collection, types of specimen for biochemical analysis. Precision, accuracy, quality control, precautions and limitations.

Unit-II: Evaluation of biochemical changes in diseases: Basic hepatic, renal and cardiovascular physiology. Biochemical symptoms associated with disease and their evaluation. Diagnostic biochemical profile. Pathophysiological significances of glucose, serum protein, albumin, urea, creatinine, uric acids, ketone bodies.

Unit- III: Enzymes: Distribution and diagnostic significance- Properties of enzymes used in diagnosis of metabolic disorders, clinical significance of diagnostically important enzymes: creatine kinase, lactate dehydrogenase, alanine and aspartate aminotransferases, amylase, acid and alkaline phosphatase, beta glucoronidase, with a detailed account of the biochemical

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

reactions catalysed by these enzymes and of their clinical assays; kinetic assay and end point assay for the enzymes. A detailed account on isoenzymes, their tissue distribution and clinical significance.

Unit -IV: Hormones: Classification with reference to their biochemical nature, mechanism of action (one example from each class of hormones), Function. Pathophysiology of disorders associated with hormones. Biochemical diagnosis of hormonal disorders.

Unit-V: Structural complexities and diseases associated with carbohydrates and lipids:
Carbohydrates: Sugars as information molecules; detailed account on Lectins: their role in physiological functions and their potential as drug targets in various infectious diseases. Dietary fibers. Assessment of glucose metabolism in blood: Clinical significance of variations in blood glucose. Diabetes mellitus. Glycosylated Hb

Lipid profile: Types of Lipoproteins (chylomicrons, VLDL, LDL, HDL); disorders associated with lipoprotein metabolism (hypercholesterolemia, atherosclerosis). Composition and functions of lipoproteins. Clinical significance of elevated lipoprotein. Lipid profile in health and diseases.

Metabolism of ketone bodies in diabetic patients. Prostaglandins- classification, biosynthesis, role of COX-1, COX-2, NSAIDS in synthesis; functions Steroids-Cholesterol- biosynthesis and regulation, inhibitors of cholesterol biosynthesis (Statins-structure and mechanism of action).

Unit -VI: Vitamins: Definition, classification, requirement and recommended allowances, and dietary precursors; diseases due to deficiency of water-soluble and fat-soluble vitamins: the symptoms and the clinical significance. Assay of vitamin.

Unit- VII: An overview of integrative metabolism: Local and global regulation in tissue specific metabolism, interplay of insulin and glucagon integration of various metabolic pathways of proteins, lipids, carbohydrates and nucleic acids, obesity- role of Leptin, Ghrelin and other hormones in regulation of body mass, electron transport chain and inhibitors, oxidative phosphorylation, role of uncouplers and ionophores.

Unit -VIII: Organ Function Tests: **a.** Liver function tests: Structure of the liver, liver function tests, causes of different liver diseases, liver function tests in the diagnosis of liver diseases. Pathophysiological significance of bilirubin. **b.** Renal function tests and urine analysis: Composition of urine. Use of urine strip / dipstick method for urine analysis. Basic ideas on different types of test for renal diseses. **c.** Tests for cardiovascular diseases: Involvement of enzymes in diagnostics of heart disease: aspartate transaminase, isoenzymes of creatine kinase and lactate dehydrogenase and troponin.

DSE3P: Medical Biochemistry (Practical) **Credits 02**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

List of Practical:

A. Collection of blood and storage. Preparation of serum and plasma from whole blood and storage.

B. Quantitative determination of the following in the whole blood/plasma/serum:

1. Estimation of blood glucose by glucose oxidase peroxides method.
2. Estimation of blood glucose by Nelson – Somogyi method.
3. Estimation of blood inorganic phosphates by Fiske - Subbaraow method.
4. Estimation of serum total protein by Biurate methods and determination of albumin globulin ratio.
5. Estimation of HDL/LDL and Triglycerides.
6. Estimation of bilirubin (direct and indirect).
7. Quantitative determination of serum creatinine, uric acid and urea.
8. Determination of serum amylase by iodometric method.
9. Estimation of creatine kinase.
10. Estimation of SGOT, SGPT, Acid & Alkaline Phosphatase.

Demonstration:

1. Estimation of Lactate dehydrogenase, beta glucoronidase **(Demonstration).**
2. SDS-PAGE Electrophoresis for Protein **(Demonstration).**
3. Five case studies based on above quantitative estimations performed **(Demonstration).**.

Or

DSE-3: Microbiology and Biotechnology — Credits 06

DSE3T: Microbiology and Biotechnology — Credits 04

Course Contents:

Microbiology:

Viruses: structure, types. Lytic and lysogenic cycle. DNA & RNA Viruses. Viroids and Prions. Bacteriophages – structure & morphological classification.
Bacteria: structure, classification. Staining :- Principle , procedure, uses. Gram stain, Acid – fast stain, Albert stain .Biochemical tests for identification Pathogenic and non - pathogenic bacteria. Nutritional requirements of bacteria, nutritional types culture media. Bacterial Growth curve-preparation, physiological factors required for growth. Bacrterial metabolism: fermentation (ethanol, lactic acid, acetic acid), glyoxalate cycle, Entner – Doudoroff pathway, Phosphoketolase pathway. Bacterial genetics: elementary idea of transformation, conjugation and transduction. Sterilization, disinfection and pasteurization: Physical and chemical methods used. Antibiotics, bacteriostatic & bacteriocidal agents. Bacteriolytic agents. Concepts of antiseptic, probiotics and prebiotics. Basic idea about medical bacteriology, virology and mycology.Food microbiology – brief ideas about food spoilage (fish, meat, milk, vegetables) and its prevention. Industrial Microbiology: Elementary knowledge for production of fermented products like alcohol, glutamic acid, penicillin and milk products (cheese, dahi). Environmental Microbiology: Role of microbes in Bio-geo chemical cycle (brief).

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Biotechnology: History and importance. DNA and RNA. Gene, Genome and Genetic code, translation. Recombinant DNA technology: concepts, techniques and application., DNA manipulation. Cloning – concept and significances. Cloning vectors. cDNA libraries. DNA sequencing. Basic concepts of Southern, Northern, Western blot techniques and DNA micro array. Polymerase Chain Reaction (PCR). RT-PCR- Basic concepts. Enzyme immobilization: basic concepts. Tissue culture – basic concepts. Human genome projects. Transgenic animals. Hybridoma techniques - Basic concepts. Monoclonal antibody. Protein interaction technology. DNA technology and gene therapy. DNA technology in diseases diagnosis. Genetic Bar-coding.
Fermentation technology: Fermentation, types, bioreactors, upstream and downstream processing. Physiology and biotechnology process.
Bio-pesticides, bio-plastics, biosensors, biochips: concepts and significances. Bio-safety and intellectual property Rights. Genomics and Proteomics. Bio-safety and ethical issues in biotechnology

DSE3P: Microbiology and Biotechnology (Practical) **Credits 02**

List of Practical

1. Study of disinfection and sterilization techniques.
2. Culture procedure and isolation of bacteria.
3. Biochemical characterization of microorganisms (Biochemical tests – Catalase test, Oxidase test, Fermentation of sugar- Glucose, Lactose, Sucrose, Mannitol, Hydrolysis of Starch, Gelatin, Casein, Citrate and Propionate utilization test, Indole production test, Nitrate reduction test, Methyl red test and Voges Proskauer [V. P.] test).
4. Negative staining. Gram staining techniques of bacteria. Acid-fast staining of bacteria. Bacterial spore staining.
5. Isolation of DNA from blood and microbial culture.
6. Separation of DNA by agarose gel electrophoresis. Extraction of DNA from agarose gel. Quantification of DNA.
7. Prepare SDS-PAGE for protein. Gel electrophoresis of protein. Quantification of protein.

Demonstration:

1. Perform immunodiffusion by Ouchterlony methods **(Demonstration).**
2. Analysis of DNA sequences (**Demonstration**).
3. Application of PCR (**Demonstration**).
4. Prepare ELISA (**Demonstration**).
5. Perform Immunoprecipitation (**Demonstration**).

Or

DSE-3: Medical Microbiology and Immunology **Credits 06**

DSE3T: Medical Microbiology and Immunology **Credits 04**

Course Contents:

Unit-I: Fundamental Concepts:

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

a) History of microbiology, Discovery of microorganisms, Contributions of Louis Pasteur and Robert Koch in Medical Microbiology. b) Molecular methods of assessing microbial phylogeny-molecular chronometer, phylogenetic trees, rRNA, DNA and proteins as indicator of phylogeny. c) Microbial growth, growth factors, culture media - types of media. Pure Cultures, Growth curves and generation time, Control of microbial growth, general concept of effect of environmental factors on growth of microbes.
Normal microflora of the human body and host pathogen interaction : Normal microflora of the human body, importance of normal microflora, normal microflora of skin, throat, gastrointestinal tract, urogenital tract Host pathogen interaction: Definitions - Infection, Invasion, Pathogen, Pathogenicity, Virulence, Toxigenicity, Carriers and their types, Opportunistic infections, Nosocomial infections. Transmission of infection. Bacterial Cells - fine structure and function **:** Size, shape and arrangement of bacterial cells. Cell membrane, cytoplasmic matrix, inclusion bodies (eg. magnetosomes), nucleoid, ultrastructure of Gram +ve and Gram –ve bacterial cell wall, Pili, Capsule, Flagella and motility. Microbial Genetics. Principles of Diseases and Epidemiology:Relationship between normal microbiota and host, Opportunistic microorganisms.Development and spread of infectious diseases: invasion, pathogen,parasite, pathogenicity, virulence, carriers and their types.

Unit-II: Sample collection, transport and diagnosis: Collection, transport and culturing of clinical samples and their identification characteristics.

Unit-III: Bacterial Diseases (with reference to etiology, clinical symptoms, virulence factors involved, detection and prevention): Respiratory tract infections, Diphtheria and tuberculosis, Gastrointestinal tract infections, staphylococcal food poisoning and *E. coli* gastroenteritis, Urinary tract infections: gonorrhea and syphilis.

Unit-IV: Viruses, viroids, prions: General characteristics of viruses, structure, isolation, cultivation and identification of viruses, viral multiplication, one step multiplication curve, lytic and lysogenic phages (lambda phage), concept of early and late proteins, clinical virology with reference to HIV virus and hepatitis virus (Life cycle and clinical symptoms), viroids and prions.

Unit-V: Medical Mycology (with reference to life cycle and clinical symptoms) **:** General and detailed life cycle of *Aspergillus* and *Candida albicans* in relation to human diseases caused by them.

Unit-VI: Parasitology (with reference to life cycle and clinical symptoms): Classification of medically important parasites. Common protozoan disease: Malaria, Infections caused by *Taenia solium* / *Taenia saginata, Fasciola hepatica and Ascaris lumbricoides*.

Unit-VII : Antimicrobial chemotherapy and emerging antimicrobial resistance: Spectrum of antimicrobial activity, action of antimicrobial drugs, anti-mycobacterial antibiotics, inhibitors of protein synthesis and nucleic acid synthesis, inhibition of cell wall synthesis, inhibitor of cell membrane function, inhibitor of metabolism. Antifungal agents: mechanism of actions of Amphotericin B, Griseofulvin , Antiviral agents :Mechanism of action of Amantadine,

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Acyclovir, Azidothymidine. Anti - protozoan drugs; effectiveness of chemotherapeutic agents. Antimicrobial resistance – concepts.

Unit-VIII: Overview of Immune System - properties of immune system; types of immunity: innate immunity, acquired immunity, active and passive immunity. First and second line defence**.** Antigens and Antibodies: Characteristics of an antigen (foreignness, molecular size and heterogeneity); haptens; epitopes (T & B cell epitopes), Adjuvants : Structure, Types and Functions of antibodies.

Unit-IX: Generation of Immune Response: Primary and secondary immune response; Generation of humoral immune response (Plasma and Memory cells); Generation of cell mediated immune response. Cytokines. Complements.

Unit-X: Immunological Disorders and Tumor Immunity & Immunological Techniques: Types of Autoimmunity and Hypersensitivity with examples; Immunodeficiencies – acquired immune deficiency. Animal models (Nude and SCID mice). Transplantation immunity. Immunological Techniques: Principles of Precipitation, Agglutination, Immunodiffusion, Immunoelectrophoresis, ELISA, ELISPOT.

DSE3P: Medical Microbiology and Immunology (Practical) Credits 02

List of Practical:

1. Study of composition and use of important differential media for identification of bacteria: EMB Agar, McConkey agar, Mannitol salt agar, Deoxycholate citrate agar, TCBS
2. Staining methods: Gram staining, Acidfast staining (permanent slide only), Capsule staining and spore staining.
3. Study and plot the growth curve of *E coli* using turbidometric method and to calculate specific growth rate and generation time.
4. Identify bacteria on the basis of cultural, morphological and biochemical characteristics: IMViC, TSI, nitrate reduction, urease production and catalase tests .
5. Study of bacterial flora of skin by swab method.
6. Perform Widal test.
7. Staining and morphological characterization of Aspergillus sp., Pencillium sp. and Saccharomyces sp.
8. Antibacterial testing by Kirby-Bauer method.
9. Immunodiffusion by Ouchterlony method. Immunodiffusion by Mancini method.
10. Determination of minimal inhibitory concentration (MIC) of an antibiotic.
11. Study of various stages of malarial parasite in RBCs using permanent mounts.
12. Study symptoms of the diseases with the help of photographs: Polio, anthrax, herpes, chicken pox, HPV warts, AIDS (candidiasis), dermatomycoses (ring worms)

Demonstration:

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

1. Demonstration of PCR based method of detection **of any causative gene (Demonstration).**
2. Isolation of bacteriophages (any with a non-pathogenic host) and calculation of the plaque forming units (pfu) **(Demonstration).**
3. Complement fixation assay **(Demonstration).**
4. Agglutination inhibition assay **(Demonstration).**
5. Sandwich dot ELISA **(Demonstration).**

Or

DSE-3: Genetics, Molecular Biology and Bioinformatics Credits 06

DSE3T: Genetics, Molecular Biology and Bioinformatics Credits 04

Course Contents:

Genetics:

Introduction to Genetics: Mendel's work on transmission of traits, Genetic variation, molecular basis of genetic information. Mitosis and Meiosis.
Mendelian Genetics and its Extension: Principles of inheritance, Chromosome theory of inheritance, Laws of probability, Pedigree analysis. Monohybrid and dihybrid, test and back crosses. Incomplete dominance and codominance. Bacterial genetics - transformation, transduction, conjugation (mention of F+ /F- , Hfr strain, function of pilus). Extension of Mendelism – Multiple alleles, Lethal alleles, Epistasis and its different types present in plants and animals. Penetrance, expressivity, pleiotropism. Environmental effects on phenotypic expression, sex linked inheritance. Linkage, Crossing over and Chromosome mapping. Mutations: Chromosomal mutations, Gene mutation. Detection of mutation: CLB method, Attached X method, DNA repair mechanism. Sex determination and sex linkage, Extrachromosomal inheritance. Quantitative genetics: Quantitative and multifactor inheritance, Transgressive variations, Heteriosis.
Chromosome structure: Concept of nucleosome, molecular organization, chromosomal proteins, the different levels of chromatin organization. Numerical and Structural variations in chromosome - basic concepts of aneuploids and polyploids.

Human Genetics: History of human genetics- Early Greek concepts about inheritance, Cytogenetics history (the works of Winiwater, Painter and Tjio and Levan), Landmark achievements of Galton, Garrod etc. Pedigree analysis. Patterns of inheritance for monogenic traits. Organization of Human Genome : General feature, gene clusters, diversity in size and organization of gene, types of repitative DNA, pseudogene, gene families, endoreplication and amplification, genetic markers.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Human Cytogenetic – Techniques (karyotyping and FISH), Human Karyotype –banding pattern and nomenclature (G and Q banding), Common syndrome – numerical chromosome changes, structural alterations. Use of human cytogenetics in medical science. Aneuploidy in humans. Chromosome abnormalities and cancer. Mapping strategies : Physical Map , Genetic Map. Techniques for genomics: DNA sequencing, DNA fingerprinting, polymorphism screening, expression analysis and proteomic analysis.

Identification of genetic basis of diseases. Population genetics. Prenatal diagnosis - introduction, significance and methods. Clinical genetics : inborn error of metabolism, genetic basis of colour blindness, familial cancer, infertility and in vitro fertilization, mental retardation. Genetic disorders of Haemopoietic systems.

Implications of Genome Research: Diagnosis and screening of genetic disorders**,** prenatal genotyping for mutations in β- globin gene and sickle cell anemia**,** DNA profiling: establishing identity and relationships**,** applications in personalized medicine (genetic polymorphism in drug metabolism genes e.g. cytP_{450} and GST and their effect on drug metabolism and drug response)**,** genetic counseling.

Molecular Biology:

Nucleic acids convey genetic information. The structure of DNA and RNA, DNA topology, organelle DNA. The Replication of DNA. The Mutability and Repair of DNA. Transcription (Prokaryotes and Eukaryotes). RNA modification. Translation (Prokaryotes and Eukaryotes). Regulatory RNAs. RNA editing. Gene and Genetic code - properties and wobble hypothesis. Gene expression and gene silencing. Methods for analysis of gene expression. Chromosomal aberration and gene mutations (agents and types). Gene Knockout. Protein sequencing methods, detection of post translation modification of proteins. DNA sequencing methods. Molecular markers in genome analysis. Genetic counseling.

Basic idea of Recombinant DNA technology and its applications, Polymerase Chain Reaction (PCR) – concepts, and application in human disease diagnosis.

Concept of oncogenes, tumour suppressor genes and properties of cancer cells. Molecular basis of apoptosis in brief. Gene therapy, transgenic animal. Molecular Techniques: PCR, Western and Southern blot, Northern blot, Sanger DNA sequencing.

Bioinformatics:

Introduction to bioinformatics - Definition, important contributions, task, application, challenge and opportunities. Computer Fundamentals – Programming languages in bioinformatics, Role of Super computer in biology. Historical background. Scope of bioinformatics – Genomics, Proteomics and Computer aided Drug Design (Structure based and ligand based approaches).

Biological databases and data retrieval: Information Network. Database, Tools and uses. Introduction to biological databases – primary, secondary and composite databases, NCBI, nucleic acid databases (GenBank, EMBL,DDBJ,NDB), Protein databases (PIR, Swiss- Prot, TrEMBL, PDB). Nutrient data bases. . Bioinformatic tools- FASTA, BLAST.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

DNA sequence analysis. Sequence Alignment. Predictive method using DNA and Protein sequences. Introduction to computational biology- prediction of 3-D protein structure. Identification of unknown protein. Phylogenetic Analysis. Drug design, Discovery and Pharmacoinformatics. Bioinformatics and Health informatics – concepts and application in health and medicine.

DSE3P: Genetics, Molecular Biology and Bioinformatics (Practical) Credits 02

List of Practical:

Genetics:

1. Preparation of human metaphase chromosomes and Giemsa staining.
2. Karyotyping with the help of photographs.
3. Abnormal karyotypes and chromosome aberrations.
4. PTC testing to prove monogenic inheritance.
5. Preparation of pedigree charts of some common characters like Tongue rolling, ear 6 lobes, blood groups, colour blindness.
6. Isolation of DNA from blood and microbial culture.
7. Estimation of DNA using colorimeter by Diphenyl reagent .
8. Estimation of DNA by Spectrophotometer (A 260 measurment). Quantify and analyze the purity of DNA using spectrophotometer (estimating at 260 nm, 280nm and 320nm).
9. Estimation of RNA by Orcinol method.
10. Separation of DNA by agarose gel electrophoresis. Extraction of DNA from agarose gel and quantification of DNA.
11. Determination of melting temperature of DNA.
12. Prepare SDS-PAGE for protein. Gel electrophoresis of protein and quantification of protein.
13. Searching of scientific information using NCBI or any search engine. Webbased analysis: retrieval of a desired human sequence from NCBI database and sequence alignment using BLAST.
14. Three dimension analysis of protein molecules.

Demonstration:

1. Demonstration of DNA fingerprinting (**Demonstration**).
2. Polymorphism analysis using PCR (**Demonstration**).
3. Demonstration of mammalian sex chromatin (**Demonstration**).
4. Demonstration Southern Blotting, Northern Blotting, Western Blotting (**Demonstration**).
5. Analysis of DNA sequences (**Demonstration**).
6. Phylogenetic analysis using PHYLIP (**Demonstration**).
7. Primer designing using software (**Demonstration**).
8. Microarray analysis using Bioconductor (**Demonstration**).

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

DSE-4: Cognitive Science Credits 06

DSE4T: Cognitive Science Credits 04

Course Contents:

Unit-1: Anatomy of brain and spinal cord

Gross anatomy of cerebrum, cerebellum, brain stem and spinal cord. Cranial and spinal nerves. Autonomic nervous system - sympathetic and parasympathetic nervous system. Neurogenesis in developing brain.

Unit-2: Methods of neuroscience

EEG, Event-related potential, CAT, MRI, fMRI, PET, Magnetoencephalography, Optical recording.

Unit-3: Memory and Emotion

Different types of memory. Neural organization of memory. Cellular and molecular basis of memory. Cortical and subcortical contribution to emotion: Fight or Flight response, Reward and motivation, Regulation of emotion, communicating emotion,

Unit-4: Language and speech

Neural basis of speech, Speech disorders. Neural organization of language, language processing. Hemispheric specialization in language and other functions. Split brain. Neural basis of attention and social cognition

Unit-5: Developmental disorders

Cognitive development theory,-piagets and Kohlberg moral reasoning theory, mental retardation, degree of mental retardation, causes of mental retardation, down syndrome, dyslexia, Attention deficit hyperactivity disorder, autism

Unit-6: Cognitive disorders

Cognitive changes with aging. Cognitive disorders: Alzheimer's disease, Frontotemporal dementia, Creutzfeldt Jakob disease, Vascular dementia, Schizophrenia, Depression, Anxiety disorders.

DSE4P: Cognitive Science (Practical) Credits 02

List of Practical:

1. Primacy and recency in short term memory in human subjects
2. Cognitive assessment by coloured matrices test in children

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

3. Test to assess the duration of short term memory
4. Psychometric tests for children- Developmental Assessment Scale for Indian Infants (DASII), Wechsler Preschool and Primary Scales of Intelligence (WPPSI), Children Apperception Test (CAT).
5. Animal study: Food retrival in maze study

Or

DSE-4: Community medicine, Epidemiological Data Analysis

Credits 06

DSE4T: Community medicine, Epidemiological Data Analysis **Credits 04**

Course Contents:

Unit-I: Concepts of Health and Disease: Definition of health, determinants of health. Agent, host and environmental factors in health and disease. Multifactorial etiology of disease.

Unit-II: Epidemiology: a. Principle of Epidemiology and Epidemiological methods: Terms used in describing disease transmission and control. Morbidity and mortality indicators. Measurements of epidemiological indicators, Epidemiology study designs. Concept of association, causation and bias. Screening for diseases. **b. Epidemiology of communicable diseases:** Extent of problem, Diagnosis- clinical and laboratory, Treatment and control, Health Programmes. Respiratory infections: measles, rubella, mumps, influenza, diphtheria, whooping cough, tuberculosis. Intestinal infections: poliomyelitis, viral hepatitis, cholera, typhoid, food poisoning, acute diarrheal diseases. Arthropod-borne infections: dengue, malaria, filariasis, leismaniasis. Zoonosis : rabies, surface infections: leprosy, HIV/AIDS **c. Epidemiology of chronic non-communicable disease and conditions:** Coronary heart disease, cancer, diabetes, hypertension, blindness.

Unit-III: Health & Nutrition and Reproductive & Child Health: a. Health & Nutrition: Concept of Balanced diet - nutritional requirement. Nutrition related disorders- Protein energy Malnutrition, Vitamin A deficiency, Iron deficiency anemia, lodine deficiency disorders. **b. Reproductive and Child Health:** Child Health, Maternal Health, Immunization, Population Control Measures.

Unit-IV: Environment & Health and Occupational Health: a. Environment & Health
Water pollution: Indicators of water pollution, Prevention and Control. Air pollution: Indicators of air pollution, Prevention and Control. **b. Occupational Health:** Basic Concepts (Silicosis and Byssinosis)

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Unit-V: Health Care system in India: Health planning, National Health Policy, Primary Health Care, Health Care delivery system in India.

Unit-VI: Medicine and Society: Introduction. Measuring diseases of a society - a. Prevalence. b. Incidence. Detection of causes of diseases and Risk factor - Methods of detection of diseases in a population. Assessing the effectiveness of the treatment of diseases: a. Effectiveness of treatment, b. Cost of therapy, c. Resource required to administer the therapy. The Socio-cultural context of medicine: a. Doctor- Patient's relationship, b. Illness behavior.

Unit -VII: Epidemiological Data, epidemiologic methods and survey: Components of epidemiology: Frequency, distribution and determinants of disease. Epidemiological approach and measurements - vital statistics (rates, ratios and proportions), measurements of health indicators. **Epidemiologic methods and survey:** Data collection: observational (descriptive and analytical) and experimental studies. Epidemiology study designs - case control and cohort studies (prospective and retrospective), techniques of sampling and matching, sources of bias.

Unit-VIII: Data Organization & Presentation, Statistical Modeling and analysis using 'R' on NCRP data and survey conducted by the students: Basic principles of 'R' software for tabulation and graphical representations, measures of central tendency, dispersion and skewness. **Statistical modeling and analysis using 'R' on NCRP data and survey conducted by the students:** Correlation analysis (scatter diagrams and Karl Pearsons coefficient of determination, standard and probable errors) and regression analysis. Inferential statistics: sampling distributions and standard error null and alternate hypothesis, basic concept and illustrations of type I and type II errors, concept of confidence interval estimation, large sample tests for single mean and difference of means, single proportion and difference of proportions, students t-distribution (test for single mean, difference of means and paired t-test), chi-square distribution, F-distribution, one-way and two-way ANOVA, non parametric analysis (sign and rank tests), p-value.

DSE4P: Community medicine, Epidemiological Data Analysis (Practical) Credits 02

List of Practical

1. Surveys/ Community based studies on the topics related to preventive and social medicine.
2. Designing a questionnaire for survey of prevalence diabetes/ hypertension/ allergy/ respiratory disorders/etc. Determining the target and control populations
3. Surveying the population for the diseases mentioned above.
4. Analysis of data from National Cancer Registry Program (NCRP). Understanding incidence, mortality (rates, ratios and proportions).

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

5. ‘R’ software and analysis of data from NCRP data and survey conducted by the students. Correlation studies. Regression studies. Probabilistic distribution studies. Comparison of groups and ascertaining statistical significance of differences.

Or

DSE-4: Patho-physiological Basis of Diseases — Credits 06

DSE4T: Patho-physiological Basis of Diseases — **Credits 04**

Course Contents:

Unit-I: **Introduction -** History of pathology, Basic definitions and common terms used in pathology, Survival mechanism and disease, microscopic and cellular pathology, scope and techniques used.

Unit-II: Cell Injury and responses of cells: Cellular Adaptations and Cell Death - An overview of cellular adaptation: Hyperplasia, Hypertrophy, Atrophy, Metaplasia; Causes and mechanisms of cell injury, reversible and irreversible injury, Necrosis, Apoptosis, Types of apoptosis, Intracellular accumulations, Cellular ageing

Unit-III: **Role of inflammation in disease (with suitable examples) -** Basic concepts with suitable examples of general features of acute and chronic inflammation: vascular changes, cellular events, important chemical mediators of inflammation, Morphological effects inflammation response, granulomatus inflammation.

Unit-IV: Role of tissue repair healing and fibrosis (with suitable examples) - Basic mechanism of tissue regeneration, and repair by healing, scar formation and fibrosis

Unit-V: **Common Hemodynamic Disorders in diseases (with suitable examples) -** An overview of edema, hyperemia, congestion, hemorrhage, hemostasis and thrombosis, Embolism, Infarction and shock with suitable examples

Unit-VI: Nutritional diseases - Protein energy malnutrition, deficiency diseases of vitamins, minerals, nutritional excess and imbalances. Roles and effects of metals.

Unit-VII: Cancer - Definitions, Nomenclature, characteristics of benign and malignant neoplasms, grading and staging of cancer, biology of tumor growth, invasion and metastasis, carcinogens and cancer, concept of oncogenes, tumor suppressor genes, DNA repair genes and cancer stem cells.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Unit VIII: Infectious diseases epidemiology- Modes of infections with suitable examples. Overview of cause, extent, prevention, treatment and control of the diseases: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonosis and Surface infections

DSE4P: Patho-physiological Basis of Diseases (Practical) **Credits 02**

List of Practical:

1. Urine analysis: Gross examination of urine for colour, odour, etc. Abnormal constituents like protein, ketone bodies, glucose, blood, and urea.
2. Measuring Erythrocyte Sedimentation Rate (ESR).
3. Tissue Processing, embedding and sectioning. Staining and preparation of permanent histological slide.
4. Study of histological slides showing hypertrophy, hyperplasia, dysplasia, leukemia, cirrhosis and any common cancer.
5. Diagnostic tests for detection of various diseases – CRP, VDRL, RA, Pregnancy, Dengue (any three)
6. PCR based diagnostics (for any one disease).
7. Physiological data acquisition like temperature, EEG, ECG.

Or

DSE-4: Research Methodology and Design **Credits 06**

DSE4T: Research Methodology and Design **Credits 04**

Course contents:

Foundation of Research: Meaning, Objectives, Motivation of research. Research Methods *vs.* Methodology, Types of Research: Analytical *vs.* Descriptive, Quantitative *vs.* Qualitative, Basic *vs.* applied.

Planning of Research design and experiment, - Need for research design: Features of good design, important concepts related to good design- Observation and Facts, Prediction and Explanation, Development of Models. Developing a research plan: Problem identification, Experimentation, Determining experimental and sample design, working a proposal - Review of literature. Research hypothesis sampling and data collection.

Ethics in research - Code of ethics and research, Ethics and research process, Importance of ethics in research, bio-safety. Intellectual property Rights, Commercialization, Copy Right, Royalty, Patent law, Plagiarism, Citation, Acknowledgement.

Tools, techniques for research in Physiology and health science: Microscopy, Spectrophotometry, Spectrofluorometry- principles and application in biological research. Chromatography: Principles and uses of Paper chromatography; Column chromatography, TLC,

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography. Mass spectrometry, X-ray diffraction, X-ray crystallography: Basic principles and role in Characterization of proteins and nucleic acids. Electrophoresis: Principle, methods and uses of application of Agarose Gel Electrophoresis (AGE), PAGE, SDS-PAGE. Staining of DNA / RNA gel by ethidium bromide. Histology and Histopathology- principle and techniques. Karyotyping - techniques and staining. Cell fractionation – Cell fractionation techniques. Centrifugation: Differential and density gradient centrifugation, sucrose density gradient, $CsCl_2$ gradient, analytical centrifugation, ultracentrifugation- principles, moving boundary and density gradient ultracentrifugation technique. Marker enzymes. Radioactivity – classification and properties. Concept of radiolabelling of biomolecules and their detection by autoradiography. Principles of radioimmunoassay (RIA), ELISA and immunoblotting.

DSE4P: Research Methodology and Design (Practical) Credits 02

A Research project work on physiology/ or related health topics to be submitted based on any above tools and techniques. Formulation of the Project: meaning of scientific research and its methods, designing a project, types of project design, methods, tools and techniques, tabulation and interpretation.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:43:37; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_HONS/Physiology_Hons6.pdf

Vidyasagar University

Curriculum for B.Sc (General) in Physiology

[Choice Based Credit System]

Semester-I

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	**T**	**P**		
CC1 [DSC-1A]		**C1T:** Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism	Core Course-1	4	0	0	6	75
		C1P: Practical		0	0	4		
CC2 [DSC-2A]	TBD	**DSC-2A (other Discipline)**	Core Course-2				6	75
CC3 [DSC-3A]	TBD	**DSC-3A (other Discipline)**	Core Course-3				6	75
AECC		English	AECC (Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC =** Core Course, **TBD =** To be decided, **AECC=** Ability Enhancement Compulsory Course
DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2,**DSC-3** = Discipline Specific Core of Subject-3.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 14:02:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General).pdf

Semester-I
Core Course (CC)

CC- I : Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism **credits 06**

C1T : Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism **credits 02**

Course Contents:

- **Cellular Physiology and Biophysical Principles**

Membrane physiology: structure and functions of cell and subcelluar membranes, cytoskeletal system, cell junctions and cell adhesion molecules, Physicocemical principles and Physiological importance of : Diffusion, Osmosis, Dialysis, Ultrafiltration, Surface tension, Adsorption, Absorption, pH and buffers, Colloids. Enzymes - classification, coenzymes, factors affecting enzyme action, regulation of enzymes- feedback, covalent and allosteric. Isozymes and non-protein enzymes

- **Biochemistry and Metabolism :**

Carbohydrates **:** classification , structure and properties
Proteins **:** Classification , order of structure (elementary idea), Amino acids**:** classification and properties
Lipids : classification. Fatty acids – Classification, and properties, lipoprotein – Classification and structure
Nucleic acid – structure of DNA and RNA
Vitamins – classification and functions. *Minerals* – functions of Sodium, Potassium, Calcium, Phosphorus, Iron, Zinc, Iodine and Fluoride.
Metabolism – Glycolysis, TCA cycle, Glycogenesis, Glycogenolysis. Gluconeogenesis, Beta oxidation of saturated fatty acid, Ketone bodies – formation and significance. Deamination, Transamination. Amino acid pool, Urea cycle, vitamins in metabolism

- **Digestive System:**

Alimentary cana1 and digestive glands – Structure in relation to functions. Composition, functions and regulation of secretion of digestive juices including bile. Digestion and absorption of carbohydrate, protein and lipid. Movements of the stomach and small intestine

C1P : Practical: Fresh tissue experiments & Identification of permanent slides **credits 02**

1. **Fresh tissue experiments:**

a) Examination & staining of fresh tissue: squamous, ciliated & columnar epithelium, skeletal muscle fibre (Rat/ Goat) by Methylene blue stain.
b) Transitional epithelium, mesentery (Rat/ Goat) (counter stain by Methylene blue)
c) Staining of adipose tissue by Sudan III or IV

2. **Identification of permanent slides:**

Bone, cartilage, lung, trachea, spleen, lymph gland, liver, salivary glands, pancreas, esophagus, stomach, small intestine, large intestine, ovary, adrenal, testis, thyroid, spinal cord, cerebellum, cerebral cortex, kidney, skin, tongue.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 14:02:25; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General).pdf

Vidyasagar University

Curriculum for B. Sc (General) in Physiology

[Choice Based Credit System]

Semester-II

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC4 [DSC-1B]		Blood, body fluid and immune System, Cardiovascular System and Respiratory System.	Core Course	4	0	0	6	75
		Practical		0	0	4		
CC5 [DSC-2B]	TBD	**DSC-2B (other Discipline)**	Core Course				6	75
CC6 [DSC-3B]	TBD	**DSC-3B (other Discipline)**	Core Course				6	75
AECC		**Environmental Studies**	AECC (Elective)				4	100
Semester Total							**22**	**325**

L=Lecture, **T=**Tutorial, **P=**Practical, **CC =** Core Course, **TBD =** To be decided, **AECC=** Ability Enhancement Compulsory Course. **DSC-1** = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2, **DSC-3** = Discipline Specific Core of Subject-3.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:55:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)2.pdf

Semester-II
Core Course (CC)

DSC-1B: Blood, body fluid and immune System, Cardiovascular System and Respiratory System

Credits 06

DSC1BT: Blood, body fluid and immune System, Cardiovascular System and Respiratory System

Credits 04

Course Contents:

Blood & Body fluids:

Blood : Properties of blood, Composition, character, properties and function of blood. Plasma proteins: origin, separation and functions. Plasmapheresis. Bone marrow. Formed elements of blood. Erythrocytes :Morphology, fate and functions. Fragility of RBC. Erythropoiesis: Definition, steps of erythropoesis, role of different factors on erythropoesis. Haemoglobin**:** chemistry, biosynthesis, functions, catabolism, derivatives. Abnormal haemoglobin. Anaemia: different types, Clinical significances. Leucopoiesis. Leucocytes : staining, types and morphology, life cycles and functions. Colony Stimulating factor , Phagocytosis, Inflammation. Significances of leucocytosis and leucocytopenia. Leukaemia. Arneth counts. Schilling Index, Reticulocyte counts. Platelets: Structure, functions. Platelets reaction, Critical counts of Platelets. Significance of platelets counts. Thrombocytosis, Thrombocytopenia. Coagulation of blood: Mechanism of blood coagulation, factors affecting blood coagulations, Pro-coagulants, anticoagulants, disorder of coagulation. Fibrinolytic systems. Bleeding disorders, tests for bleeding disorders. Thrombotic disorders. Coagulation time, bleeding time, prothrombin time, hemolysis.

Blood groups - The ABO systems, The Rh systems, The MN system, Importance of blood groups, Immunological basis of identification of ABO and Rh blood groups. Cross matching, Donor and Recipient. Blood transfusion – collection and storage of bloods, Blood products, Preservation injuries, Precaution and hazards of blood transfusions. The RH system and pregnancy, Erythroblastosis foetalis. Blood volume: Normal value. Determination of blood volume. Determination of cell volume, Determination of plasma volume, variation and maintenance of blood volume. effective blood volume, factors influencing blood volume, regulation of blood volume.

Body fluids: Intracellular and extra cellular compartment of body fluids. Water : intake and excretion. Volumes of body water in different compartments and their estimation. Water balance and its regulation. Dehydration and oedema. Lymph and tissue fluids: Composition, formation, circulation , function and fate of lymph and tissue fluids.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:55:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)2.pdf

Immune System

Immune system: Overview, properties of immune system, types of immunity : innate immunity, acquired immunity, active and passive immunity. First and second line defence. Humoral and Cell mediated immunity. Complement system. Immune Competent cells : structure and functions of neutrophil, B lymphocytes, T- lymphocytes (helper, cytotoxic and suppressor), Natural killer cells, monocytes – macrophages. Primary and Secondary lymphoid organs.

Antigen and Antibody : Properties of immunogen, antigens and haptens. Classification, structure and functions of immunoglobulins. Antigen- antibody reaction, physiological effects and clinical significances. Major Histocompatibility Complex.. Brief idea of auto immunity. AIDS. Transplantation immunity.

Vaccination : Immunization- Passive and active immunozation. Immunizing agents. Vaccine. Antisera. Vaccination. Toxin and Toxoids.

Cardiovascular system:

Cardiovascular system - Anatomy and histology of the heart. Properties of cardiac muscle. Origin and propagation of cardiac impulse. Electrophysiology of cardiac tissue. Heart Block , basic idea about artificial pacemaker. Cardiac valves, Heart rate and its regulations. Heart sounds. Nerves and its role in the regulation of the heart function. Frank – Starlings law's of heart. Electrocardiography, Echocardiography,

Cardiac cycle : events. different phases and pressure changes in cardiac chamber, factors affecting and regulation. Cardiac output: methods of determination (dye dilution and Fick principle), factors affecting regulation.

Structure of arteries, arterioles, capillaries. Venules and veins. Pulse - arterial and venous. Blood pressure and its regulation and factors controlling. Baro - and Chemoreceptor. Vasomotor reflexes. Methods of measurement of blood pressure. Role of Renin- angiotensin system, Vasopressin or ADH in Blood Pressure regulations.

Peculiarities of regional circulations: Coronary, Pulmonary, Renal, Cutaneous, Hepatic and Cerebral.

Respiratory System:

Anatomy and histology of the respiratory passage and organs. Role of respiratory muscles in breathing. Compliance & elastic recoil of the lung, Lung surfactant, intra thoracic and intra pleural pressure. Respiratory failure. Artificial respiration. Significance of physiological and anatomical dead space. Lung volumes and capacities. Exchange of respiratory gases between lung and blood and between blood and

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:55:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)2.pdf

tissues. Transport of oxygen and carbon dioxide in blood. Regulation of respiration - neural and chemical. Role of respiratory centre, central and peripheral chemo-receptors.

Hypoxia, asphyxia, dyspnea, asthma, cyanosis, dysbarism,. Lung function tests. Non respiratory function of lungs.

DSC1BP: Practical **Credits 02**

Haematology:

1. Study of the compound microscope.
2. Preparation of blood film of your own blood. Staining of the blood film with Leishman's stain. Identification of different types of blood corpuscles.
3. Determination of TC of RBC and WBC by haemocytometer.
4. Differential count of WBC.
5. Determination of ESR of human blood.
6. Estimation of haemoglobin by haemoglobinometer.
7. Preparation of haemin crystals.
8. Determination of Blood groups.
9. Determination of clotting time, bleeding time, prothrombin time.
10. Determination of osmotic fragility of Red Blood Corpuscle.
11. Preparation and staining of bone marrow. Measurement of diameter of megakaryocyte.
12. Reticulocyte staining

Human Experiment:

1. Measurement of arterial blood pressure by Sphygmomanometer at rest and after exercise, Calculate the mean arterial blood pressure (MABP)
2. Measurement of heart rate and pulse rate (30 beats methods) during rest and exercise and graphical plotting.
3. Modified Harvard step test and determination of physical fitness.
4. Pneumographic recording of respiratory movements along with the effect of drinking of water, talking, laughing, coughing, exercise, hyperventilation and breathe holding.
5. **Demonstration:** Measurement of oxygen saturation by pulse oxymeter before and after exercise. Measurement of Peak Expiratory Flow Rate. Measurement of forced expiratory volume (FEV) in first second.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:55:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)2.pdf

Vidyasagar University

Curriculum for B.Sc (General) in Physiology

[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1C		**DSC1CT:** Nerve –Muscle Physiology, Nervous system, Skin and Body Temperature Regulation	Core Course	4	0	0	6	75
		- Lab		0	0	4		
DSC-2C	TBD	**DSC-2C (other Discipline)**	Core Course				6	75
DSC-3C	TBD	**DSC-3C (other Discipline)**	Core Course				6	75
SEC-1		SEC1T: Public Health and Epidemiology Or Environmental Epidemiology	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**20**	**275**

L = Lecture, **T** = Tutorial, **P** = Practical, **CC** = Core Course, **TBD** = To be decided, **SEC** = Skill Enhancement Course.

DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2,

DSC-3 = Discipline Specific Core of Subject-3.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:47:05; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)3.pdf

Semester-III

Core Course (CC)

DSC-1C (CC-3): Nerve –Muscle Physiology, Nervous system, Skin and Body Temperature Regulation Credits 06

DSC1CT: Nerve –Muscle Physiology, Nervous system, Skin and Body Temperature Regulation Credits 04

Course Contents:

Nerve-muscle Physiology

Different types of muscle and their structures. Sarcotubular system. Red and white muscles. Properties of muscle: all or none law, rheobase, chronaxie, indefatigability, beneficial effect, summation, refractory period, tetanus and fatigue. Smooth Muscle: Morphology, Single-unit and multi-unit smooth muscle. Muscle spindle. Cardiac Muscle: Morphology, Electrical Properties, Mechanical Properties Pacemaker Tissue.

Mechanism of muscular contraction. Structural, chemical and mechanical changes in skeletal muscle during contraction and relaxation. Isotonic and isometric contraction. Molecular basis of smooth muscle and cardiac muscle contraction and relaxation.

Structure and classification of nerves. Nerve cells. Excitation & Conduction. Measurment of electrical events. Degeneration and regeneration of nerve fibre. Myelination. Origin and propagation of nerve impulse. Velocity of impulse in different types of nerve fibres. Properties of nerve fibre: all or none law, rheobase, chronaxie, refractory period, indefatigability. Properties of mixed nerves. Neurotropin.

Synapse: structure , functional anatomy, classification, mechanism of synaptic transmission. Electrical Events at Synapses, Inhibition & Facilitation at Synapses. Motor unit, motor point. EPSP,IPSP.

Neuromuscular junction: structure, mechanism of impulse transmission, end plate potential. A brief overview on neurotransmitters. Electromyography.

Nervous System:

A brief outline of organization and basic functions of the nervous system - central and peripheral nervous system. Structural organization of the different parts of the brain and spinal cord. Hemi section and complete section of spinal cord. Brown- Sequard syndromes. Receptors : Definition, structure, classification, mode of action. Blocker and Stimulator. Reflexes: Introduction, Monosynaptic Reflexe, Stretch Reflex, Polysynaptic reflex. Withdrawal Reflex. General Properties of Reflexes. Reflex action - definition, classification, properties , reflex arc.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:47:05; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)3.pdf

Ascending and Descending tracts : Origin, course, terminations, and functions. Lower motor neurone and upper motor neurone. Postural reflex, Muscle spindle, Muscle tone and its regulation. Decrebrate and decorticoid rigidity.

Arousal Mechanisms, Sleep, & the Electrical Activity of the Brain - The Reticular Formation & the Reticular Activating System, The Thalamus & the Cerebral Cortex: structure & functions. The Electroencephalogram, Physiological Basis of the EEG & Sleep, Interpretation of abnormal EEG pattern.

Control of Posture & Movement - Introduction, General Principles, Basal Ganglia & Cerebellum: Structure & functions. Disorders of basal ganglia and cerebellum.

The Autonomic Nervous System - Introduction, Anatomic Organization of Autonomic Outflow, Chemical Transmission at autonomic Junctions.

Central Regulation of Visceral Function - Introduction, Hypothalamus: Anatomic Considerations, Hypothalamic Function, Relation to Autonomic Function, Relation to Sleep, Hunger, Thirst, Control of Posterior Pituitary Secretion, Control of Anterior pituitary Secretion, Temperature Regulation, fever.
Neural Basis of instinctual Behavior & Emotions - Introduction, Limbic system: Anatomic Considerations, Functions - Sexual Behavior, Fear & Rage, Motivation.

CSF: composition, formation, circulation and functions. A brief idea of speech, aphasia, memory conditioning and learning. Sleep and sleep wakefulness cycle.

Skin and Body temperature regulation:

Histological structure of skin. Colour of the skin. Organization of sweat gland. Composition and function of the sweat. Regulation of sweat secretion. Insensible and sensible perspiration. Composition and function of sebum. Triple response.
Normal body temperature. Channels of heat loss and heat gain process. Regulation of body temperature: Higher centre and mechanism of regulation. Hypothermia and Hyperthermia. Physiological basis of fever. Cold sress. Insulating effects. Acclimatization to colds.

DSC1CP: Practical **Credit 02**

Practical:

1. Isolation and Staining of nerve fibers with node(s) of Ranvier (AgNO3).
2. Staining of skeletal and cardiac muscles by Methylene Blue stain.
3. Measurement of grip strength.
4. Recording of body temperature.
5. To study the response of the skin to blunt injury (triple response) (**Demonstration)**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:47:05; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)3.pdf

Neurological experiments:

1. Experiments on superficial (plantar) and deep (knee jerk) reflex.
2. Reaction time by stick drop test.
3. Short term memory test (shape, picture word).
4. Two point discrimination test.

Demonstration:

1. Study of Kymograph, Induction coil, Key and other instruments used to study mechanical responses of skeletal muscle.
2. Kymographic recording of mechanical responses of gastrocnemius muscle to a single stimulus and two successive stimuli.
3. Kymographic recording of the effects of variations of temperature and load (after-load) on single muscle twitch.
4. Calculation of work done by the muscle.
5. Determination of nerve conduction velocity.

Skill Enhancement Course (SEC)

SEC- 1: Public Health and Epidemiology Credits 02

SEC1T: Public Health and Epidemiology

Course Contents:

Unit I: Principles of Epidemiology in Public Health: Overview of epidemiology methods used in research studies to address disease patterns in community and clinic-based populations, distribution and determinants of health-related states or events in specific populations, and strategies to control health problems

Unit II: Statistical Methods for Health Science Analysis and interpretation of data including data cleaning, data file construction and management; implementation of analytic strategies appropriate for the type of data, study design and research hypothesis; parametric and nonparametric methods, measures of association, Linear and Logistic regression, Generalized Linear Modeling, and Survival analysis

Unit III:
Environmental Health. Effects of biological, chemical, and physical agents in environment on health (water, air, food and land resources); ecological model of population health; current legal framework, policies, and practices associated with environmental health and intended to improve public health.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:47:05; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)3.pdf

Unit IV: Psychological, Behavioural, and Social Issues in Public Health. Cultural, social, behavioural, psychological and economic factors that influence health and illness; behavioural science theory and methods for understanding and resolving public health problems; assess knowledge, attitudes, behaviours towards disease and patient compliance to treatment.

Unit V: Management of Health Care Program and Service Organizations Techniques and procedures for monitoring achievement of a program's objectives, generating evidence of program effectiveness, assessing impacts in public health settings; evaluation of framework that leads to evidence-based decision-making in public health. Organizational principles and practices including organizational theory, managerial role, managing groups, work design, and organization design at primary, secondary, and tertiary levels of care

Unit VI: Epidemiology of disease. Contemporary methods for surveillance, assessment, prevention, and control of infectious and chronic diseases, disabilities, HIV/AIDS; understanding etiology; determining change in trend over time; implementation of control measures

Suggested Readings:

1. Gordis Leon. Epidemiology (Fifth edition) , Elsevier Saunders.
2. Dona Schneider and David E. Lilienfeld. Lilienfeld's Foundations of Epidemiology, Fourth Edition, Oxford University Press, USA.
3. Porta Miquel. A Dictionary of Epidemiology, Oxford University Press, USA,
4. Somerville Margaret, et al., Public Health and Epidemiology at a Glance, Second Edition, Wiley-Blackwell,
5. Beaglehole. R. Bonita, et. al Basic Epidemiology, 2nd Edition, WHO Publication, Geneva, .
6. Spassoff R.A. Epidemiologic Methods for Health Policy, Oxford University Press,
7. Barkar, D.J.P., Practical Epidemiology: Churchill pub, Livingstone.
8. Knox E. G. Epidemiology in health care planning: A Guide to the Uses of a Scientific Method, Oxford University Press, USA.

Or

SEC-1: Environmental Epidemiology Credits 02

SEC1T: Environmental Epidemiology

Course Contents:

UNIT-I:
Introduction, Definitions, man - environment relation, terms, Historical Background- brief history of social reforms. Branches – Descriptive, research, bio- statistical, economic, Methodological and Administrative.

UNIT-II:

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:47:05; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)3.pdf

Principles- an epidemic and ingredients - and types of studies – Descriptive, analytical- cohort, case- control and cross sectional an biological studies.

UNIT-III:

Causes – Koch postulates. Immunological proof- cancers and slow viruses- Hills criteria- emergence of new diseases-and effect modifications. Diseases of plants and animals - extinct and endangered animals - causes and effects - Measurements and statistical associations –prevalence rate – incidence rate - Cumulative incidence rate-Mortality rate- Mean and standard error–risk ratio, attributable ratio - simple problems.

UNIT-IV:

Types of sampling - simple random sampling; stratified sampling; systematic sampling; multi stage sampling; cluster sampling.

Methods in Field study – questionnaire preparation; Data analysis; Report writing.

UNIT –VI:

Environmental hazards and Public health management: Sources of Environmental hazards, hazard identification and accounting, fate of toxic and persistent substances in the environment, dose response, evaluation, exposure assessment. Pollution: Air, water, noise pollution sources and effects. Waste management and hazards: Types and characteristics of wastes, biomedical waste handling and disposal, nuclear waste handling and disposal, Waste from thermal power plants. Case histories on Bhopal gas tragedy, Chernobyl disaster, Seveso disaster and Three Mile Island accident and their aftermath. Diseases: Social and economic factors of disease including role of health services and other organizations: Infectious (Bacterial-Tuberculosis, Typhoid; Viral - AIDS, Poliomyelitis, Hepatitis; Protozoan- Leishmaniasis, Malaria); Lifestyle and Inherited/genetic diseases, Immunological diseases; Cancer; Diseases impacting on Western versus developing societies.

Suggested Readings:

1. Anisa Basheer, Environmental Epidemiology, Pointer Pub .
2. R.Beaglehole, R. Bonita & T. Kjellstrom Epidemiology WHO Publ., Current edition .
3. Epidemiology of Occupational Health, WHO publication.
4. Rose, G. The Strategy of Preventive Medicine, Oxford pres.
5. Gordis Leon. Epidemiology (Fifth edition) , Elsevier Saunders.
6. Porta Miquel. A Dictionary of Epidemiology, Oxford University Press, USA,
7. Somerville Margaret, et al., Public Health and Epidemiology at a Glance, Second Edition, Wiley-Blackwell,
8. Spassoff R.A. Epidemiologic Methods for Health Policy, Oxford University Press,
9. Knox E. G. Epidemiology in health care planning: A Guide to the Uses of a Scientific Method, Oxford University Press, USA.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:47:05; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)3.pdf

Vidyasagar University

Curriculum for B.Sc (General) in Physiology

[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1D		**DSC1DT:** Sensory Physiology, Endocrine and Reproductive System, Renal Physiology	Core Course	4	0	0	6	75
		- Lab		0	0	4		
DSC-2D	TBD	**DSC-2C (other Discipline)**	Core Course				6	75
DSC-3D	TBD	**DSC-3C (other Discipline)**	Core Course				6	75
SEC-2		**SEC-2:** Biochemical Techniques **Or** Medical Diagnostics **Or** Instrumentation Techniques in Biology	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							**20**	**275**

L = Lecture, **T** = Tutorial, **P** = Practical, **CC** = Core Course, **TBD** = To be decided, **SEC** = Skill Enhancement Course.

DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2,

DSC-3 = Discipline Specific Core of Subject-3.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:45:01; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)4.pdf

Semester-IV
Core Course (CC)

DSC-1D (CC-4): Sensory Physiology, Endocrinology and Reproductive Physiology, Renal Physiology Credit 06

DSC1DT: Sensory Physiology, Endocrine and Reproductive System, Renal Physiology

Credit 04

Course Contents:

Sensory Physiology

Classification of general and special senses and their receptors. Muller's law of specific nerve energetic. Weber – Fechner Law, Mechanism of transduction of stimuli from sensory receptors. Adaptation of receptors. Receptors as biological transducer. Neural pathway of touch, pressure, pain, thermal and kinaesthetic sensation.

Olfaction and Gustation: Structure of sensory organ, neural pathway of olfactory and gustatory sensation. Physiology of olfactory and gustatory sensation. Olfactory and gustatory adaptation. After-taste.Olfactometer.

Audition & Equilibrium: Sound wave, decibel**,** Structure of ear ,anatomic consideration, Auditory apparatus- external, middle and internal ears. Organ of Corti. Mechanism of hearing and its modern theory. Vestibular function. Discrimination of sound frequency and loudness. Auditory pathways and centres.

Vision: Structure of the eye anatomic consideration.. Structure of the lens. Error of refraction. Pupilary reflex, Light reflex. Argyll Robertson pupil. Histology of retina. Photopic and Scotopic vision. Chemical changes in retina on exposure to light. Genesis of electrical response, Visual pathway and effects of lesions of these pathways. Light reflex. Accommodation and Visual acuity. Errors of refraction. Positive and negative after-image. Light and dark adaptation. Colour vision and colour blindness. Errors in visual processes. Electroretinogram, Visual Field, Perimetry, Binocular vision.

Endocrinology:

Anatomy of endocrine system. Hormones - classification. Experimental and clinical methods of study of endocrine glands. Hormone receptor and cell signalling. Mechanism and modern concepts of hormone action. Basic concept of regulation of hormone actions. Positive and negative feedback mechanism.

Hypothalamo - Hypophysial axis: Basic concept of neurohormone. Hypothalamo-hypophyseal tract and portal system. Releasing factors, Tropic hormones, vascular and neural connections

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:45:01; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)4.pdf

between the hypothalamus and pituitary.

Pituitary gland: Histological structure, hormones, functions and regulation of anterior, middle and posterior lobes of pituitary. Growth hormone. Oxytocin and Vasopressin. Hypo and hyperactive states of pituitary gland.

Thyroid gland: Histological structure. Thyroid hormone: chemistry, biosynthesis, storage and transport. Functions of thyroid hormones (T_4 T_3) Thyrocalcitonin. Hypo and hyper-active states of thyroid.Regulation of thyroid hormone secretion.

Parathyroid gland: Histological structure, functions of parathyroid hormone. Role in calcium metabolism, Parathyroid hormone and bone. Tetany. Calcitonin- source, function and regulations.

Adrenal Cortex: Histological structure and functions of different hormones. Biosynthesis of adrenocortical hormone. Hypo and hyper-active states of adrenal cortex.

Adrenal Medulla: Histological structure, regulation and hormonal functions of adrenal medulla. Pheochromocytoma.

Pancreas: Histological structure of panchreatic islets. Source, regulation, mode of action and function of pancreatic hormones.Diabetes mellitus.

Brief idea of the origin and functions of renin- angiotensin, prostaglandins. Erythropoietin and melatonin. Gastrointestinal hormones- physiological functions. The endocrine function of the heart : Atrial Natriuretic Peptide and its function.

Reproductive Physiology:
Primary and secondary sex organs: Anatomy and Physiology, secondary sex characters. Puberty, Precocious & Delayed Puberty.

Testis: histology, spermatogenesis, spermiogenesis, testicular hormones and their functions, Abnormalities of the testicular function. Prostate and seminal vesicle.

Ovary: histology, oogenesis, ovarian hormones and their functions. Control of ovarian functions. Physiological mechanism of ovulation. Abnormalities of ovarian functions. Ovarian cysts.

Oestrus and menstrual cycles and their hormonal control. Fertilization, implantation and structure and functions of placenta. Placental hormone. Pregnancy : Physiological changes during pregnancy. Maintenance of pregnancy – role of hormones. Pregnancy tests, Parturation, ectopic pregnancy. Development of mammary gland. Lactation - Role of hormones, Sympathetic nervous system. Menopause. Stem cell biology.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:45:01; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)4.pdf

Renal Physiology:

Structure and functions of kidney. Microanatomy of a nephron. Juxtaglomerular apparatous.Mechanism of formation of urine. Counter current system, counter current multiplier. Function of Malpighian corpuscles and renal tubule. Normal and abnormal constituents of urine and their clinical significances. Renal threshold. Physiology of urine storage and micturation.Non excretory function of kidney. Disorders of Renal Functions. Renal stone formation. Renal function tests. Dialysis and Artificial kidney.

DSC1DP: Practical **Credits 02**

1. Staining and identification of kidney and ureters.
2. Silver nitrate preparation of corneal cell space.
3. Study of estrous cycle.
4. Identification of normal and abnormal constituents of urine.
5. Tests for Urinary deposits.
6. Estimation of albumin in urine.
7. Detection of specific gravity of urine.
8. Determination of visual acuity by Snellen's chart / Landolt's chart.
9. Determination of colour blindness by Ishihara chart.
10. Exploration of conductive and perceptive deafness by tuning fork method.
11. Sperm count and sperm motility in rat.

Demonstration:

1. Study of the effects of oxytocin on uterine contraction.
2. Study of the effects of adrenaline on intestinal / uterine movements.
3. Estimation of estrogen by Spectrophotometric method.
4. Pregnancy test from human urine by kit method.
5. Quantitative estimation of Urea in Urine
6. Surgical techniques: principles of surgery in endocrinology. Ovarectomy, hysterectorny, castration and vasectomy in rats.
12. Human vaginal exfoliate cytology.

Skill Enhancement Course (SEC)

SEC-2: Biochemical Techniques **Credits 02**

SEC2T: Biochemical Techniques

Course Contents:

Unit-I: Spectroscopic Techniques

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:45:01; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)4.pdf

Principle of UV- Visible absorption spectrophotometry, instrumentation and applications. Flourimetry: Phenomena of fluorescence, intrinsic and extrinsic fluorescence, instrumentation and applications

Unit-II: Chromatography

Basic principles of chromatography: Partition coefficient, concept of theoretical plates, various modes of chromatography (paper, thin layer, column), preparative and analytical applications, LPLC and HPLC. Principle and applications of: Paper Chromatography, Thin Layer Chromatography. Molecular Sieve Chromatography, Ion Exchange Chromatography, Affinity Chromatography

Unit-III: Electrophoresis

Basic principle of electrophoresis, Paper electrophoresis, Gel electrophoresis, discontinuous gel electrophoresis, PAGE, SDS-PAGE, Native and denaturing gels. Agarose gel electrophoresis, buffer systems in electrophoresis. Electrophoresis of proteins and nucleic acids, protein and nucleic acid blotting, detection and identification. Molecular weight determination, Isoelectric Focusing of proteins

Unit-IV: Centrifugation

Principle of centrifugation, basic rules of sedimentation, sedimentation coefficient, various types of centrifuges, different types of rotors, differential centrifugation, density gradient centrifugation (Rate zonal and Isopycnic)

Suggested Readings:

1. Human Molecular Genetics, 3rd edition (2003), Tom Strachan and Andrew Read; Garland Science Publishers.
2. Physical Biochemistry: Applications to Biochemistry and Molecular Biology, 2nd edition (1982), David Freifelder, W.H. Freeman and Company.
3. Principles and Techniques of Biochemistry and Molecular Biology 7th edition (2010), Wilson K and Walker J. Cambridge University Press, 2010.
4. Principles of Gene Manipulation and Genomics, 7th edition (2006), S.B. Primrose and R.M.
   Twyman. Blackwell Scientific
5. Molecular Biotechnology: Principles and Applications of Recombinant DNA, 4th edition (2009), Bernard R. Glick, Jack J. Paternack, Cheryl I. Patten. ASM press,
6. Molecular Cloning: A Laboratory Manual, 4th edition (2012), Three-volume set by Michael
   R. Green, Joseph Sambrook; Cold Spring Harbor Laboratory Press,
7. Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications, 6th edition (2010),

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:45:01; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)4.pdf

Or

SEC-2: Medical Diagnostics Credits 02

SEC2T: Medical Diagnostics

Course Contents:

Unit-1: Biomedical basis of Diseases

Infectious diseases (Bacterial, Viral, Protozoan); Inherited/genetic diseases (Diabetes, Hypertension); Immunological diseases [Autoimmune hemolytic anemia (AHA), Di George's Syndrome, Systemic Lupus Erythematosus (SLE)]; Cancer- Nature/ types; Treatment, Relation of pathogenesis to symptoms, diagnosis and treatment.

Unit-II: Analytical Technology

Brief and relevant description of the following Wet techniques: UV Chromatography Methods-LC, HPLC and GC-MS Nuclear Magnetic Resonance Spectroscopy (NMR) Atomic Force and Scanning Electron Microscopy (AFM and SEM) Electrochemistry Molecular Modeling and Chemical Databases

Unit-III: Diagnostic Methods

Outline methods used in hospital histopathology, biochemistry, hematology and microbiology laboratories. Theoretical knowledge - ECG, Echo, X-ray, CT, MRI, PET, Ultrasonography.

Suggested Readings

1. Bailey and Scott's Diagnostic Microbiology, 12th edition (2007), Betty A. Forbes, Daniel,F. Sahm and Alice S. Weissfeld; Mosby Elsevier Publishers.
2. Medical Laboratory Technology Methods and Interpretations Volume 1 and 2, 6th edition (2009), Ramnik Sood; Jaypee Brothers Medical Publishers.
3. Current Protocols in Human Genetics, 1st edition (1994), Dracopoli and Nicolas C. Dracopoli; John Wiley and Sons, Inc.,
4. Molecular Cloning: A Laboratory Manual, 4th edition (2012), Michael R. Green and Joseph Sambrook; Cold Spring Harbor Laboratory Press,
5. Microbiology: A Laboratory Manual, 10th edition (2013), James Cappuccino and Natalie Sherman, Benjamin Cummings,

Or

SEC-2: Instrumentation Techniques in Biology Credits 02

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:45:01; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)4.pdf

SEC2T: Instrumentation Techniques in Biology

Course Contents:

Unit-I: Basics of Microscopy-Features, Working principle, Advantages and limitations - Introduction- Bright field Microscopy - Dark Field Microscopy, Light microscopy-Construction and working of compound microscope - Phase contrast microscopy - Electron microscopy-TEM, SEM

Unit-II: Staining methods - Simple staining; Gram staining - Lacto-phenol cotton blue staining

Unit-III: Optical Methods - Features, Working principle, Advantages and Limitations **-** Absorption Methods; Ultraviolet Spectrophotometer; Infrared spectrophotometer **-** Emission methods; Atomic Absorption Spectrophotometer (AAS) Flame Photometry

Unit-IV: Chromatography methods - Features, Working principle, Advantages and Imitations High performance liquid chromatography (HPL Gas Chromatography

Unit-V: Biotechnology and Immunological techniques- Features, Working principle, Advantages and limitations - Electrophoresis –Introduction, Types of electrophoresis, Agarose gel electrophoresis, Gradient gel electrophoresis, DNA finger printing PCR Technique ELISA (Enzyme Linked Immuno Sorbant Assay)

Suggested Readings:

1. A. R. Murugesan and C. Rajakumari, Environmental Science and biotechnology-Theory and Techniques, MJP Publishers.
2. M. L. Srivastava, Bioanalytical Techniques, Narosa Publishing House.
3. R.Gopalan, P.S.Subramanian and K.Rangarajan, Elements of Analytical Chemistry, Sultan Chand and Sons.
4. S.Sadasivam and A. Manicham, Biochemical methods, New Age International Publishers.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:45:01; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)4.pdf

Vidyasagar University

Curriculum for B. Sc (General) in Physiology [Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1A		Any one from Discipline-1(Physiology) **DSE1T:** Sports Physiology, Work Physiology and Ergonomics **Or** Environmental Physiology **Or** Community Nutrition and Public Health **Or** Biostatistics	Core Course	4	0	0	6	75
		DSE1P: Sports Physiology, Work Physiology and Ergonomics(Pr) **Or** Environmental Physiology(Pr) **Or** Community Nutrition and Public Health(Pr) **Or** Biostatistics(Pr)		0	0	4		
DSE-2A	TBD	Other Discipline (Any one from Discipline-2)/TBD	Core Course	5-1-0/4-0-4			6	75
DSE-3A	TBD	Other Discipline (Any one from Discipline-3)/TBD		5-1-0/4-0-4			6	75
SEC-3		**SEC3T:** Maternal and Child Nutrition **Or** Nutrition and Fitness	Skill Enhancement Course-3	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE=** Discipline Specific Electives**, SEC=** Skill Enhancement Course, **TBD** = To be decided.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

Discipline Specific Electives (DSE)

DSE-1A: Sports Physiology, Work Physiology and Ergonomics
Or
DSE-1A: Environmental Physiology
Or
DSE-1A: Community Nutrition and Public Health
Or
DSE-1A: Biostatistics

Skill Enhancement Course (SEC)

SEC-3: Maternal and Child Nutrition
Or
SEC-3: Nutrition and Fitness

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

Semester-V

Discipline Specific Electives (DSE)

DSE -1A: Sports Physiology, Work Physiology and Ergonomics Credits 06

DSE1AT: Sports Physiology, Work Physiology and Ergonomics Credits 04

Course Contents:

Sports & work Physiology: Concepts of Physical work and Physiological work. Physical work: Definition and units of measurement. Classification of Physical work. Classification of workloads. Differences between work and sports. Energetic of muscular works. Measurement of energy cost for various Physical Work. Cardiovascular and respiratory changes during graded exercise. Aerobic and anaerobic capacity. Maximum aerobic power.
Exercise Physiology. Exercise & Performance. Exercise Physiology & Gender. Environmental Exercise Physiology. Maximal oxygen consumption and post exercise oxygen consumption – definition, factors affecting, measurement and significance. Muscle fatigue and recovery. Tests for Physical work capacity – measurement with Bicycle Ergo meter, Tread Mill and Harvard Step Test. Work rest cycle and importance of rest pause.
Physical Training: General Principles and different methods. Effects of overtraining and detraining. Nutrition in sports – neutrient and caloric requirements for different kinds of sports. Sports injury and its management. Sports rehabilitation and sports medicine. Role of sports in emotion and social factors. Basic concepts of sports psychology. Sports Biochemistry. Ergogenic aids. Ergogenic aids & Dietary supplement.

Ergonomic – Basic concepts and its application in industry to improve efficiency. Ergonomics-importance of ergonomics in occupational health and well beings. Physical work environment. Occupational hazards- Physical, Biochemical Hazards. Occupation diseases – Silicosis, Asbestosis, Farmer's Lung. Industrial safety.

Anthropometry: Anthropometry and its implication in general. Different body dimension measures in anthropometry and their significances. Sports Anthropometry.

DSE1AP: Sports Physiology, Work Physiology and Ergonomics (Practical) Credits 02

List of Practical

1. Measurements of resting and working heart rate using thirty beats and ten beats methods respectively.
2. Measurement of blood pressure before and after different graded exercise.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

3. Determination of Physical Fitness Index (PFI) of an individual and recording of recovery heart rate after standard exercise.
4. Determine cardiac cost of specific work.
5. Determination of $VO_{2\,max}$ by Queen College step test.
6. Determination of endurance time by hand grip dyanometer.
7. Six minutes walk tests.
8. Measurement of some common anthropometric parameters – stature, weight, eye height(standing), shoulder height, sitting height, knee height (sitting), arm reach from wall, mid – arm circumference, waist circumference, hip circumference, neck circumference, head circumference, chest circumference.
9. Determination of body surface area (using a nomogram) and Body Mass Index (BMI) for an anthropometric measurement.
10. Measurement of body fat percentage.

Or

DSE-1A: Environmental Physiology — Credits 06

DSE1AT: Environmental Physiology — Credits 04

Course contents:

Ecosystem – structure and function, different types of ecosystem, food chains, food webs and energy flow and mineral cycling in ecosystems; primary production and decomposition , Biogeochemical cycle. Global environmental problems: global climate change, ozone layer depletion, the green house effect, global warming and its consequences.

Environment – Physical and biological aspects. Effects of exposure to hot and cold environment. Acclimatization to hot and cold environment. Heat disorders and its preventive measures. Effects of hypobaric and hyperbaric environment. Caisson disease. Mountain sickness. Acclimatization to high altitudes. Preventive measure for hypobaric and hyperbaric effects. Physiological effects and preventive measures against G force, noise, vibration and radiation. Types of pollutants (Primary, secondary and tertiary).

Environmental Pollutions and Health Hazards: Concept of hygiene, health and public health. Air, water, food borne diseases: causes, symptoms and control. Food Additives and Adulterants: definition, examples and human health hazards. Vector Borne Epidemic Diseases: Malaria and Plague- aetiology and control.

Air Pollution: definition, sources, air pollutants, effects of air pollution on human health. Water Pollution: definition, types, health hazards, water pollutants, biochemical oxygen demand (BOD), thermal pollution, concept of safe drinking water standards. Soil Pollution: causes, health hazards, solid waste management, bioremediation, phyto-remediation. Sound Pollution: definition, concept of noise, source of sound pollution, effects of sound pollution on human health, noise index (noise standards). Radionuclide Pollution: ionizing radiations, effects of ionizing radiation on human health, permissible doses. Source, health problems and preventions

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

of Bio- medical waste. Environment and Health impacts assessment – Concept, Steps and application. Brief idea about biotransformation, bioaccumulation, biomagnifications. Population over growth and its effects on health. Xenobiotics. Impacts of green house effects in life. Human health, permissible doses.

Environmental management: Environmental ethics. Conservation of topsoil, ground water and wild lives; rain water harvesting; sanctuary, national park, biosphere reserve, wildlife (conservation) Act, 1992.

DSE1AP: Environmental Physiology (Practical) **Credits 02**

Practical:

A:

1. Measurement of environmental temperature – dry bulb and wet bulb, relative humidity, air velocity.
2. Determination of O_2,CO_2, BOD & COD
3. Determination of total alkalinity and chlorine in water.
4. Determination of dissolve oxygen in the supplied water samples-supplied water, ground water extracted by shallow and deep tube wells, stream waters, pond water etc.
5. Detection of food additives in different food samples.
6. Biochemical estimation of serum glucose, total proteins, SGPT and SGOT
7. Detection of food additives in different food samples.
8. Determination of light intensity (at library, laboratory, and class room) by lux meter.
9. Determination of sound levels by sound level meter and noise index.

B:

Physiological (experimental) Experiments (Demonstration)

1. Kymographic recording of the effects of Hg, Pb , As compounds and food additives on the movements of perfused heart of toad.

2. Kymographic recordind of the effects of Hg, Pb , As compounds and food additives on the intestinal movements of rats in Dale's bath.

C: Histo - chemical Experiments (Demonstration)

Histochemical studies: chronic effects of food additives and arsenic compounds on liver, kidney, intestine, brain, muscle and lung tissues in rat.

Or

DSE-1A: Community Nutrition and Public Health Credits 06

DSE1AT: Community Nutrition and Public Health **Credits 04**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

Course contents:

Population, society, community and community health: concepts. Nutrition - introduction. Food as source of nutrients, functions of food, definition of nutrition, Nutrients & energy. Adequate, optimum & good nutrition. Malnutrition and under nutrition, Over nutrition. Human Nutrition- Principle, Interrelationship between nutrition, health& diseases. Visible symptoms of good health. Nutrition - fitness, athletics & sports.

Food guide - Basic food groups. Use of food guide (according to R.D.A.). Use of food in body - digestion, absorption, transport & utilization. ACU- concept.

Balanced diet. Diet Survey – Principles. Composition and nutritional value of common Indian food stuff - rice, wheat, pulses, egg, meat, fish and milk. Dietary fibres - role of fibers in human nutrition. Calorie requirement. Vitamins and Minerals. Malnutrition and under nutrition.
Principles of formulation of balanced diets for growing child, adult man and woman, pregnant and lactating woman. Diet management of obese, diabetic, hypertensive person and athlete. Basic idea on PCM, marasmus, kwashiorkor and their prevention. Iron and Iodine deficiency. Recommended dietary allowances, malnutrition and chronic energy, LBW, PEM, Xerophthalmia, micronutrient disorders. Physiology of starvation and obesity. Food toxicity. Effect of processing on nutritive values of foods.
Socio ecology of nutrition, Habitual diets in India and their adequacy. Nutritional assessment of human and community. Malnutrition in a community. National nutritional related health program.

Epidemiology : Concepts. Public health and public health issues: Basic ideas.Etiology, epidemiology and prevention of malaria, dengue, filarial, hepatitis, AIDS, nutritional anemia, atherosclerotic disorders. Cause and management of thalassemia, gout, obesity, endemic goiter, dental carries.

Population problem – principles and methods of family planning and Assisted Reproductive Technology. Sound pollution as a community health issue; definition, concept of noise, source of extraordinary sound, effects of sound pollution on human health, noise index (noise standards).

DSE1AP: Community Nutrition and Public Health (Practical) Credits 02

Practical:

1. Quantitative estimation of glucose, sucrose by Benedict’s method.
2. Estimation of lactose from milk by Benedict’s methods.
3. Estimation of Chloride by Mohr’s methods.
4. Estimation of amino nitrogen through formol titration methods.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

5. Qualitative analysis of pulse, rice, milk to test the presence of carbohydrates, protein, fat.
6. Qualitative identification of lipids and cholesterol.
7. Qualitative assessment of noise by sound level meter.

Field Survey Report:

1. Survey on the status of dietary intake in the surrounding area through visits, etc.

Or

2. Diet survey report of a family (as per ICMR specification). Each student has to submit a report on his/her own family. [Report should be as per ICMR specification. Report should be hand written].
3. A report (hand-written) on the basis of field survey from one of the followings:
   (1) Physiological parameters of human (at least three parameters).
   (2) Anthropometric measurements on human (at least three parameters).

Or

DSE-1A: Biostatistics — Credits 06

DSE1AT: Biostatistics — Credits 04

Course Contents:

Scope of statistics– utility and misuse. Principles of statistical analysis of biological data. Basic concepts –variable. Population and Sampling -- parameter, statistic. Presentation of data frequency distribution, frequency polygon, histogram, bar diagram and pie diagram. Different classes of statistics-mean, median, mode, mean deviation, variance, standard deviation, standard error of the mean, Standard score. Degrees of freedom, Probability. Normal distribution. Student's t- distribution. Testing of hypothesis-Null hypothesis, errors of inference, levels of significance, t- test and z score for significance of difference. Distribution-free test - Chi-square test. Linear correlation and linear regression

DSE1AP: Biostatistics (Practical) — Credits 02

Practical:

1. Computation of mean, median, mode, standard deviation and standard error of the mean with physiological data like body temperature, pulse rate, respiratory rate, height and weight of human subjects.

2. Graphical representation of data in frequency polygon and histogram.

3. Student's t test for significance of difference between means.

4. Demonstration: Statistical analysis and graphical representation of biological data with computer application program (Microsoft Excel).

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

Skill Enhancement Course (SEC)

SEC- 3: Maternal and Child Nutrition — Credits 02

SEC3T: Maternal and Child Nutrition

Course Contents:

Unit - I

• Nutritional needs during pregnancy, common disorders of pregnancy (Anaemia, HIV infection, Pregnancy induced hypertension), relationship between maternal diet and birth outcome.
• Maternal health and nutritional status, maternal mortality and issues relating to maternal health.

Unit - II

• Nutritional needs of nursing mothers and infants, determinants of birth weight and consequences of low birth weight, Breastfeeding biology, Breastfeeding support and counselling

Unit - III

• Infant and young child feeding and care - Current feeding practices and nutritional concerns, guidelines for infant and young child feeding, Breast feeding, weaning and complementary feeding.
• Assessment and management of moderate and severe malnutrition among children, Micronutrient malnutrition among preschool children
• Child health and morbidity, neonatal, infant and child mortality, IMR, U5MR and MMR; link between mortality and malnutrition;

Unit - IV

Overview of maternal and child nutrition policies and programmes.

Or

SEC-3: Nutrition and Fitness — Credits 02

SEC3T: Nutrition and Fitness

Course Contents:

Unit -1: Understanding Fitness

- Definition of fitness, health and related terms
- Assessment of fitness
- Approaches for keeping fit

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

Unit- 2: Importance of nutrition

- Role of nutrition in fitness
- Nutritional guidelines for health and fitness
- Nutritional supplements

Unit -3: Importance of Physical activity

- Importance and benefits of physical activity
- Physical Activity – frequency, intensity, time and type with examples
- Physical Activity Guidelines and physical activity pyramid

Unit - 4: Weight Management

- Assessment, etiology, health complications of overweight and obesity
- Diet and exercise for weight management
- Fad diets
- Principles of planning weight reducing diets

****

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:42:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)5.pdf

Vidyasagar University

Curriculum for B. Sc (General) in Physiology [Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1B		Any one from Discipline-1(Physiology) **DSE1BT**:Microbiology, Immunity and Biotechnology **Or** Developmental aspects of embryo and foetus **Or** Clinical Biochemistry **Or** Clinical Hematology	Core Course	4	0	0	6	75
		DSE1BP: Microbiology, Immunityand Biotechnology (Pr) **Or** Developmental aspects of embryo and foetus(Pr) **Or** Clinical Biochemistry (Pr) **Or** Clinical Hematology **(**Pr**)**		0	0	4		
DSE-2B	TBD	Other Discipline (Any one from Discipline-2)/TBD	Core Course	5-1-0/4-0-4			6	75
DSE-3B	TBD	Other Discipline (Any one from Discipline-3)/TBD		5-1-0/4-0-4			6	75
SEC-4		**SEC4T:**Environmental Surveillance **Or** Health Psychology, Physiology of stress and Stress Management **Or** Pharmacology and Toxicology	Skill Enhancement Course-4	1-1-0/1-0-2			2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE=** Discipline Specific Electives**, SEC=** Skill Enhancement Course, **TBD** = To be decided.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

Discipline Specific Electives (DSE)

DSE-1B: Microbiology, Immunity and Biotechnology
Or
DSE-1B: Developmental aspects of embryo and foetus
Or
DSE-1B: Clinical Biochemistry
Or
DSE-1B: Clinical Hematology

Skill Enhancement Course (SEC)

SEC-4: Environmental Surveillance
Or
SEC-4: Health Psychology, Physiology of stress and Stress Management
Or
SEC-4: Pharmacology and Toxicology

Semester-VI

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

Discipline Specific Electives (DSE)

DSE-1B: Microbiology, Immunity and Biotechnology — Credits 06

DSE1BT: Microbiology, Immunity and Biotechnology — Credits 04

Course Contents:

Microbiology:

Viruses: DNA & RNA Viruses. Viroids and Prions. Bacteriophages – structure & morphological classification. Bacteria: structure, classification. Staining :- Principal, procedure, uses. Gram stain, Acid – fast stain, Albert stain. Pathogenic and non - pathogenic bacteria. Nutritional requirements of bacteria, nutritional types culture media. Bacterial Growth curve- Preparation, physiological factors required for growth. Bacrterial metabolism: fermentation (ethanol, lactic acid, acetic acid), glyoxalate cycle, Entner – Doudoroff pathway, Phosphoketolase pathway. Bacterial Genetics: elementary idea of transformation, conjugation and transduction. Sterilization, disinfection and pasteurization: Physical and chemical methods used. Antibiotics, Bacteriostatic & Bacteriocidal agents. Bacteriolytic agents. Concepts of antiseptic, probiotics and prebiotics. Basic idea about medical bacteriology, virology and mycology.

Immunity and Vaccination: Elementary knowledge of innate and acquired immunity. Humoral and Cell mediated immunity. Toxin and toxoids. Vaccination : Principles and importance. Passive and active immunisation. Types and uses of vaccine.

Biotechnology: History and importance. DNA and RNA. Gene, Genome and Genetic code, translation. Recombinant DNA technology : concepts, techniques and application., DNA manipulation. Cloning – concept and significances. Cloning vectors. c DNA libraries. DNA sequencing. Basic concepts of Southern, Northern, Western blot techniques and DNA micro array. Polymerase Chain Reaction (PCR). RT-PCR- Basic concepts. Enzyme immobilization: basic concepts. Tissue culture – basic concepts. Human genome projects. Transgenic animals. Hybridoma techniques- Basic concepts. Monoclonal antibody. Protein interaction technology. DNA technology and gene therapy. DNA technology in diseases diagnosis. Genetic Barcode.
Fermentation technology: Fermentation, types, bioreactors, Upstream and downstream processing. Physiology and biotechnology process.
Bio-pesticides, bio plastics, biosensors, biochips: concepts and significances. Bio-safety and intellectual property Rights. Genomics and Proteomics.

DSE1BP: Microbiology, Immunity and Biotechnology (Practical) — Credits 02

Practical

1. Study disinfection and sterilization techniques.
2. Culture procedure and isolation of bacteria.
3. Gram staining techniques of bacteria. Acid- fast staining of bacteria. Spore Staining.
4. Isolation of DNA from blood.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

5. Separation of DNA by agarose gel electrophoresis. Extraction of DNA from agarose gel.
6. Prepare SDS-PAGE for protein.
7. Perform immunodiffusion by Ouchterlony methods.
8. Biochemical characterization of microorganisms (**Demonstration**).
9. DNA and Protein quantification (**Demonstration**)
10. Analysis of DNA sequences (**Demonstration**).
11. Application of PCR (**Demonstration**).
12. Prepare ELISA (**Demonstration**).
13. Perform Immunoprecipitation (**Demonstration**).

Or

DSE-1B: Developmental aspects of embryo — Credits 06

DSE1B T: Developmental aspects of embryo — Credits 04

Course Structure:

Theoretical concepts:

General concepts of reproductive system. Stem cell : Characteristics and applications.
Gametogenesis: Spermatogenesis and Oogenesis. Sperm and Ovum of mammals: ultra structure. Egg membrane. Fertilization in mammals.
Cleavage: Cleavage plane, types, role of yolk in cleavage; Cleavage process in mammals.
Blastula formation : Mammals. Morphogenetic movements : types and examples.
Gastrulation : Mammals general concepts of induction, determination and differentiation.
Organogenesis : Development of eye as an example of reciprocal and repeated inductive events.

DSE1BP: Developmental aspects of embryo (Practical) — Credits 02

List of Practical

1. Hematoxylin and Eosin staining of testicular, ovarian tissue sections.
2. Identification of spermatocytes, spermatids, Graafian follicle, Corpus Luteum.
3. Demonstration of preserved mammalian embryo.

Or

DSE-1B: Clinical Biochemistry — Credits 06

DSE1BT: Clinical Biochemistry — Credits 04

Course Contents:

Unit 1: Introduction: Organization of clinical laboratory, Introduction to instrumentation and automation in clinical biochemistry laboratories safety regulations and first aid. General

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

comments on specimen collection, types of specimen for biochemical analysis. Precision, accuracy, quality control, precautions and limitations.

Unit 2: Evaluation of biochemical changes in diseases: Basic hepatic, renal and cardiovascular physiology. Biochemical symptoms associated with disease and their evaluation. Diagnostic biochemical profile. Pathophysiological significances of glucose, serum protein,albumin, urea, creatinine, uric acids, ketone bodies.Pathophysiological significances of following enzymes : Lactate dehydrogenase, Creatinine kinase, Amylase, Acid and alkaline phosphatase, beta glucoronidase, SGPT & SGOT.

Unit 3: Assessment of glucose metabolism in blood: Clinical significance of variations in blood glucose. Diabetes mellitus. Glycosylated Hb.

Unit 4: Lipid profile: Composition and functions of lipoproteins. Clinical significance of elevated lipoprotein. Lipid profile in health and diseases.

Unit 5: Liver function tests: Structure of the liver, liver function tests, causes of different liver diseases, liver function tests in the diagnosis of liver diseases. Pathophysiological significance of bilirubin.

Unit 6: Renal function tests and urine analysis: Composition of urine. Use of urine strip / dipstick method for urine analysis. Basic ideas on different types of test for renal diseses.

Unit 7: Tests for cardiovascular diseases: Involvement of enzymes in diagnostics of heart disease including aspartate transaminase, isoenzymes of creatine kinase and lactate dehydrogenase and troponin.

DSE1BP: Clinical Biochemistry (Practical) **Credits 02**

List of Practical

1. Collection of blood and storage. Separation and storage of serum.
2. Estimation of blood glucose by glucose oxidase peroxidase method.
3. Estimation of blood glucose by Nelson – Somogyi method.
4. Estimation of blood inorganic phosphates by Fiske- Subbaraow method.
5. Estimation of serum total protein by Biurate methods, and determination of albumin globulin ratio.
6. Estimation of triglycerides.
7. Estimation of bilirubin (direct and indirect).
8. Quantitative determination of serum creatinine and urea.
9. Determination of serum amylase by iodometric method.
10. Estimation of creatine kinase.

Or

DSE-1B: Clinical Hematology **Credits 06**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

DSE1BT: Clinical Hematology **Credits 04**

Course Contents:

Anemia and its classification. Laboratory investigation and management of anemia. Iron deficiency anemia, megaloblastic anemia, pernicious anemia- pathogenesis and laboratory investigation. Reticulocytes. Aplastic anemia- laboratory diagnosis. Bone marrow examination. Aspiration techniques.

Hemoglobin - abnormal hemoglobin. Hemolytic anemia and its laboratory investigation. Haemoglobinopathies. Hemoglobin electrophoresis. Sickle cell anemia , Thalassemia- laboratory diagnosis.

Blast cell. Causes and significances of leucocytosis, leucopenia, neutrophilia, eosinophilia, basophilia, monocytosis, lymphocytosis, neutropenia, lymphopenia. Toxic granulation. Leukemia and its classification. HIV on blood cell parameters. LE cells and its significances. Blood parasites.

Hemostasis and Coagulation: Platelet development. Qualitative and quantitative disorders of platelets. Secondary hemostasis. Hemophilia, Willebrand diseases. Disorder of fibrinogen. Fibrinolysis. Bleeding and coagulation disorders.

Blood groups: Immunological basis of identification of ABO and RH blood groups. Biochemical basis of ABO system and Bombay phenotyping. Others blood groups : Kell, Kidd, Duffy, etc. Blood transfusion. Blood banking.

Definition determination and significance of TC, DC ,ESR, Arnth count, PCV, MCV, MHC, MCHC. bleeding time, clotting time, prothrombin time.

DSE1BP: Clinical Hematology (Practical) **Credits 02**

List of Practical

1. General blood picture
2. Differential Leucocute Count. Absolute leucocyte count
3. Determination of haemoglobin by various methods.
4. Determination of total RBC count and WBC count.
5. Determination of PCV
6. Determination of red cell indices
7. Determination of ESR.
8. Determination of reticulocyte count.
9. Staining of bone marrow
10. Determination of blood groups.

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

11. Determination of toxic granulation of neutrophil
12. Determination of total platelet count.
13. Demonstration of thrombin time.**(Demonstration)**
14. Perform sickling test (**Demonstration**)
15. Perform Heinz bodies(**Demonstration**)
16. Demonstration of leukemic slides (**Demonstration**).
17. Determine fibrinogen conc.(**Demonstration**)
18. Demonstrate malarial slide(**Demonstration**)
19. Haemoglobin electrophoresis(**Demonstration**)

Skill Enhancement Course (SEC)

SEC- 4: Environmental Surveillance Credits 02

SEC4T: Environmental Surveillance

Course Contents:

UNIT – I: Environmental Surveillance Monitoring – definition, advantages, disadvantages, scale of observation, GEMS and its goal current and future status of environmental surveillance and monitoring
UNIT - II: Types of Environmental surveillance, systematic ground surveys (SGS), soil, surface water and air surveillance – parameters and instruments, standards, sensors and RUSS, Surveillance devices, Social Network Analysis
UNIT - III: Water quality surveillance and air, water and health, Water quality and sanitary inspection data collection. Sampling site selection and sample approaches. Systematic aerial reconnaissance flight surveillance, using the surveillance data, Household water and the safe water chain
UNIT – IV: Biological surveillance programme for the monitoring of crop pests, Biometric surveillance – aquatic bodies, various invertebrates and vertebrate vectors surveillance, Biomarkers in environmental surveillance
UNIT - V: Disease surveillance (of pathogens) – Definition, World Health Organization AIDS surveillance case definition, Anthrax, Avian influenza, Dengue hemorrhagic fever, Hepatitis, Influenza, Plague, Severe Acute Respiratory Syndrome, Smallpox

Or

SEC-4: Health Psychology, Physiology of stress and Stress Management Credits 02

SEC4T: Health Psychology, Physiology of stress and Stress Management

Course Contents:

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

Health Psychology:

Introduction: Definition, Mind-body relationship, Bio-psychosocial model of Health, Life styles and disease patterns. Behaviour and Health: Characteristics of health behaviour; Barriers to health behaviour; Theories of health behaviour and their implications. Health Enhancing Behaviour: Exercise, nutrition, accident prevention, pain and stress management. Health and Well-being: Happiness; Life satisfaction; Resilience; Optimism and Hope.

Physiology of Stress:

Stress: Definition, Nature of stress, symptoms of stress. Physical and Emotional Stressors. General Adaptation Syndrome. Role of Hypothalamic - Pituitary- Adrenal Axis and Sympatho-adrenal Medullary Axis in coping stress. Effects of chronic stress: Immunological, Cardiovascular, Emotional problem.

Stress Management

Various sources of stress: environmental, social, physiological and psychological. Stress and health: effects of stress on health, eustress, distress**.** Managing stress: Methods - yoga, meditation, relaxation techniques, Problem focused and emotion focused approaches.

Or

SEC- 4: Pharmacology and Toxicology — Credits 02

SEC4T: Pharmacology and Toxicology — **Credit 01**

Course Contents:

Unit I: General pharmacology and toxicology

Nature and source of drugs, routes of drug administration and their advantages, definitions and scope of toxicology. Introduction to eco-toxicology.

Unit II: Mechanism of toxicity

Formation of ultimate toxicant of xenobiotics and its interaction with target molecules.

Unit III: Pharmacokinetics

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

Membrane transport, absorption, distribution of xenobiotics. Brief introduction to biotransformation, Phase- I reactions including oxidations, hydrolysis, reductions and phase II conjugation reactions and excretion of drugs.

Unit IV: Pharmacodynamics

Mechanism of drug action, receptors and receptors subtypes, Dose response relationship and combined effect of drugs. Concept of LD50, LC50, TD50 and therapeutic index.

Unit V: Introduction and classification of the drugs acting on:

a. Central and autonomic nervous system, neurotoxic agents.
b. Cardiovascular system and cardiotoxic agents.
c. Kidney and nephrotoxic agents.

Unit VI: Introduction and classification

a. Anti-inflammatory and analgesic drugs and their related toxicity.
b. Endocrine drugs
c. Antimicrobial chemotherapeutic drugs

SEC4P: Pharmacology and Toxicology **Credits 01**

Practical

1. To study presence of paracetamol /aspirin in the given sample.
2. Determination of Dissolved water (DO) using Winkler's method.
3. To determine the total hardness of water by complexometric method Using EDTA.
4. To determine Acid value of the given oil sample.
5. Calculation of LD50 value of an insecticide from the data provided.
6. Handling of laboratory animals and various routes of drug administration **(Demonstration).**
7. Separation of a mixture of benzoic acid, beta- napthol and napthelene by solvent extraction and identification of their functional groups **(Demonstration).**
8. Pharmacodynamics : dose- response curve **(Demonstration).**

Downloaded from Vidyasagar University by 103.77.136.219 on 26 July 2023 : 13:40:11; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/Physiology(General)6.pdf

Vidyasagar University

Curriculum for B.A (General) in National Cadet Corps (NCC)

[Choice Based Credit System]

Semester-I

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	**T**	**P**		
CC1 [DSC-1A]		**C1T:** National Security, NCC, Indian Army – Organization ,National Integration & Awareness	Core Course-1	4	0	0	6	75
		C1P: Drill (without arms) & Social activity		0	0	4		
CC2 [DSC-2A]	TBD	DSC-2A (other Discipline)	Core Course-2				6	75
AECC Core[L-1]		English-1	AECC-Core **[Language core]**	5	1	0	6	75
AECC (Elective)		English	AECC (Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC =** Core Course, **TBD =** To be decided, **AECC (Elective) =** Ability Enhancement Compulsory Course (Elective)
DSC-1 = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,
AECC- Core [L-1]: Ability Enhancement Compulsory Course - Core [Language Core - 1]

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:57:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General).pdf

Semester-I
Core Courses (CC)

CC-1: National Security, NCC, Indian Army – Organization ,National Integration & Awareness **Credits 06**

C1T: National Security, NCC, Indian Army – Organization ,National Integration & Awareness **Credits 04**

Module I : NCC organization

1. History of NCC, Aims and Objectives of NCC.
2. Organization &Training and NCC Song, Motto of NCC - Motivation of Cadets.
3. System of NCC Trainings. Incentives and benefits.
4. Awards, different types, Rank of officers and cadets.
5. Role of NCC Cadets in National programmes.
6. Opportunities of NCC Cadets in army and other services.
7. Camps, types of camps. Preparation and participation.

Module II : National Integration and Awareness

1. Religions, Culture, Traditions and Customs of India.
2. National Integration: Importance and Necessity. Unity in diversity.
3. Freedom Struggle and Nationalist Movement in India.
4. National Interests, Objectives, Threats and Opportunities.
5. Problems / Challenges of National Integration.
6. National Integration Council.
7. Contribution of Youth in Nation Building.

Module III: National Security Organizations

1. National Defence Policy.
2. Organization and Administration of defence.
3. Role of intelligence.
4. National security system.

Module IV : Indian Army – Functional Organisations

1. Combat Branches-Infantry, Armoured.
2. Supporting Arms – Artillery including Air Defence, Engineers, Signals, Aviation.
3. Logistic Organisations – ASC, AOC, EME, AMC, ENGINEERS.
4. Other – Intelligence, Education, Legal.

Module V : Drill

1. General and words of command.
2. Attention, stand at ease and stand easy, turning and inclining at the halt.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:57:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General).pdf

3. Sizing, forming up in three ranks and numbering, open and close order march and dressing.
4. Saluting at the halt, getting on parade, dismissing and falling out.
5. Marching, Length of pace and time of marching in quick time and halt, slow march and halt.
6. Side pace, pace forward and to the rear.
7. Turning on the march and wheeling.
8. Saluting on the march .
9. Marking time, forward March and halt in quick time.
10. Changing step.
11. Formation of squad and squad drill.
12. Guard of Honour and Ceremonial drill.

C1P: Drill (without arms) & Social activity **(Practical)** **Credits 02**

1. **Drill (Without arms) :**
   Drill without Arms : i) Savdhan (Attention), ii) Vishram (stand on easy), iii) Aram se (stand easy), iv) Tej Chal (quick march), v) Thum (halt), vi) Dahine Mur (Right turn), vii) Baen Mur (left turn), viii) Piche Mur (About turn), ix) Samne ka Salute, x) Patra ke sath Salute, xi) Line Tour (Falling out), xii) Visarjan (Dismiss).

2. **Social Activity** – any one
   i) Tree plantation, ii) Blood Donation, iii) Participation in Social Awareness Programme, iv) Participation in Environment Awareness Programme, v) Participation in Health and Hygiene Awareness Programme.

3. **Field reports**: Students will be submitted a Field Reports on any Social Awareness Programme organized by the Institution.

4. **Laboratory Note Book**
   Students will be required to maintain records of all works done in connection with the topics taught in this paper.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:57:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General).pdf

Vidyasagar University

Curriculum for B.A (General) in National Cadet Corps (NCC)

[Choice Based Credit System]

Semester-II

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1B		DSC1BT: Personality Development, Human Health, Social & Environmental awareness and Community Development.	Core Course	4	0	0	6	75
		DSC1BP: **Practical**		0	0	4		
DSC-2B	TBD	**DSC-2B (other Discipline)**	Core Course				6	75
AECC Core[L-1]		**MIL-1**	AECC-Core **[Language core]**	5	1	0	6	75
AECC		**ENVS**	AECC (Elective)				4	100
Semester Total							**22**	**325**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC =** Core Course, **TBD =** To be decided, **AECC=** Ability Enhancement Compulsory Course

DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2,

DSC-3 = Discipline Specific Core of Subject-3.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:57:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General).pdf

Semester-II
Core Courses (CC)

DSC-1B (CC-2): Personality Development, Human Health, Social & Environmental awareness and Community Development. **Credits 06**

DSC1BT: Personality Development, Human Health, Social & Environmental awareness and Community Development.

Credits 04

Course Contents:

Module -I: Personality Development and Leadership

1. Personality Development introduction. Factors Influencing /shaping Personality: Physical, social, psychological and philosophical.
2. Self-Awareness – Know yourself/ Insight. Self Defense- Theory and practice, prevention of untoward incidence. Self defense mechanisms. Change your mind set.
3. Interpersonal relationship and communication.
4. Leadership Traits. Types of Leadership and perception. Effects of Leadership with historical examples. Attitude – Assertiveness and negotiation.
5. Time management. Stress management.
6. Importance of Group /Team Work.
7. Influencing Skills. Sociability: Social Skills. Values / Code of Ethics.

Module-II: Health and Hygiene

1. Structure & functioning of the human body. Hygiene & sanitation (Personal & Food hygiene). Physical & Mental Health. Infectious & Contagious Diseases & its prevention. Preventable diseases, fractures and types of treatments.
2. Basics of home nursing. First aids: methods and Practice. First aids in common medical emergencies. Snake bites. Wounds & Fractures. Dressing of wounds.
3. Yoga &Exercises – introduction. Role on physical and mental health.

Module-III: Environmental Awareness and Conservation

1. Natural Resources – Conservation & Management. Water Conservation &Rainwater harvesting. Waste Management.
2. Environment and ecology – pollution and its control; Water, Air, Noise and Soil. Wild life conservation. Energy Conservation.

Module-IV: Social Awareness and Community Development

1. Basics of Social Service, weaker sections of our society and their needs. Social / Rural Development Projects: MNREGA, SGSY, NSAP etc. NGOs: Role & Contribution. Social service – family planning.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:57:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General).pdf

2. Drug Abuse & Trafficking. Causes & Prevention of HIV/AIDS; Role of youth
3. Social Evils - Dowry/Female Foeticide /Child abuse & trafficking, etc. Provisions of Protection of Children from Sexual Harassment Act 2012.
4. Traffic Control Organization and Anti-drunken driving. Traffic rule and road signs.
5. Counter Terrorism. Corruption
6. Contribution of youth towards social welfare. Civic Responsibilities.
7. NCC cadets and civil administration.

DSC1BP: Practical **Credits 02**

1. **Drill :**

Drill without Arms: i) Sizing, forming up in three ranks, numbering, open and close order march and dressing, ii) Getting on parade, dismissing and fall out, iii) Saluting at the halt, iv) Marching, length of space and time of marching, marching in quick tome and halt, v) Turning at the march and wheeling, vi) Saluting at the march, vii) Side space, pace forward and to the rear, viii) Marking time, forward and halt in quick time and changing step, ix) Formation of squad and squad drill.

2. **First Aids**
   i. Principles of First aids.
   ii. First aids for Snake bite, Burns and Scalds, Drowning, Poisoning, Dog bite.

3. **Tactical exercise without troops**

   a. Sand model on the following: a) attack, b) defense
   b. Outline organization of infantry Battalion in Lab Note Book
   c. Chart showing Organization, weapons at equipments at platoon level
   d. Verbal order at platoon level
   e. Movement without arms and section battle drill
   f. Message writing

4. **Field reports**
   Students will be submitted a Field Reports on any Health & Hygiene, / Environment Awareness Program organized by the Institution.

5. **News paper clippings**
   News paper clippings on relevant defense related topics and a short essay on the basis of clippings to be produced.

6. **Field visit:** Field visit to defense establishment/ places of military interests. Students will submit a field report.
7. **Laboratory Note Book**
   Students will be required to maintain records of all works done in connection with the topics taught in this paper.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:57:08; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General).pdf

Vidyasagar University

Curriculum for B.A. (General) in National Cadet Corps (NCC)

[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1C		**DSC1CT:** Defense Organization, Military Geography, Military History, Field Craft & Battle Craft and Weapon Training	Core Course	4	0	0	6	75
		- Practical		0	0	4		
DSC-2C	TBD	**DSC-2C (other Discipline)**	Core Course				6	75
AECC Core[L-2]		**English -2**	AECC-Core **[Language core]**	5	1	0	6	75
SEC-1		**SEC1T**: Volunteering **Or** Human Rights Education and Humanitarian Law**Or** News Writing Procedure and News Story	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**20**	**275**

L = Lecture, **T** = Tutorial, **P** = Practical, **CC** = Core Course, **TBD** = To be decided, **SEC** = Skill Enhancement Course.

DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2,

AECC- Core [L-2]: Ability Enhancement Compulsory Course-Core [Language Core]

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:02:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General)sem3.pdf

Semester-III

Core Course (CC)

DSC-1C (CC-3): Defense Organization, Military Geography, Military History, Field Craft & Battle Craft and Weapon Training **Credits 06**

DSC1CT: Defense Organization, Military Geography, Military History, Field Craft & Battle Craft and Weapon Training **Credits 04**

Course Contents:

Module-I: Defense Organization of India

a) Principles of Defense Organization. Principles of defense organization and administration. **Reconstruction of Indian Armed Forces -** a) Indian armed forces under the British Rule, b) Reconstruction of Army after 1947, b) Reconstruction of Navy, c) Reconstruction of Air Force- Hierchy of Higher Defense Organization of India of Present time. Hierarchy of Higher Defense Organization.

b) Indian Armed Forces : Basic organisation of Armed Forces. Strength, task & role of Indian armed forces. Organizational structure of Indian Army : Different Commands of Indian army. Static formation of army, field formation of army. Composition of Indian army: a) Organizational structure of an infantry battalion, b) Organizational structure of an Armoured regiment, c) Organizational structure of artillery Field Regiment.
c) Indian Navy: History, structure, organization, characteristics, command, support services, its role during war.

d) Indian Air Force: History, structure, organization, characteristics and Different commands of Indian Air Force: Limitation of Air Force role during war.

Module -II:

A. Organization of Supported Arms:

a) **Paramilitary Forces:** Assam Rifles, Central Armed Police Forces, Special Frontier Forces. Central Reserve Police Forces (CRPF), Boarder Security Forces (BSF), Indo-Tibetan Boarder Police (ITBP), Shasastra Seema Bal (SSB),
b) **Special Forces:** Special Frontier Forces, Central Industry Security Force (CISF).
c) **Para Special Force [Para (SF)]:** Ghatak Force, Marine Commando (MARCOS), Guard Commando Force.
d) **Other Protection Forces:** National Security Guards (NSG), Special Protection Group (SPG), Railway Protection Forces (RPF).
e) **Second Line of Defense :** Indian Coast Guard, National Cadet Corps (NCC). Territorial Army

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:02:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General)sem3.pdf

B. Military decoration of Indian army:

Badges of Ranks- Honours and Awards - Gallantry award - Doctrine, Corps and field forces - Concept of Integrated Defence staff- Modes of entry to army - Structural changes in Indian Defense Organization

Module -III: Military Geography

a) Introduction: Meaning, nature, scope and elements of Military Geography. Man and Environment. Role of geography in military application. Military geography in India and defense problem in relation thereto-role of geography in different warfare.

b) Evolution of Military Geography: a) History & Development. b) Founders of Military Geography - F. Ratzal, A.T. Mahan, c) Sir. Halfred Mackinder, Karl Haushofer, N.J. Spykman

c) Inter-State relations & Geographical factors: a) Frontiers and Boundaries of India - its meaning & differences types of borders and boundaries. b) Communication routes- land, sea and aerial- strategic scope. c) Population and Power

d) Geography and Foreign Policy of India: a) India's Geo-strategic significance, b) India's borders, c) Indian Ocean territory and strategic significance.

e) Applied Military Geography: Brief idea on a) Global Positioning System (GPS), b) Global Information System (GIS) and c) Remote Sensing.

Module -III: Map Reading

Theoretical aspects of Map Reading:
Introduction to different types of Maps, and Conventional Signs. Scales & Grid System. Topographical Relief features, Contours and Gradients - Cardinal points and Types of North - Types of bearings and use of Service Protractor - Prismatic compass and its use. Setting a Map - finding North and own position - Map to Ground, Ground to Map - Point to Point March – use of GPS.

Module -IV: Military History

a. Definition, Concept, Significance to study Military history. Military system of India since Vedic era to modern India.. A brief survey of the military tradition of India. Weapon, Battle dress. Kautilya’s philosophy of war organization and art of war, weapons and interstate relation. War pattern and tactics in different periods in India – a comparative study. Historiography of military history of India.

b. Biographies of renowned Generals:

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:02:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General)sem3.pdf

i. Niccolo Machiavelli (1469-1527), Giulio Douhet (1869 - 1930), Jorge Smith Patton (1885-1945), Bernard Law Montogomery (1887-1976), J. E. Rommel (1891-1944)

ii. Kodandera Madappa Cariappa (1899-1993), S.H.F.J. Manekshaw (1914-2008), Subrata Mukherjee (1911- 1960), Sundarilal Matharadas Nanda (1915-2009).

c. Indian Army War Heroes – PVCs.

d. Study of the following important battles of India with its background, causes, results and its review: Battle of Panipath (1526AD), Battle of Plessey (1757AD), Battle of Chillianwalla (1849AD), Kashmir Conflict (1947), Operation of Mizo National Front (1966), Indo Pak war 1965, 1971, Operation Cactus (1988), Sri-Lanka Mission (1987-1990) & Kargil war (1999).

Module - V: Field Craft, Battle Craft

Introduction. Judging Distance and its methods. Description of ground. Recognition, description and indication of landmarks & targets. Observation, Camouflage and Concealment. Field Signals. Section Formations . Section Battle Drill. Fire fighting. Fire Control Orders. Fire and Movement. Knots and Lashings. Section Battle Drill.

Module -VI : Weapon Training

Theoretical aspects of Weapon Training:

1. Object of Weapon training . Types of weapons, parts, stripping and assembling of light guns. Characteristics of a rifle - rifle ammunition and its firepower. Rifle Mark III.
2. Stripping, assembling, care and cleaning and sight setting of .22 rifle.
3. Stripping, assembling, care and cleaning of 7.62mm SLR and its loading cocking and unloading.
4. Rules of Aiming. Firing position. The lying position, Holding& aiming.
5. Trigger control and firing a shot.
7. Range procedure and safety precautions.
8. Theory of Group and Snap shooting.
9. Short range firing, Aiming – Alteration of sight.
10. Rifle firing and follow up practice.
11. Parts of heavy weapons, stripping and assembling of heavy weapons.
12. Essentials of Good Shooting

DSC1CP: Drill, Military History & Map Reading (Practical) Credits 02

Practical:

1. Drill with Arms:

a. Getting on parade with rifle and dressing at the order.
b. Dismissing and falling out.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:02:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General)sem3.pdf

c. Ground / take up arms
d. General salute, salami shastra
e. Squad drill
f. Short / long tail from the order and vice-versa
g. Examine arms

2. Military History:

a. Prepare sand models of Battle formation of the following Battles:

i) Battle of Plessey, 1757,
ii) Battle of Chilianwala, 1849,
iii) Three battles of Panipath,
iv) Indo-Pak war of 1947, 1962, 1971,
v) Kargil war, 1999.

b. Draw sketches on plan papers of the following Battles:

i) Battle of Plessey, 1757,
ii) Battle of Chilianwala, 1849,
iii) Three battles of Panipath,
iv) Indo-Pak war of 1947, 1962, 1971,
v) Kargil war, 1999.

3. Map Reading:

1. Map – civil and military
2. Concept of military maps and map index
3. Topographical sheet
4. Scales and grid system
5. Conventional sign – civil and military
6. Compass : liquid prismatic compass – uses of compass during day and night
7. Location and identification of objects from ground to map and vice-versa
8. Preparation of night march chart
9. Preparation of weather chart
10. Field sketching, eye and memory sketching
11. Determination of visibility of survey maps of hilly region by comparing gradients and section drawing methods.

4. Field reports:

Students will submit a field report based on participation in a NCC camps.

5. Field visit: Field visit to military establishment for the demonstration of different weapons, armaments and weapon carriers. Students will submit a field report.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:02:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General)sem3.pdf

6. Laboratory note book

Students will be required to maintain records of all works done in connection with the topic taught in this paper.

Skill Enhancement Course (SEC)

SEC-1: Volunteering **Credits 02**

SEC1T: Volunteering

Course Contents:

a) Meaning of volunteering, need for volunteering, types of volunteering, benefits of volunteering.
b) United Nations volunteers: An introduction; Youth Empowerment and volunteerism; Role of youth in peace building, development and socio-economic change; Group presentations.
c) Traits of an effective volunteers; Self awareness, Essential skills of a volunteer: Importance of effective communication, skills in Conflict Resolution, Team Building, Leadership.

Or

SEC-1: Human Rights Education and Humanitarian Law **Credits 02**

SEC1T: Human Rights Education and Humanitarian Law

Course Contents:

a) Meaning of Human Rights, Importance of Human Rights: Social, Economic and Political Universal Declaration of Human Rights.
b) Human Rights and Duties in India: fundamental Rights, Directive Principles of State Policy and Fundamental Duties.
c) Importance of Internalizing Human Rights Value – Urgent need for not only sensitizing others of Human Rights and duties, but of practicing oneself those values: Self inculcation, endeavor to live up to those ideals; Duty to respect others' rights, respect each other's human dignity.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:02:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General)sem3.pdf

d) United Nations and Human Rights. Human Rights and International Politics. Violation of Human Rights.
e) India and Human Rights: Indian Constitution and Human Rights - Enforcement and Policy Implementation - Human Rights Protection/Violations as Chosen by Faculty – Special Laws for Protection of Specific Categories / Vulnerable Sections of the people – Problems of Enforcement of Human Rights in India.

Or

SEC-1: News Writing Procedure and News Story **Credits 02**

SEC1T: News Writing Procedure and News Story

Course Contents:

Unit-I: Introduction to News Writing Procedure a) Where to begin, the Date and Place b) Paragraphing and Readability c) Aids to clarity and Journalistic Style

Unit-II: Defining the News Story a) The Journalist as an Interpreter b) The inverted Pyramid News vs Sequential Style c) The Usage of the third person, Grammar Quotation and Ending the story

Unit-III: The Five 'W's a) Emphasizing important points b) The Importance of time c) Telling a story 'Where' and other application of the 'W' s

Unit-IV: Types of News story a) Political b) Industrial and Finance c) Civic Affairs

Unit-V: Specialized reporting a) Science reporting b) Industrial reporting c) Entertainment Reporting- Defence Journalism & Defence Reporting- Basic idea.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:02:41; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(General)sem3.pdf

Vidyasagar University

Curriculum for B.Sc (General) in National Cadet Corps (NCC)

[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1D		**DSC1DT**: Military Sociology, Military Psychology, Communication Process, Field Engineering Weapon & Armaments and Adventure Training	Core Course	4	0	0	6	75
		Practical		0	0	4		
DSC-2D	**TBD**	**DSC-2D (other Discipline)**	Core Course				6	75
DSC-3D	**TBD**	**DSC-3D (other Discipline)**	Core Course				6	75
SEC-2		SEC2: Revolutionary war and low Intensity Operations Or Cyber Security & Crime Or Road Safety & Road Rights	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							**20**	**275**

L = Lecture, **T** = Tutorial, **P** = Practical, **CC** = Core Course, **TBD** = To be decided, **SEC** = Skill Enhancement Course.

DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2,

DSC-3 = Discipline Specific Core of Subject-3.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:59:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NCC(Gen)sem4.pdf

List of the Core Courses (CC) and Electives

Core Courses (CC)

DSC-1D: Military Sociology, Military Psychology, Communication Process, Field Engineering Weapon & Armaments and Adventure Trainings

Skill Enhancement Course (SEC)

SEC-2A: Revolutionary war and low Intensity Operations
Or

SEC-2B: Cyber Security & Crime

Or

SEC-2C: Road Safety & Road Rights

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:59:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NCC(Gen)sem4.pdf

Semester-IV

Core Course (CC)

DSC-1D (CC-4): Military Sociology, Military Psychology, Communication Process, Field Engineering, Weapon & Armaments and Adventure Trainings

Credits 06

DSC1DT: Military Sociology, Military Psychology, Communication Process, Field Engineering, Weapon and Armaments and Adventure Trainings

Credits 04

Course Contents:

Module - I: Military Sociology: a) Study of Society, Social groups, social interaction: motivation, morality, Personality – Definition and determinants. Social aspects of war. Social effects of war. Post war social problems. Social background of military personnel of India. **b)** Armed Force and Society: Role of Indian Armed force society and inter-dependence, military aid to civil authorizes. Civil – Military relation in India. **c)** Indian Armed Forces and Disaster Management: Disaster – aims and objectives, Disaster management – meaning, concept, elements and preventive measures. War and disaster. **d)** Overseas bases and relations – peace keeping – anti piracy and exploration mission**. e)** Military Coups: causes and its consequences on society. **f)** Problem of ex-service men of India. Benefits of service for *Jawans* and Officers. One man one person demands. Role of women in Armed forces: contemporary trends.

Module - II: Military Psychology: Military Psychology - Meaning, definition, historical development, role, aim and importance. Relevance of Psychology in the defense problems. Use of the psychology in the war and military use of Psychology. Application of the principles of psychology in the Military training. Personal adjustment factors in adjustment during army life, the recruits of adjustment to combat. Problem of adjustment and the problem of Re-adjustment of ex-soldiers.

Module - III: Communication process: Communication- main elements, types and methods of communications, media. Communication systems- internet, Faxi mail, Satellites. Characteristics of Wireless Technology (Mobile, Wi Fi, etc)**.** Characteristics of Walkie /Talkie**.** Basic Radio Telephony (RT) Procedure**.** Military Language**.** Latest trends and development (Multi Media, Video Conferencing, IT). Information system and type of information. Signals- introduction to radio, telephony procedure. Field signals. Air raid warnings.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:59:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NCC(Gen)sem4.pdf

Module - IV: Field Engineering: Principles and applications, camouflage and concealment. Section formation. Mines and types of mines fields, anti tanks and explosive.

Module - V: Adventure Training: Introduction to adventure Training, Planning Organization & Conduct. Cycle & Trekking Expeditions. Organization & Conduct of Sightseeing. Spirit of Mountaineering. Selection of camp site Layout & Sanitation in camp.

Module -VI: Weapon and Armaments

a. Evolution of arms and armaments in art of war.

b. **Modern weapons** - Small Arms - Theories of small arms. History, characteristics, design, variant, operating mechanism and military significance of following common arms used in Indian Army: Glock, Mouser, IM1 Galil snaiper. .22 Rifle, .303 Rifle, 7.62 Self Loading Rifle . INSAS, LMG, 5.56 mm Rifle. Light Machine Gun (LMG).Multi caliber Individual Weapon System (MCIWS). Modern Submachine Carbine (MSMC), Artillery : Artillery Gun, No 35 HE Grenade, 2 inch Mortar. 40mm L-60 and L-70 BOFFORS GUN. DRDO 155 mm artillery gun, Dhanush Howitzer Indian Fields Gun. Shell and Ammunition: Explosive, Rockets and Mortar- Properties & Types. Missiles: Concept, characteristics, types. Anti Tank : Brief idea. Nuclear explosive: History, uses, effects, science for formation of nuclear bomb.

Weapon Carriers: Characteristics, mechanisms of operation, fire power and military importance of following: Land war weapon carrier, Naval war weapon carrier, Air war weapon carrier, Strategic transport aircraft, Tactile transport aircraft. Military Glider, Military Helicopter Fighter airplane, Bomber, Fighter- Bomber Airplane.

Weapons of Mass Destruction - Chemical & Biological Weapons: concept, characteristics and , uses. Nuclear weapons: Nuclear Command Authority in India. Strategic forces command, Indian land based nuclear armed ballistic missile, : Indian Sea based nuclear armed ballistic missiles, Nuclear armed cruise missiles. Air Defense: Brief idea.

DSC1DP: Practical Credits 02

Practical

a) **Adventure training :**

Parasailing, Sailing, Slithering, Rock climbing, Cycling and trekking.

b) **Weapon Training**

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:59:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NCC(Gen)sem4.pdf

Stripping as aiming & Sight setting of Riffle. Lying position 'and hold', including bolt manipulation. Trigger control and firing a shot. Aiming, Range figures targets–Range procedure and safety precautions. Alteration of Sight and firing shots. Firing in different wind conditions. Range classification firing.

On Guard hip firing. The point 2 point. Training stick (Self defense & attack).

LMG - Stripping, assembling, piston group and barrel. LMG - Loading, unloading, Sight, aiming and holding.

c) **Weapon Training - Field craft, Battle craft, Patrolling and Field engineering:**

1. Judging distance and indication of targets.
2. Camouflage & Concealment
3. Fire discipline & Fire control order.
4. Observation and Concealment exercise.
5. Simple Verbal orders.
6. Field Signals
7. Section battle drill.

d) **Weapons and Armaments:**

1. Demonstrate following arms: .22 Riffles, .303 Riffles, Self Loading Rifles, INSAS LMG 5.56 mm, LMG, Sten Machine Carbine. Pistol & Revolvers. No 36 HE Grenade, Artillery Gun, Air Defense Gun.
   Students will require drawing and explaining the important stages of mechanisms of the above weapons.
2. Students will be required to draw sectional diagrams showing the parts connected with the mechanisms of movements and firing of the following armaments: Tanks, Air craft - Fighters, Bombers, Transport, Helicopters. Naval Ships - Frigates, Destroyers, Submarine and Torpedo.

e) **Project:** Project report will be based on Field visit to military establishment/ places of military interests.

f) **Laboratory Note Book and Viva Voce:**
Students will be required to maintain records of all works done in connection with the topic taught in this paper.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:59:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NCC(Gen)sem4.pdf

Skill Enhancement Course (SEC)

SEC-2A: Revolutionary war and low Intensity Operations Credits 02

SEC2AT: Revolutionary war and low Intensity Operations

Course Contents:

A. Guerilla War / Asymmetric Warfare: **1.** Meaning and concept, **2.** Principal and characteristic **3.** Guerilla strategy and Tactics, **4.** Contributors to the Guerilla war

B. Insurgency ad counters Insurgency: **1.** Meaning and concept, **2.** Basic Characteristics, **3.** Causes, **4.** Counter Measures.

Or

SEC-2B: Cyber Security & Crime Credits 02

SEC2BT: Cyber Security & Crime

Course Contents:

Unit I: Introduction to Cyber Technologies. Information Systems - Networks/LAN/WAN - Military Sensors

Unit II: Types of Cyber Crime. Hacking - Password Cracking - Insecure Network Connection – Theft at Tele Communication Services

Unit III: Impact of Cyber Crime on National Security. Impact on Armed Forces & Law enforcement Agencies' Information Systems - Impact on National Economy/Market - Impact on Citizen Security

Unit IV: Detection and Prevention methodologies. Risk Identification - Levels of Protection - Cyber Defensive Measures

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:59:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NCC(Gen)sem4.pdf

Unity V: Cyber Laws. Overview of General Laws and Procedures in India - Introduction to Indian Cyber Law - Cyber Crime and Digital Evidence- Indian Perspective.

Or

SEC-2C: Road safety & Road Rights Credits 02

SEC2CT: Road safety & Road Rights

Course Contents:

1. Conceptual framework – i) Introduction, ii) Meaning, iii) Concept, iv) Need

2. i) Road Safety & National Security, ii) Importance of Study of Road Safety.

3. Road Infrastructure & Road Safety – i) Quality of Road, ii) Use of Techniques & Material for Road building.

4. Inspection System

5. Road network and its Impact – i) Types of Roads, ii) Road signs.

6. License System of Vehicles and Motor Vehicles Act and Rules, WB Safe Drive –Save Life

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:59:28; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NCC(Gen)sem4.pdf

Vidyasagar University

Curriculum for B.A. (General) in National Cadet Corps (NCC)

[Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1A		**DSE1AT:** India's Defence Mechanism **or** Non Traditional Security Threats	Core Course	4	0	0	6	75
		DSE1AP: Practical		0	0	4		
DSE-2A	**TBD**	Other Discipline (Any one from Discipline 2)/**TBD**	Core Course	5	1	0	6	75
GE-1		**TDB**	Generic Elective	4	0	0	6	75
				0	0	4		
SEC-3		**SEC3T:** Armed Forces (Specialized Subject) **or** Indian Navy (Specialized Subject)	Skill Enhancement Course	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE=** Discipline Specific Electives**, GE=** Generic Elective, **SEC=** Skill Enhancement Course, **TBD** = To be decided.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

Semester-V

Discipline specific Elective (DSE)

DSE-1A: India's Defence Mechanism

Or

DSE-1A: Non Traditional Security Threats

Skill Enhancement Course (SEC)

SEC-3: Armed Forces (Specialized Subject)

Or

SEC-3: Indian Navy (Specialized Subject)

Generic Elective(GE)

GE- 1: Introduction to the History of National Cadet Corps (NCC)

Or

GE-1:Conflict Resolution and Peace Building

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

Semester-V

Discipline Specific Elective (DSE)

DSE-1A: India's Defence Mechanism — Credits 06

DSE1AT: India's Defence Mechanism — Credits 04

Course contents:

Unit I: **India's Defence Forces**

a) Rank Structure of three Services
b) Recruitment Methods of three Services
c) Important Training Institutions of three Services
d) Second Line of Defence(Introduction to Paramilitary Forces, in brief)

Unit II:Defence Organizations in India

a) Power of President of India in relation to Defence
b) Role and Functions of Ministry of Defence, Government of India
c) Composition and Function of Defence Committee/National Security Council(NSC)
d) Chief of Staff (COS) and Joint Service Organization

Unit III:Army Organization

a) Organization of Army Headquarter(Role of Chief of Army Staff(COAS) and Principal Staff Officers(PSOs)
b) Static and Field Formation of Indian Army
c) Arms and Services

Unit IV:Air Force Organization

a) Organization of Air Force Headquarter;
b) Role of Chief of Army Staff(COAS) and Principal Staff Officer(PSOs)
c) Static and Field Formation of Indian Air force

Unit V:Navy Organization

a) Organization of Air Force Headquarter
b) Role of Chief of Army Staff(COAS) and Principal Staff Officer(PSOs)
c) Static and Field Formation of Indian Navy

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

DSE1AP: Practical **Credits 02**

Course contents:

1. Paper Clippings on Security related Issues and a Case Study Report thereon.
2. Field Visit: Field Visit to a Place/Unit having importance on National Security and/or Strategic Defence.
3. Laboratory Note Book: Sand Model on Human Security/ Illegal Migration/Organised Crime.

Suggested Readings:

- Government of India (1924):The Army of India and its Evolution, Calcutta
- Ministry of Defence, Government of India, Indian Arm Forces, Year Book(Annual)
- Palit, D. K. (1989):Essentials of Military Knowledge, New Delhi
- Singh Nagendra (1967): Defence Mechanism of Modern State, New Delhi
- Venkateswaran A. L. (1967): Defence Organizationin India, New Delhi

Or

DSE-1A: Non Traditional Security Threats Credits 06

DSE1AT: Non Traditional Security Threats **Credits 04**

Unit I: Human Security; Definition, Meaning, Concept, Threats & Challenges in the Indian Context

Unit II: Environment Security: Definition, Meaning, Concept and Contemporary Issues in the Indian Context

Unit III: Illegal Migration: Definition, Meaning, Concept and Contemporary Issues in the Indian Context

Unit IV: Organised Crimes: Definition, Meaning, Concept, Recent Trend in the Indian Context

DSE1AP: Practical **Credits 02**

Course contents:

1. Paper Clippings on Security related Issues and a Case Study Report thereon.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

2. Field Visit: Field Visit to a Place/Unit having importance on National Security and/or Strategic Defence.
3. Laboratory Note Book: Sand Model on Human Security/ Illegal Migration/Organised Crime.

Suggested Readings:

- Joakim Palme, Kristof Tamas (2006): Globalizing Migration Regime: New Challenges to Transnational Cooperation
- Moufida Goucha, John Crowley (2008): Rethinking Human Security
- Shahrbanou Tadjbakhsh, Anuradha M. Chenoy (2007): Human Security: Concepts and Implications, Rutledge Advances and International Relations and Global Politics
- Richard A Matthew and John Barnett Bryan Macdonald and Karen L. O'Brien (2010): Global Environmental Change and Human Security
- Kimberley L. Thachuk (2007): Transitional Threats; Smuggling and Trafficking in Arms, Drugs and Human Life
- Lal Marie (2008): The Geopolitics of Energy in South Asia, Institute of Southeast Asian Studies, Singapore
- Leena (2000): Energy Infrastructure; Priorities, Constraints and Strategies for India, Oxford

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

Skill Enhancement Course (SEC)

SEC-3:Armed Forces (Specialized Subject) Credits 02

SEC3T:Armed Forces

Course contents:

Unit I: **Organizations**

a) Basic Organizations of Armed Forces
b) Organization of Army
c) Badges and Ranks

Unit II:Infantry Weapon and Equipment

a) Characteristics of Rifle and 7.62 mm SLR,
b) Ammunition, Fire Power, Stripping, Assembling and Cleaning

Unit III:Military History

a) Biographies of Renowned Generals
b) Indian Army War Heroes-PVCs

Unit IV: Communications

a) Types of Communications
b) Characteristics of Wireless Technology (Mobile, WiFietc)

Or

SEC-3: Indian Navy (Specialized Subject) Credits 02

SEC3T:Indian Navy

Course contents:

Unit I: **Orientation and Service Subjects**

a) History of Indian Navy- In Pre and Post Independent India, Gallantry Award Winners
b) Organization of Navy Head Quarter- Commands, Fleets, Ships and Shore Establishment
c) Types of Warships and their Role
d) Ranks of Officers and Sailors, Equivalent Ranks in other Services

Unit II: Ship and Boat Modelling

a) Principle of Ship Modelling

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

b) Maintenance of Care of Tools

U**nit III**: **Search and Rescue**

SAR Organization in the Indian Ocean

Unit IV:Swimming

Floating for Three Minutes and Free Style Swimming

Suggested Readings: Newspapers; Journals; Magazines

Generic Elective(GE)

GE- 1:Introduction to the History of National Cadet Corps (NCC) Credits 06

GE1T:Introduction to the History of National Cadet Corps (NCC) Credits 04

Course contents:

Unit I: **History of National Cadet Corps**: National Cadet Corps of Independent India, The National Cadet Corps Act 1948, Motto of NCC, Aims and Objectives, Emblem, National Flag, NCC Song, Organisation of NCC- Army, Navy, Air Force, Training Organization

Unit II: Youth Organization: Introduction, Importance, Association of our Great Leaders with Youth Organization- Mahatma Gandhi, Jawaharlal Nehru, Netaji Subhas Chandra Bose, Sardar Ballabh Bhai Patel

Unit III: Nationalist Movement in India: Formation of Indian National Congress, Jalianwalabagh Massacre, Non-Cooperation Movement, Simon Commission, Civil Disobedience Movement, Quit India Movement, Emergence of Independence Day and Republic Day

Unit IV: Military History: Great Military Leaders: Maharana Pratap, Chhatrapati Shivaji, Tipu Sultan, Rani Lakhsmi Bai, **Famous Battle/War**: Sepoy Mutiny, World War I and II, Ind-Pak War, 1948, 1965, 1971, and 1999, Sin-Indian War 1962

Unit V: Introduction to Defence Services: Army, Navy and Air Force; Organization Structure of NCC Organizations (COY, Battalion, Group, Directorate);NCC as a path to Career Building.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

GE1P: Practical **Credits 02**

Course contents:

1. Paper Clippings and Photographs of different NCC activities and Training Programme son Security related Issues and a Case Study Report thereon.
2. Field Visit: Report on Field Visit to a Place/Unit having importance on NCC activities and Training.
3. VIVA VOCE

Suggested Books/ Readings

- NCC Cadet Hand Book
- V. Longer: Youth In Step
- NCC Common Subject
- Lt G. D. Singh, Pvsm, Vsm: Field Marshal S. Manekshaw (Soldiering With Dignity)

Or

GE- 1: Conflict Resolution and Peace Building Credits 06

GE1T: Conflict Resolution and Peace Building **Credits 06**

Course contents:

UNIT I: Conflict Resolution and Peace Building: Concept and Significance

UNIT II; Nature of Conflict: Inter-State and Intra-State

UNIT III: Method of Conflict Resolution

a) Pacific Methods
b) Coercive Methods

UNIT IV: Peace Building: Legal, Regional and International Perspective

UNIT V: Confidence Building Measures; Concept and Techniques; Conflict Resolution and Peace Building: Role of IGOs, Role of NGOs and Role of UN

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

GE1P: Practical **Credits 02**

Course contents:

1. Paper Clippings with issues relating to Conflict resolution and Peace Building
2. Short Presentation/ Lecture
3. VIVA VOCE

Suggested Books/ Readings

1. Barash, D. P (2014): Approaches to Peace: A Reader in Peace Studies, Oxford University Press.
2. Garnett, J (1970): Theories of Peace and Security, Palgrave Macmillan, London
3. Gultung, J (1996): Peace by Peaceful Means: Peace and Conflict Development and Civilixzation, Sage Pub
4. Kadloor, S (2015): Conflict Resolution and Peace Building
5. Murty, K. S (1986) : quest for Peace, Ajanta Pub , New Delhi
6. Ursula, O (ed.) (2000): Peace Studies from Global Perspective, Maadhyam Books, New Delhi Veena, Kukreja: Contemporary Pakistan, Political Processes, Conflict and Cases

******

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 12:01:54; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem5.pdf

Vidyasagar University

Curriculum for B.A. (General) in National Cadet Corps (NCC)

[Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1B		**DSE1BT:** International Terrorism **or** Role of NCC in Nation Building	Core Course	4-0-4 / 5-1-0			6	75
		DSE1BP: Practical						
DSE-2B	**TBD**	Other Discipline (Any one from Discipline 2)/ **TBD**	Core Course	5	1	0	6	75
GE-2		**GE2T:** International Relations **or** India and Her Neighbouring Countries	Generic Elective	4	0	0	6	75
		GE2P: Practical		0	0	4		
SEC-4		**SEC4T:** Indian Air Force (Specialized Subject) **or** Current Affairs and General Studies	Skill Enhancement Course	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE=** Discipline Specific Electives**, GE=** Generic Elective, **SEC=** Skill Enhancement Course, **TBD =** To be decided.

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:58:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem6.pdf

Semester-VI

Discipline specific Elective (DSE)

DSE-1B: International Terrorism

Or

DSE-1B: Role of NCC in Nation Building

Skill Enhancement Course (SEC)

SEC-4: Indian Air Force (Specialized Subject)

Or

SEC-4: Current Affairs and General Studies

Generic Elective (GE)

GE- 2: International Relations

Or

GE-2: India and Her Neighbouring Countries

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:58:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem6.pdf

Discipline Specific Elective (DSE)

DSE-1B: International Terrorism — Credits 06

DSE1BT: International Terrorism — Credits 04

Course contents:

Unit I: Terrorism, Meaning, Concept, Philosophy and Historical Perspective

Unit II: Causes of Terrorism: Social, Economic, Political and Religious

Unit III: International Terrorism, State Terrorism and State-sponsored Terrorism Context

Unit IV: Terrorism and National Security, Strategy for fighting against Terrorism

DSE1BP: Practical — Credits 02

Course contents:

1. Paper Clippings on Security related Issues and a Case Study Report thereon
2. Field Visit: Field Visit to a Place/Unit having importance on National Security and Strategic Defence
3. Laboratory Note Book; Viva-Voce
4. Educational Tours and its Reports

Suggested Readings:

- Brass, Paul R., (1991): Ethnicity and Nationalism, New Delhi, Sage Publications.
- Combs, Cindy C., (1997): Terrorism in the Twenty-first Century, New Jersy, Prentice Hall.
- Kartha, Tara (1999): Tools and Terror: Light Weapons and India's Security, New Delhi, Knowledge World and ISDA
- Lequer, Walter (1999): The New Terrorism, Oxford, Oxford University Press
- Sondhi M L.(ed), (1999): Terrorism and Political Violence-A Source Book, New Delhi
- Wardlaw, Grant(1982): Political Terrorism, Cambridge

Or

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:58:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem6.pdf

DSE-1B: Role of NCC in Nation Building Credits 06

DSE1BT: Role of NCC in Nation Building Credits 06

Unit 1: National Integration:

a) Concept, Importance, Religion, Culture, Tradition and Customs of India,
b) National Interests and National Threats,
c) Problems and Challenges of National Integration-Social Disparity, Linguistic, Fanaticism, Casteism, Regionalism, Communalism, Economic inequalities-Poverty, Unemployment, Growth of Population, Corruption;
d) Opportunities- Defence & Police Force, National Games
e) NCC's Role in Unifying India

Unit 2: Social Service and Community Development

a) Introduction, Weaker Section of Society and their Needs
b) Contribution of NCC towards Social Welfare
c) NGO's Role and Contribution

Unit 3: Human Rights

a) Fundamental Rights, Duties of Citizen;
b) Human Right Organizations;
c) Rural Development Programmes: MGNREGA, SGSY, JGSY, IAY,NASP, PMGSY
d) Contribution of NCC towards Community Development

Unit 4: Aid to Civil Authority

a) Disaster Management: introduction, Types of Natural Disaster, Role of NCC in various Disasters
b) Civil Defence, Organization of Civil Defence; Role of NCC;
c) Fire Fighting-Fire Fighting Equipments, Role of NCC
d) Role of NCC in Traffic Control

Suggested Books/ Readings:

- NCC Cadet Hand Book
- V. Longer: Youth In Step
- NCC Common Subject
- Lt G. D. Singh, Pvsm, Vsm: Field Marshal S. Manekshaw (Soldiering With Dignity)

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:58:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem6.pdf

Skill Enhancement Course (SEC)

SEC-4: Indian Air Force (Specialized Subject) Credits 02

SEC4T: Indian Air Force (Specialized Subject) Credits 02

Course contents:

Unit I: General Service Knowledge

a) Development of Aviation
b) History of Indian Force

Unit II: Principle of Flight

a) Introduction
b) Laws of Motion
c) Glossary of Terms

Unit III: Airmanship

a) Introduction
b) Airfield Layout
c) Role of the Air, Circuit Procedure
d) ATC/RT Procedures
e) Aviation Medicine

Unit IV: Maintenance

a) Aero Engine Introduction
b) Minimum Mechanical Knowledge for Maintenance
c) Ammunition, Fire Power, Stripping, Assembling and Cleaning

Suggested Readings:

- DG NCC, New Delhi: Cadet's Handbook- Common Subjects, All Wings
- DG NCC, New Delhi: Specialized Subjects, Army, Navy and Air Force
- DG NCC, New Delhi: OTA Precise
- Gupta, N. L.: Humanistic Traditions of India, Mohit Publications, New Delhi
- Iyer Prakash: The Habit of Winning, Penguine India, 2011
- Goldratt E: The Goal, The North River Press, 1994
- Bipan Chanda: Freedom Struggle, National Book Trust
- Lambert M & Henssonow F: National Civil Defence Cadet Corps, 2011

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:58:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem6.pdf

Or

SEC-4: Current Affairs and General Studies — Credits 02

SEC4T: Current Affairs and General Studies — Credits 02

Course contents:

Unit I: Topic on Current Affairs, General Awareness in National and International Significance

Unit II: General Knowledge Syllabus & Topics of the Indian and World History along with Freedom Movement in India

Unit III: General Knowledge and Current Affairs Topics on Indian Polity, Indian Constitution, Government, Government Policy and Political System

Unit IV: General Knowledge Questions on Environmental Science, Biodiversity and Ecology related Topics

Suggested Readings:

- Newspapers; Journals; Magazines

Generic Elective (GE)

GE- 2: International Relations — Credits 06

GE2T: International Relations — Credits 04

Course contents:

Unit I: Introduction to the Understanding of International Relations, Theories and Approaches

Unit II: Diplomacy and Foreign Policy: Theoretical Background, Contemporary Issues in Indian Context

Unit III: International Relation of India with its Neighbouring Countries (Pakistan, Bangladesh, Nepal, Sri Lanka, Bhutan and China)

Unit IV: End of Cold War and Emergence of New World Order (after 9/11/2001)

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:58:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem6.pdf

GE2P: Practical **Credits 02**

Course contents:

1. Laboratory Note Book**:** Strategic Maps of India**:** India and her Neighbouring Countries; India and Indian States and Union Territories with Capital, Strategic Raw Materials, Defence Industries and Atomic Reactors
2. Short Presentation/ Lecture
3. Records
4. VIVA VOCE

Suggested Books/ Readings

- Aron, Raymond (2003) Peace and War: A Theory of International Relations, Transaction Publishers
- Couloumbis, T. A and Wolfe, W. H. (1986): International Relations: Power and Justice, Prentice Hall, New Jersey
- Kumar Mahendra (2017): Theoretical Aspects of International Politics, Shivlal Agarwala and Co , New Delhi.
- Frenkel Joseph (1968): Making of Foreign Policy: An Analysis of Decision Making, Oxford University Press, London
- Calvocoressi, Peter (2008): World Politics Since 1945, 9th Edition, Longman

Or

GE- 2: India and Her Neighbouring Countries Credits 06

GE2T: India and Her Neighbouring Countries **Credits 04**

Course contents:

Unit I: India and her Neighbouring Countries

Study of Geo-Strategic Factors Relating to Pakistan, China, Bangladesh, Nepal, Bhutan, Myanmar, Maldives, and Sri Lanka

Unit II: **Emergence of Pakistan as an Independent State**

Pakistan's foreign and Defence Policies to India; Recent Trends of Bilateral Relations between Bangladesh and India

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:58:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem6.pdf

Unit III: Emergence of China and Global Power Policies

Political System in China, Ethnic Composition of China; Recent Trends of Bilateral Relations between China

Unit IV: Emergence of Bangladesh as an Independent State

Strategic Relations of India with Bangladesh; Recent Trends of Bilateral Relations between Bangladesh

Unit V: Strategic Relations of India

Strategic Relations of India with Nepal, Bhutan, Myanmar, Maldives and Sri Lanka; The issue of Immigration and Infiltration.

GE2P: Practical **Credits 02**

Course contents:

1. Strategic Maps of India and her Neighbours with identification of and Special emphasis on Strategic Geographical locations, boundaries, Cities, Transport and Communication, Strategic Raw Materials, Defence Industries and Atomic Reactors, National Anthem, Symbol, Flower, Language, Culture and Customs.
2. Short Presentation/ Lecture
3. Records
4. Viva Voce

Suggested Readings

- U. S. Bajpai: India and Its Neighbours
- C. P. Bhambri: Foreign Policy of India
- A. Shah: Indian Defence and Foreign Politics
- Cohen, Stephen Philip: The Idea of Pakistan
- Veena, Kukreja: Contemporary Pakistan, Political Processes, Conflict and Cases
- Iftikar H. Malik; Culture and Customs of Pakistan

******

Downloaded from Vidyasagar University by 115.187.50.121 on 16 August 2022 : 11:58:39; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NCC(BAGeneral)sem6.pdf

Vidyasagar University

Curriculum for B.A (General) in National Service Scheme (NSS)

[Choice Based Credit System]

Semester-I

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	**T**	**P**		
CC1 [DSC-1A]		**C1T:** History, Philosophy, Aims & Objectives of NSS	Core Course-1	5	1	0	6	75
CC2 [DSC-2A]	TBD	**DSC-2A (other Discipline)**	Core Course-2				6	75
AECC Core[L-1]		**English-1**	AECC-Core **[Language core]**	5	1	0	6	75
AECC (Elective)		**English**	AECC(Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC =** Core Course, **TBD =** To be decided, **AECC (Elective) =** Ability Enhancement Compulsory Course (Elective)
DSC-1 = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,
AECC- Core [L-1]: Ability Enhancement Compulsory Course-Core [Language Core -1]

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 14:58:29; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General).pdf

Semester – I
Core Course (CC)

CC1: History, Philosophy, Aims & Objectives of NSS **Credits 06**

C1T: History, Philosophy, Aims & Objectives of NSS

Unit-I : Basic concept of NSS

a. History and Objectives
b. Significance of Emblem, Flag, Motto, Song, Badge, Discipline
c. Organisational Structure of NSS: National, State, University, college
d. NSS Functionaries: Roles and Responsibilities

Unit-II : Concept of the Nation, Community, Family And Nature

a. What is Nation and National integration
b. Communities and intervention of Caste, Religion and Language
c. Family as primary Unit and Community
d. Man and Nature

Unit-III : From Campus to Community

a. Concept of Activities: Regular and special camping & day camp
b. Kinds of Activities: Legal Awareness, Health Awareness, First Aid, Career Guidance, Child care, Leadership training, Skill development, afforestation, Old-age care, Blood donation, Disaster Management, Swachh Bharat, Campus Development.
c. Understanding Youth as an agent of social Change: Definition and categories of youth,Challenges and opportunities of youth.

Unit-IV : Volunteerism

a. Indian Tradition of Volunteerism
b. Needs and Importance of volunteerism
c. Motivation and constraints of volunteerism
d. Shramadan as a part of volunteerism.

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 14:58:29; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General).pdf

Vidyasagar University

Curriculum for B.A. (General) in National Service Scheme (NSS)

[Choice Based Credit System]

Semester-II

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	**T**	**P**		
DSC-1B		DSC1BT: Management of NSS Programme in Society	Core Course	4	0	0	6	75
		DSC1BP: Practical		0	0	4		
DSC-2B	TBD	DSC-2B (other Discipline)	Core Course				6	75
AECC Core[L-1]		MIL-1	AECC-Core **[Language core]**	5	1	0	6	75
AECC (Elective)		ENVS	AECC (Elective)				4	100
Semester Total							**22**	**325**

L=Lecture, **T**=Tutorial, **P**=Practical, **CC =** Core Course, **TBD =** To be decided, **AECC (Elective) =** Ability Enhancement Compulsory Course (Elective)

DSC-1 = Discipline Specific Core of Subject-1, **DSC -2** = Discipline Specific Core of Subject-2,
AECC- Core [L-1]: Ability Enhancement Compulsory Course-Core [Language Core]

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 14:58:29; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General).pdf

Semester – II
Core Course (CC)

DSC-1B (CC-2): Management of NSS Programme in Society **Credits 06**

DSC1BT: Management of NSS Programme in Society **Credits 04**

Course Contents:

Unit –I: Citizenship

a. Basic features of Constitution of India
b. Fundamental Rights and Duties
c. Human Rights, Human values and personality Development.
d. Consumer awareness and the legal rights of the consumer
e. RTI

Unit –II: Health, Hygiene and Sanitation

a. Definition needs and scope of health education.
b. Food and Nutrition.
c. Safe drinking water, water borne diseases and sanitation (Swachh Bharat Abhiyan)
d. National health programme.
e. Reproductive health.
f. Youth Health: Healthy lifestyles. HIV, AIDS, Drugs and substance abuse. Home nursing. First Aid

Unit – III: Youth Development Programme : Yoga and Sports

1. **Youth Development Programme in India**
   National Youth Day. Youth Development Programme at the National level, State level and voluntary sector. Youth focused and Youth-led organizations
2. **Yoga and Sports**
   History, philosophy and concept of yoga and sports. Different yoga traditions and their impacts. Yoga as a preventive, promotive and curative method. Yoga and sports as tools for healthy lifestyle.

Unit – IV: Environment Issues and Disaster management

a. Environment conservation, enrichment and sustainability.
b. Climate change.
c. Waste management.

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 14:58:29; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General).pdf

d. Natural resource management (Rain water harvesting, energy conservation, waste land development, soil conservations and afforestation)
e. Energy conservation programme: concept of conservation - conventional and non-conventional energy.
f. Introduction to Disaster Management, Classification of disasters. Role of youth in Disaster Management.
g. Afforestation and tree plantation: Creation of tree consciousness among community. Prevention of soil erosion. Establishment of nurseries. Plantation of trees and preservation and upkeep of trees. Weed control, pest management and rodent control.

Unit –V: Methodology of conducting survey

a. Need for action oriented surveys in NSS
b. Identification and selection community problem for investigation
c. Methods of collecting information
d. Analysis of collected data and preparation of report
e. Application of survey findings in problem solving process

DSC1BP: Practical **Credits 02**

a. First Aids

i. Principles of First aids. Importance of First Aids.
ii. First aids for Snake bite, Burns, Drowning, Poisoning, Dog bite.

b. Social Activity

i) Tree plantation , ii) Blood Donation, iii) Participation in Social Awareness Programme, iv) Participation in Environment Awareness Programme, v) Participation in Health and Hygiene Awareness Programme. vi) Participation in awareness campaign programme on welfare schemes of the central and state government.

c. Campaigning Programme

Campaigning on awareness of i) Water harvesting techniques, ii) Soil conservation techniques, iii) Community health programme of central and state government , iv) Gender equality and women empowerment, v) Child health care programme , vi) Blood donors club, vii) AIDS awareness campaign, viii) Self employment opportunities as per local needs and feasibility, ix) Animal health care programme Dairy and poultry farming, x) Total literacy, xi) Road safety, xii) Biogas and smock less chulah.

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 14:58:29; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General).pdf

d. **Field reports**: Students will be asked to submit a Field Report on any social Awareness Programme organized by the Institution.

e. **Laboratory Note Book and Viva -voce**

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 14:58:29; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General).pdf

Vidyasagar University

Curriculum for B.A. (General) in

National Service Scheme (NSS)
[Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1C		**DSC1CT:** Social work, Family, Community, Society & Youth and Life competencies, additional life skills & Civil/ Self Defense.	Core Course	4	0	0	6	75
		Practical		0	0	4		
DSC-2C	TBD	**DSC-2C (other Discipline)**	Core Course				6	75
AECC Core[L-1]		**English-2**	AECC-Core **[Language core]**	5	1	0	6	75
SEC-1		**SEC-1:** Personality Development & Communication Skills **Or** Computer Applications **Or** News and News Contents	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							**20**	**275**

L = Lecture, **T** = Tutorial, **P** = Practical, **CC** = Core Course, **TBD** = To be decided, **SEC** = Skill Enhancement Course.

DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2,

DSC-3 = Discipline Specific Core of Subject-3. **AECC- Core [L-2]:** Ability Enhancement Compulsory Course-Core [Language Core]

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 15:00:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem3.pdf

Semester-III
Core Course (CC)

DSC-1C (CC-3): Social work, Family, Community, Society & Youth and Life competencies, additional life skills & Civil/ Self Defense. Credits 06

DSC1CT: Social work, Family, Community, Society & Youth and Life competencies, additional life skills & Civil/ Self Defense. Credits 04

Course Contents:

Unit- I: Family, Community & Society

a. Concept of Family and society. Growing up in the family - dynamics and impact. Community (PRIs and other community-based organizations). Human Values-Concept & importance. Gender justice: concepts & needs. Old age problems and care. Impact of modernization on family: Definition, nature and effects of modernization.
b. Organisation of Family and Child Care: Philosophy of family and child Care programme. Nutrition: calories, protein and vitamin requirements of the child during development stages. Balanced diet. Nutrition education. Prevention of diseases caused by some deficiency. Common ailments of infancy and childhood, infectious diseases, immunization, booster doses. Role of Government and voluntary agencies in the development of Family and child care programme with special reference to: Integrated Child Development Service (ICDS), applied nutrition programme, mid-day meal programme, and special nutrition programme. Maternity and child care: Mother mental and physical health care during pregnancy and delivery. Child development from conception till maturity – role of parents. Peer groups, school community in socialization of the child health programme. Common ailments of infancy and child hood, infectious diseases, immunization, booster doses.
c. Population dynamics and family planning; Population problems, goals of family planning, methods of family planning, methods and media of communication in family planning. Population education and the role of NSS.
d. Prevention and control of communicable diseases: infectious diseases, mass communication and the role of NSS.
e. **Community Mobilization:** Mapping of Community Stakeholders. Designing the message in the context of the problem and the culture of the community. Identifying methods of Mobilization. Youth-Adult Partnership.

Unit –II: Society and youth

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 15:00:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem3.pdf

1. Definition and Profile of youth. Importance of youth for society. National youth policy. Other youth programme / schemes of GOI.
2. Current issues and social problems. Poverty, ill health, illiteracy, rapid population growth, youth employment and under employment. Nature of social deviance, delinquency and crime, beggary, corruption, adulteration hoarding, profiteering, dowry system, etc. Problems of physically and mentally handicapped. Problems of socially/ educationally backward communities' i.e. Schedule castes Schedule tribes and Denitrified Tribes. Problem resulting from regional on national catastrophes – draught, flood, etc.
3. **Youth leadership:** Meaning and types of leadership. Qualities of good leaders; traits of leadership. Importance and role of youth leadership.
4. **Social harmony, National Integration and youth:** Indian History and culture. Role of youth in peace building and conflict resolution. Role of youth in Nation building.
5. **Youth and Crime**: Sociological and Psychological factors influencing Youth Crime. Peer mentoring in preventing crimes. Awareness about anti ragging. Cyber crime and its prevention. Juvenile Justice: concepts & needs

Unit - III: Social Work

1. Social Work- History, philosophy, ideology. Social service and its need. Weaker sections of our society and their Needs.
2. Relationship of social work with social services, social welfare, social security & social reforms.
3. Family planning, HIV/AIDS: Causes & Prevention and contribution of Youth towards prevention of AIDS. Cancer, its causes and preventive measures. Drugs and substance abuse. Drug trafficking and crime.
4. Contribution of Youth towards social welfare. NGOs and their contribution to society.

Unit - IV: Life Competencies, additional life skills and Civil/Self Defense

1. **Life Competencies:** Definition and importance of life competencies. Communication - process, types & barriers. Inter personal. Motivation – Concept & Cycle. Problem solving and Decision making.
2. **Additional life skills:** Communication, interpersonal, problem solving and decision making. Positive thinking. Self confidence and self esteem. Setting life goals and working to achieve them. Management of stress including time management.
3. **Civil/Self Defence:** Civil defense services, aims and objectives of civil defense. Needs for Self defence training. NCC, NSS, Home Guard, Scouts, Guide - objectives & role.

DSC1CP: Practical **Credits 02**

1. **Studies on Socio Economic status.**

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 15:00:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem3.pdf

a) Visit to selected villages - gathering basic data on socio - economic status.
b) Visit to urban slum - gathering data on socio - economic status.
c) Visit to tourist places of Medinipur District and gathering data on socio economic status.

2. **Days Observation**:
NSS Day, Gandhi Jayanti, Ektadiwas, Womens Day, Yoga Day, World Youth Day, World Aids Day, Aranya Saptah and Biographic Inspirational Personalities : Swami Vivekananda, Derozio, Netaji Subhash chandra Bose, Rajnarayan Bose , Mother Teresa.

3. **Field Reports**:

i. Students will be asked to submit a Field Reports on any Environment/Health Awareness Programme organized by the Institution.

ii. Students will submit a field report based on participation in NSS visit of nearby places of tourist/ historical importance and campaign on cleanliness and preservation organized by the institution.

4. **Project Work:** Preparation of a Project Report on topics taught in this paper.

5. **Laboratory Note Book:**Students will be required to maintain records of all works done in connection with the topics taught in this paper.

Skill Enhancement Course (SEC)

SEC-1: Personality Development & Communication Skills Credits 02

SEC1T: Personality Development & Communication Skills

Course Content:

Unit I:

Techniques in Personality development a) Self confidence b) Mnemonics c) Goal setting d) Time Management and effective planning

Unit II:

Written communication: Basics of Letter writing, memorandum, notice, email, and report writing. Resume writing.

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 15:00:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem3.pdf

Unit III:

Communication skills and Personality Development a) Intra personal communication and Body Language b) Inter personal Communication and Relationships c) Leadership Skills d) Team Building and public speaking

Or

SEC-1: Computer Applications **Credits 02**

SEC1T: Computer Applications

Course Contents:

UNIT-1: Introduction to Computer Application

Components of computer-input and output unit, storage unit, CPU, ALU, control unit. Starting & quitting windows, setting display, time & date, managing files and folders. Meaning, need and importance of information and communication technology (ICT). Application of computer and computer software in for social service programme.

UNIT-2: Word

Introduction to word. Creating, saving and opening a document. Formatting & editing features, drawing table and graphs, page setup, paragraph alignment, spelling and grammar check, bullets and numbering, page number, header and footer, footnote and endnotes, mail merge, printing option and hyperlink. Preparation of word document

UNIT-3: Excel

Introduction to Excel. Creating, saving and opening spreadsheet. Format and editing features, adjusting columns width and row height, Creating formulas, short and filter, inserting graph and pictures, printing option. Preparation of Excel worksheet

UNIT – 4: Power Point

Introduction to Power Point. Creating, saving and opening a ppt file. Format and editing features, slide show, design, inserting slide number, picture, graph, table, hyperlink and graphics. Preparation of Power Point Presentation

Or

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 15:00:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem3.pdf

SEC-1: News and News Contents Credits 02

SEC1T: News and News Contents

Course Contents:

Unit - I: Defining News: The ingredients of News, Sources of News, Reporting and Editorial Policy.

Unit - II: News Content: Headlines, Editorials, Columns, Features (Art, Entertainment, sports etc).

Unit - III: News Writing Procedures: The paper and Headings, Brief paragraphing and Readability, Making up the Newspaper and aids to clarity, Unusual or incorrect material

Unit – IV: Newspaper, Radio and Writings, Levels of News, Hard and soft News.

Unit – V: Characteristics of Newspaper, News Agencies, Types of News dissemination.

Downloaded from Vidyasagar University by 106.196.15.183 on 26 July 2023 : 15:00:58; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem3.pdf

Vidyasagar University

Curriculum for B.Sc (General) in National Service Scheme (NSS)

[Choice Based Credit System]

Semester-IV

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSC-1D		**DSC1DT:** Method of Organising Human Service to the Nation through students and youths	Core Course	4	0	0	6	75
		- Practical		0	0	4		
DSC-2D	TBD	**DSC-2D (other Discipline)**	Core Course				6	75
DSC-3D	TBD	**DSC-3D (other Discipline)**	Core Course				6	75
SEC-2		**SEC-2: TBD**	Skill Enhancement Course-2	1	1	0	2	50
Semester Total							**20**	**275**

L = Lecture, **T** = Tutorial, **P** = Practical, **CC** = Core Course, **TBD** = To be decided, **SEC** = Skill Enhancement Course.

DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2,

DSC-3 = Discipline Specific Core of Subject-3.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:49; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NSS(General)sem4.pdf

List of Core Course (CC) and Electives

Core Course (CC)

DSC-1D: Method of organising Human Service to the Nation through students and youths.

Skill Elective Courses (SEC)

SEC-2: Value System & Gender Sensitivity
Or
SEC-2: Health and Education Program
Or
SEC-2: Methods and Techniques of working with people and program planning

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:49; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NSS(General)sem4.pdf

Semester-IV

Core Course (CC)

DSC-1D (CC- 4): Method of Organising Human Service to the Nation through students and youths. Credits 06

DSC1DT: Method of organising Human Service to the Nation through students and youths. Credits 04

Course Contents:

Unit – I: Special Camping Program

Nature, objectives and types. Concept of camp: identification of community problems – importance of group living – team building. Ice breaking and team building activities. Adaptation of village. Selection of camp site and physical arrangement. Identification of specific theme. Planning for camp - pre, during and post campaigning activities. Organizatin of NSS camps through various committees and discipline in the camp. Co-ordination with local planning Government and other agencies. Healthy Programmes and activities to be undertaken in the camp. . Use of mass media in NSS activities. Feedback /Evaluation : post camping activities.

Unit –II: Special program: a. Legal awareness, Health awareness, Environment awareness. **b.** First aid, Career guidance. **c.** Leadership training – cum- cultural guidance. **d.** Globalization and its economic, social, political and cultural impacts.

Unit –III: Rural work under NSS - i) Nature of rural society, **ii)** Problems in rural and tribal areas: Agricultural problems – low productivity tenancy, problems of bonded labours; Rural migration to towns and cities; Rural medical health services – prevention of diseases environmental sanitation through disposal of garbage, construction of soak pits, drains, roads etc. And provision of safe drinking water supply; Need for subsidiary occupation for the poor organization of village industries; Difficulties in organizing the literacy programmes and rural libraries, **iii)** Rural Youth Programme organization youth club, Young Farmers club, Mahila Mandal, **iv**) Integrated Rural Development- concept, **v)** Structure of Extension Agencies in rural areas **vi)** Credit facilities in rural areas, **vii)** Land reforms and tenancy, **viii)** Programme for weaker sections of the society in relation to the 20- point Economic Programme, e.g. allotment of house sites to schedule castes/schedule tribes, legal aid to the rural poor etc. **ix)** Re-cycling of waste and use of gobar gas plants **x)** NSS and other youth programmes.

Unit –IV: Urban work under NSS - i) NSS work in urban slums – housing projects, health services, **ii)** Medical social service work and community health programme**, iii)** NSS programme in Welfare Institutions, **iv)** NSS programme in primary schools.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:49; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NSS(General)sem4.pdf

Unit - IV: Role and Importance of Government Organisations (GO) and Non-Government Organization (NGO): Meaning, characteristics and functions of NGO**.** Characteristics and Functions. Structure of Government Organisations and Non – Government Organisations**.** Co-ordination of National Service Scheme (NSS) with Government Organisations (GO) and Non-Government Organisations (NGO)). Grants for NSS from GO's for activities- Regular Activities, Camping activities, Other Programme Development Scheme - e.g. HIV-AIDS, Blood Donation. Studies on UNICEF (United Nations Children's Emergency Fund)**,** WHO (World Health Organization).

DSC1DP: Practical **Credits 02**

1. Campus development program:

a. Campus development, tree planting maintenance and greening the campus cleaning.

b. Campus development activities – clean environment campaign, formation of plastic free zones.

c. Campus improvement activities.

2. Agency visits: Specified by the respective institution.

3. Special camp: Students will attend one special camp in the selected village and undertake various activities based on the need of that village. Students will submit a report based on the NSS camps.

4. Project: Project report will be based on field work assignments in nearby village or urban slums of NSS interests.

5. Laboratory note book and Viva Voce: Students will be required to maintain records of all works done in connection with the topic taught in this paper

Skill Enhancement Course (SEC)

SEC-2: Value System & Gender Sensitivity Credits 02

SEC2T: Value System & Gender Sensitivity

Course Contents:

Unit –I: Value System

1. Meaning of Values, Types of Values.
2. Human Values & Social Responsibilities.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:49; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NSS(General)sem4.pdf

3. Indian Value System – the Concepts and its Features.
4. Eleven Vows.

Unit – II: Gender Sensitivity and Women Empowerment

1. Concept of Gender.
2. Causes behind Gender related problems and remedial measures.
3. Meaning of Woman Empowerment.
4. Various Schemes for Woman Empowerment in India.

Or

SEC-2: Health and Education Program **Credits 02**

SEC2T: Health and Education Program

Course Contents:

Unit-I: First aid, Emergency and transportation of casualties: 1. First Aid - Definition, importance and objectives. General rules of First aid. Principles of First aid. Characteristics of First aider**.** First Aid Box. **2.** Life saving work - concept**.** Methods of transferring patients. Definition, types and treatment of wound**.** Bleeding, types of bleeding and pressure points of blood. Checking of Circulation of blood, Control of bleeding: Nose bleeding, Ear bleeding and management of different types of fractures. Opening of air passage, checking of breathing, commencement of ERC, giving artificial respiration. **3.** Dressing – its rules. Bandage – types and methods of bandaging. Fracture, joint sprain, joint dislocation – identification and first treatment. Management of different types of fractures. **4.** Poison- effects and its treatment. Burns and scalds and it first treatment. Sun-stroke and its first treatment. Heart attack , Stroke, fainting, shock, unconsciousness, hysteria - reasons and First aid treatment. First aid in diabetes and unconsciousness. First aid for dog and snake bite. **5.** Disaster management: Definitions and Types. State level Disaster Management Authority: Introduction, Constitution and Function

Unit-II: Blood, eyes, organs and body donation awareness programs

1. Blood donation awareness programme
2. Eye donation awareness programme
3. Organs donation awareness programme
4. Body donation awareness programme
5. Self-awareness

Unit-III: AIDS/HIV/Stress management through group discussion

1. AIDS/HIV awareness programme
2. Stress management programme
3. Value education
4. Safety measures: General Discussion

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:49; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NSS(General)sem4.pdf

Unit-IV: Awareness program in community and Education Institutions

1. Road safety programme
2. Food safety programme
3. Cyber safety programme
4. Substrate abuse safety programme
5. Drugs safety programme

Or

SEC-2: Methods and Techniques of working with people and program planning

Credits 02

SEC2T: Methods and Techniques of working with people and program planning

Course Contents:

Unit-I: Working with individuals – skills and techniques required in working with NSS volunteers and adult leaders in the community;

Unit-II: Working with groups – group formation, group development, group dynamics, leadership development and working with NSS volunteers;

Unit-III: Working with communities – Nature of Communities and their organisations, as method, techniques in human relations and communications, coordination with other agencies/Government Departments.

Unit-IV: Program planning and implementation- Importance of program planning ; Principles and methods of program planning ; Factors involved in exploring field placements for NSS volunteers; Selection of time – bound and target oriented program, including adoption of villages/urban slums.

****

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:49; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BSC_GENERAL/NSS(General)sem4.pdf

Vidyasagar University

Curriculum for B.A. (General) in National Service Scheme (NSS)

[Choice Based Credit System]

Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1A		**DSE1AT:**Entrepreneurship Development and Rural resource mobilization	Core Course	4	0	0	6	75
		DSE1AP: Practical		0	0	4		
DSE-2A	**TBD**	Other Discipline (Any one from Discipline 2)/**TBD**	Core Course	5	1	0	6	75
GE-1		**TDB**	Generic Elective	4-0-4/5-1-0			6	75
SEC-3		**SEC3:**Human Rights and Consumer Protection Rights **Or** Institutional social responsibilities	Skill Enhancement Course	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical,**DSE=** Discipline Specific Electives**, GE=** Generic Elective, **SEC=** Skill Enhancement Course,**TBD =** To be decided.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

Semester-V

Discipline specific Elective (DSE)

DSE-1A:Entrepreneurship Development and Rural Resource Mobilization

Skill Enhancement Course (SEC)

SEC-3:Human Rights and Consumer Protection Rights

Or

SEC-3:Institutional social responsibilities

Generic Elective(GE)

GE- 1: First-Aid for Disasters Management

Or

GE-1:Social Work

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

Semester-V

Discipline Specific Elective (DSE)

DSE-1A:Entrepreneurship Development & Rural Resource Mobilization Credits06

DSE1AT: Entrepreneurship Development & Rural Resource Mobilization

Credits 04

Course Contents:

Unit-I: Entrepreneurship development

- Definition, role of small scale industries in the nationaleconomy.
- Characteristics and types of small scale industries; demand-based and resources-basedancillaries.
- Government policy(s) for small scale industries; stages in startinga small scale industry.

Unit-II: Project identification, planning and control

- Assessment of viability, formulation, evaluation, financing.
- Field-study, preparation of project report, demand analysis, materialbalance and output methods, benefit cost analysis.
- The financial functions, cost of capital approach inproject planning and control
- Laws concerning entrepreneurship.
- Role of various national and state agencieswhich render assistance to small scale industries.

Unit-III: Rural resource mobilization

- Basic objectives
- Case study of eco-village, eco-tourism and agro-tourism.
- Micro financing with special reference to self-help groups.
- Rural entrepreneurship development through traditional technologies.

Unit-IV: Ideal village

- Concept and case studies.
- Sustainability of model village.
- NGOs and SHGs- role in rural development.

DSE1AP: Entrepreneurship Development & Rural Resource Mobilization (Practical)

Credits02

List of Practical

1. Model entrepreneur development project:

a. Project development.
b. Entrepreneurship model framework.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

2. Visits: Visit to village-based and community-based entrepreneurship programme(s).

3. Training: Training (duration as per the college discretion) at village entrepreneurship/ SHG/NGO engaged in rural development. Students will submit a report on training.

4. Laboratory note book and Viva Voce: Students will be required to maintain records of all works done in connection with the topic taught in this paper

Suggested Books/ Reading

- Forbat, John, "Entrepreneurship" New Age International.
- Havinal, Veerbhadrappa, "Management and Entrepreneurship" New Age International
- Joseph, L. Massod, "Essential of Management", Prentice Hall of India.
- National Service Scheme Manual (Revised) 2006, Government of India, Ministry or Youth Affairs and Sports, New Delhi.
- RashtriyaSevaYojanaSankalpana – Prof.Dr.SankayChakane, Dr.Promad \ Prabhakar, Diamond Publication, Pune .
- National Service Scheme Manual for NSS District Coordinators, National Service Scheme cell, Dept. of Higher and Technical Education, Mantralaya.
- Annual report of National service Scheme (NSS) published by dept. of Higher and Tachnical Educational, Mantralaya.
- NSS Cell, Dept. of Higher and Technical Education, Mantralaya, UTKARSHA- Socio and cultural guidelines.
- Case material as a Training Aid for Field Workers, Gurmeet Hans.
- Social service opportunities in hospital, Kapil K. Krishnan, TISS
- New Trends in NSS, Research papers published by University of Pune.
- ANOOGUNJ Research Journal, published by NSS unit C.K. Thakur college.
- Training Manual for Field Work published by RGNIYD, Shreeperumbuduer
- Prof.Ghatole R.N. Rural Social Science and Community Development.
- PurushottamSheth ,Dr.Shailja Mane, National Service Scheme.
- Join programme of National Service Science, University of Mumbai & DISHA – DEEPSHIKHA Projects, Nair Hospital, 2011-12.
- National Service Scheme in India: A Case study of Karnataka, M.B. Dishad, Trust Publications,2001
- Shastri, R.R. (1966), Social Work tradition in India, Welfare Research Organization, Varanasi.
- Singh Surendra and Srivastava S. P. (ed) 2005), Social Work Education in India, Challengeand oportunities, New Royal Book Publications, Lucknow
- Siddiqui, H.Y.2015, Social Work and Human Relations,Rawat Publications, Jaipur.
- http://www.thebetterindia.com/140/national-service-scheme-nss/
- http://en.wikipedia.org/wiki/ national-service-scheme
- http://nss.nic.in/adminstruct
- http://nss.nic.in/propexpan
- http://nss.nic.in
- http://socialworkness.org/about/hmtl

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

Skill Enhancement Course (SEC)

SEC- 3: Human Rights and Consumer Protection Rights Credits 02

SEC3T: Human Rights and Consumer Protection Rights Credits 02

Course Contents:

Unit -1: Human Rights

- Human Rights definition
- Universal declaration of Human Rights
- Human Rights: voices of youths
- History of youth for Human Rights
- Importance of Human Rights education

Unit -2: Fundamental rights of Indian Citizens

- Fundamental rights of Indian Citizens
- Fundamental Duties of the Indian Citizens
- Human Rights in India

Unit- 3: Consumer Rights

- Consumer rights of Indian Citizens
- Directive Principle of State Policy

Unit -4: Redressal of violation of consumer rights

- District Redressal Forum, State Forum
- National Council

Unit - 5: Consumer Safety

- Consumer and Food Safety
- Banking and Insurance problems
- Misleading Advertisement

Suggested Books/ Reading:

- Mishra Bijaylaxmi, United Nations and Security Challenges In New Millennium, Kilasobooks, NewDelhi 2004.
- Morgenthau Hans. J., Politics Among Nations. Scientific book Agency Culcutta 1963.
- Sing Jasjit, United Nations Peace Keeping Operation, The challenges of change in ReganMS Ed. UN
- 50 and beyond, lancer Books Delhi, 1996.
- Shastri M N, Introduction to Environment, Himalaya Publishing house, Mumbai 2005.

Or

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

SEC-3:Institutional Social Responsibilities in Rural Base Credits02

SEC3T: Institutional social responsibilitiesin Rural Base Credits 02

Course Contents:

Unit -1: Concept and functioning- appreciation of rural society

Rural life style, rural values with respect to nature, community participation, rural infrastructure.

Unit- 2: Understanding rural livelihood

Agriculture and farming, water management, non-farming livelihood and artisans, rural market.

Unit -3: Rural Institutions

Traditional rural organizations, SHGs, Panchayati Raj institutions (Gram Sabha, Gram Panchayat), Local Administration.

Unit - 4: Rural Development

- Basics of rural development.
- National programmes in rural development.
- Implementation strategies.

Unit - 5: Social Responsibilities in Rural Life

- Responsibilities towards poverty alleviation.
- .Responsibilities for eradication of illiteracy and unemployment.
- Responsibilities towards maintenance of health and hygiene of children, women & elderly.
- Responsibilities towards women empowerment.
- Responsibilities to abolish gender inequality and domestic as well as social violence.

Suggested Books/ Reading

- Singh, Katar, Rural Development: Policies, Principals and Managements, Sage Publication, New Delhi, 2015
- Hand Book on Village Panchayat Administration, Rajiv Gandhi for Panchayati Raj Studies, 2002
- United Nations Sustainable Development Goals, 2015
- M.P. Boraian, Best Practices in Rural Development, Shalex Publishers, 2016
- Kurukshetra (Ministry of Rural Development, GOI)
- Yojona Ministry of Information and Broadcasting, GOI)

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

Generic Elective(GE)

GE- 1:First-Aid for Disasters Management — Credits 06

GE1T: First-Aid for Disasters Management — Credits 04

Course contents:

Unit -1: Introduction to First-Aid

Concept.Aims of first-aid.Significance.Types and Levels.Principles of first-aid. Emergency Medical Responder and Roles

Unit -2: First-Aid Assessment and Supplies

Recognizing Emergencies.Assessing the situation.Disaster Kit.Home First Aid Kit, Travel First Aid Kit.Organizing Shelter.Check-lists.Safety Tools.DRAB and ABCD of first-aid.

Unit- 3: Disaster specific safety guidelines

Landslides, Earthquakes, Fires, Floods, Hazardous Materials.Epidemics.Others.Life-stock safety and Management during disasters.

Unit -4: Emergencies and What to do

The ABC Bites and Stings.Breathing.Bleeding.Fractures.Burns.Choking. Cold and Heat related illnesses. Convulsions and Seizures.Cardiac Problems.Dizziness and Fainting.Eye and Ear injuries.Head, neck and spine injuries.Infectious diseases.Poison.Shock.Stroke and Tooth injuries.Drowning, Dizziness and Fainting.

Unit - 5: Tools and Techniques for First Aid

Concept of Basic Life Support.Bandaging, Slings and Binders.Checking Pulse.Cardiopulmonary resuscitation (CPR).Clearing Air-way obstruction.Using the Fire extinguisher.

GE1P: Practical — Credits 02

Course contents:

Practical:

1. Breathing and circulation, Life-saving practices
2. Removing clothing, Casualty handling
3. Preparation of First aid Toolbox
4. Dressings, Cold compresses

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

5. Principles of bandaging
6. Roller bandages,Tubular gauze bandages, square knots, hand and foot cover
7. Arm sling, Elevationsling, improvised slings

Suggested Books/ Reading:

- The authorized manual of St. John Ambulance, St. Andrew's Ambulance association and the British red cross society, First Aid manual, 9th edition, Dorling Kindersley, London
- Clement Text book on First Aid & Emergency Nursing, First edition, JP brothers, 2012
- American Red Cross. (2008). A Family Guide to First Aid and Emergency Preparedness. United States: Staywell.
- Staywell. (2012). Responding to Emergencies: Comprehensive First Aid/ CPR/ AED. United States: American National Red Cross.

Or

GE- 1: Social Work — Credits 06

GE1T: Social Work — **Credits 06**

Course contents:

UNIT I: **Concept and SignificanceSocial Work**

Definition, meaning, purpose, goals and objectives; assumptions and functions of Social Work - basic and ancillary methods of Social Work - scientific basis of Social Work - knowledge, tools, techniques, skills, and abilities of a Professional Social Work Practitioner

UNIT II: Social Service

Principles of Social Work - Concepts: Social Service, Social Welfare, Social Security, Social Reform, and Social Action.

UNIT III:Philosophical bases of Social Work

Philosophical bases of Social Work - moral and religious values in Social Work philosophy -Christian, Hindu, Islam, Buddhist traditions - ideologies: Liberalism, Humanism, Socialism, Communism, Democracy; Gandhian Philosophy of Social Work

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

UNIT IV:Avenues of Social Work Practice

Fields of Social Work Practice.International Social Work.Voluntarism.Definition and characteristics of a profession - Social Work as profession; professional role of Social Work Practitioner - Development of Social Work Education in India.

Suggested Books/ Readings

- Shastri, R.R. (1966), Social Work tradition in India, Welfare Research Organization, Varanasi.
- Singh Surendra and Srivastava S. P. (ed) 2005), Social Work Education in India, Challengeand opportunities, New Royal Book Publications, Lucknow
- Siddiqui, H.Y.2015, Social Work and Human Relations,Rawat Publications, Jaipur.
- Social service opportunities in hospital, Kapil K. Krishnan, TISS
- Case material as a Training Aid for Field Workers, Gurmeet Hans.

******

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:48:13; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem5.pdf

Vidyasagar University

Curriculum for B.A. (General) in National Service Scheme (NSS)

[Choice Based Credit System]

Semester-VI

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
DSE-1B		**DSE1BT**: Vocational Skill Development	Core Course	4	0	0	6	75
		DSE1BP: Practical		0	0	4		
DSE-2B	TBD	Other Discipline (Any one from Discipline-2)/**TBD**	Core Course	5-1-0/4-0-4			6	75
GE-2		**GE2T**: Introduction to Disaster Management **Or** Project Management and Documentation Skills	General Elective Course-2	5-1-0/4-0-4			6	75
SEC-4		**SEC4T** : Environment & Energy Conservation **Or** Corporate Social Responsibility (CSR) & Sustainability	Skill Enhancement Course-4	1-1-0/1-0-1			2	50
Semester Total							**20**	**275**

L=Lecture, **T**=Tutorial, **P**=Practical, **DSE**= Discipline Specific Electives**, SEC**= Skill Enhancement Course, **TBD** = To be decided.

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:47:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem6.pdf

Semester-VI

Discipline Specific Electives (DSE)

DSE-1B: Vocational Skill Development

Skill Enhancement Course (SEC)

SEC-4: Environment & Energy Conservation

Or

SEC-4: Corporate Social Responsibility (CSR) & Sustainability

Generic Elective (GE)

GE- 2: Introduction to Disaster Management

Or

GE-2: Project Management and Documentation Skills

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:47:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem6.pdf

Discipline Specific Electives (DSE)

DSE-1B: Vocational Skill Development Credits 06

DSE1BT: Vocational Skill Development Credits 04

Course Contents:

Unit-I: Vocational Skills

a) Skill: Meaning, need & types.
b) Soft and Technical Skill Development, Training.
c) Time Management, Team Work.
d) Mentoring.

Unit-II: Vocational Training

a) Vocation and Training programmes.
b) Apprenticeship, Internship.
c) Entrepreneurship Development Skills- Government, Self- Employment.
d) Marketing of cottage products and outlets.
e) Industrial Safety Measures.

Unit-III: Field application

a) Marketing of cottage products and outlets
b) Role of cottage industry in development process
c) Micro financing with special reference to Self-Help groups
d) Entrepreneurship Development Skills- Government, Self- Employment

DSE1BP: Vocational Skill Development (Practical) Credits 02

Practical

- Each student will have the option to select two skill-areas out of the list of vocational skills based on the local conditions and opportunities
- 15-20 days training on one such skill.
- Required arrangements for developing these skills to be provided to each volunteer in collaboration with established agencies that possess the necessary in the related vocational skills.
- Training: Students will attend two vocational training programme in the selected village.
- Viva Voce: Laboratory note book and Viva Voce: Students will be required to maintain records of all works done in connection with the topic taught in this paper

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:47:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem6.pdf

Suggested Books/ References:

1. National Service Scheme Manual (Revised) 2006, Government of India, Ministry or Youth Affairs and Sports, New Delhi.
2. Rashtriya Seva Yojana Sankalpana – Prof. Dr. Sankay Chakane, Dr. Promad \ Prabhakar, Diamond Publication, Pune .
3. National Service Scheme Manual for NSS District Coordinators, National Service Scheme cell, Dept. of Higher and Technical Education, Mantralaya.
4. Annual report of National service Scheme (NSS) published by dept. of Higher and Tachnical Educational, Mantralaya.
5. NSS Cell, Dept. of Higher and Technical Education, Mantralaya, UTKARSHA- Socio and cultural guidelines.
6. Case material as a Training Aid for Field Workers, Gurmeet Hans.
7. Social service opportunities in hospital, Kapil K. Krishnan, TISS
8. New Trends in NSS, Research papers published by University of Pune.
9. ANOOGUNJ Research Journal, published by NSS unit C.K. Thakur college.
10. Training Manual for Field Work published by RGNIYD, Shreeperumbuduer
11. Prof. Ghatole R.N. Rural Social Science and Community Development.
12. Purushottam Sheth , Dr. Shailja Mane, National Service Scheme.
13. Join programme of National Service Science, University of Mumbai & DISHA – DEEPSHIKHA Projects, Nair Hospital, 2011-12.
14. National Service Scheme in India: A Case study of Karnataka, M.B. Dishad, Trust Publications,2001
15. Shastri, R.R. (1966), Social Work tradition in India, Welfare Research Organization, Varanasi.
16. Singh Surendra and Srivastava S. P. (ed) 2005), Social Work Education in India, Challenge and oportunities, New Royal Book Publications, Lucknow
17. Siddiqui, H.Y.2015, Social Work and Human Relations, Rawat Publications, Jaipur.
18. http://www.thebetterindia.com/140/national-service-scheme-nss/
19. http://en.wikipedia.org/wiki/ national-service-scheme
20. http://nss.nic.in/adminstruct
21. http://nss.nic.in/propexpan
22. http://nss.nic.in
23. http://socialworkness.org/about/hmtl

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:47:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem6.pdf

Skill Enhancement Course (SEC)

SEC- 4: Environment & Energy Conservation — Credits 02

SEC4T: Environment & Energy Conservation — Credits 02

Course Contents:

UNIT – I: Environment – The need of sustainability:
Introduction to environment and the multidisciplinary nature of environment. Environment conservation and management as the key requirements of sustainability. Definitions, scope and importance, need for public awareness

UNIT - II: Environmental Pollution:
Quantification of environmental pollution, various parameters and indexes. Types of environmental pollution and pollutants. Causes, effects and control measures of – Air pollution, Water pollution, Solid and e-waste management, Soil/land pollution, Noise pollution, Radioactive pollution and Thermal pollution. Role of an individual in prevention of pollution

UNIT - III: EMS and EIA:
Introduction and basics of environmental management systems and environmental impact assessment tools. Linkages between technology, environmental quality and economic gain: Carbon trading, Clean Development Mechanism etc.

UNIT – IV: Social issues and the environment:
Environment ethics, issues and possible solutions. Urban problems related to energy, water conservation, rain water harvesting, water shed management, rehabilitation problems and concerns – case study of Sardar Sarovar dam, environment protection acts.

UNIT - V: Energy – Sources, types and important aspects:
Physical understanding of issues and problems involved with the generation, storage, transport, and usage of various forms of energy in technological society. Types of energy resources as Renewable and Non-renewable energy, fossil fuels and hydropower, nuclear, solar, and wind energy, and issues related to energy conservation in everyday life. Effects of waste products associated with energy generation and usage and energy conservation measures.

Suggested Books/ Reading:

- A textbook of Environmental Chemistry and Pollution Control: Dr. S. S. Dara and Dr. D. D. Mishra
- Environmental studies: Dr. Suresh K. Dhameja
- Energy and the Environment, 2nd Edition: Robert A. Ristinen and Jack J. Kraushaar.
- Environmental Studies: Anindita Basak (Pearson Publications).
- 5. Introduction to Environmental Engineering and Science: Gilbert M. Masters (Prentice-Hall Publications).
- http://www.indiaenvironmentportal.org.in
- http://www.cseindia.org
- http://www.cpcb.nic.in

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:47:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem6.pdf

- http://www.gpcb.gov.in
- http://www.colorado.edu/physics/phys3070/phys3070_sp13/reading.html

Or

SEC-4: Corporate Social Responsibility (CSR) & Sustainability Credits 02

SEC4T: Corporate Social Responsibility (CSR) & Sustainability Credits 02

Course Contents:

UNIT – I: Understanding CSR

a) Understanding about various issues related to Corporate citizenship. Various corporate players and risk involved in mismanaging corporate citizenship.

b) Identification of Corporate Social Responsibility and role of the organization in CSR, Assessment of the organization's performance in regards to CSR.

UNIT – II: Elements of CSR

Elements of CSR, Importance of CSR, Role of CSR commitments Importance of capturing the value created from CSR efforts, Role of annual reporting in Value capture, Difference between tangible and intangible CSR value.

UNIT – III: Application of CSR strategy to a real life example

A survey on how different companies have fulfilled their corporate social responsibilities. Assessing how well a company is capturing the value of its CSR efforts.

Suggested Books/ Reading

1. Notes by trainer
2. Corporate Social Responsibility : doing the most good for your company and your cause, Philip Kotler & Nancy Lee
3. Small Giants companies that choose to be great instead of big – Bo Burlingham, Penguin 2007
4. Investing in Corporate Social Responsibility: A guide to Best Practice, Business Planning & the Uk's Leading Companies, Kogan Page Publishers, John Hancock

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:47:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem6.pdf

Generic Elective (GE)

GE- 2: Introduction to Disaster Management — Credits 06

GE2T: Introduction to Disaster Management — Credits 06

Course contents:

Unit I: Introduction

a) Disaster, Hazards, Vulnerability, Resilience, Risks.
b) Factors & significance, causes, nature, types and magnitude of disasters.
c) History of Disaster, Levels of disasters as per national guideline

Unit II: Consequences of disaster

a) Causes and consequences of hazards-physical, economic, cultural.
b) Repercussion of disasters and hazards, Economic damage.
c) Loss of human and animal life. Destruction of Ecosystem.

Unit III: Environment Issues

a) Environment conservation, enrichment and Sustainability
b) Climate Change, Global Efforts for environment conservation
c) Waste management, Solar Energy in India
d) Natural resource management: Rain water harvesting, Energy Conservation,
e) Waste land development, Soil conservations and Afforestation.

Unit IV:

a) Role of youth in Disaster Management
b) Role of NSS team in Disaster Management
c) National Disaster Response Force and Civil Defence-organization and functions
d) Quick Response Team and NDRF

Suggested Books/ Readings

1. Carter, Nick 1991. Disaster Management: A Disaster Manager's H Bank, Manila Philippines.
2. Document on World Summit on Sustainable Development 2002.
3. Govt. of India: Disaster Management Act 2005, Government of India, New Delhi.
4. Government of India, 2009. National Disaster Management Policy.
5. Gupta Anil K, Sreeja S. Nair. 2011 Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi
6. Kapur Anu 2010: Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New Delhi.
7. Parasuraman S, Acharya Niru 2000. Analysing forms of vulnerability in a disaster, The Indian Journal of Social Work, vol 61, issue 4, October
8. NIDM Publications at http://nidm.gov.in- Official Website of National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India- http://cwc.gov.in

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:47:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem6.pdf

Or

GE- 2: Project Management and Documentation Skills Credits 06

GE2T: Project Management and Documentation Skills (Marks- 50) Credits 04

Course contents:

Unit I: Introduction of Project Management

a) Overview of Project Management;
b) Problem Identification and Project plan;
c) Selection of Basic Research Methods- Field Study, Laboratory Study, Survey Method, Observational Method, Existing Data Based Research, Longitudinal Studies, Panel Studies

Unit II: **Project Cycle Management**

a) Project planning
b) Project implementation
c) Project monitoring
d) Project evaluation: impact assessment

Unit III: Documentation & Reporting

a) Collection and analysis of data
b) Layout of Project report
c) Steps in report writing; Citations, Bibliography and Annexure in report
d) Dissemination of documents/reports

GE2P: Practical (Marks- 25) Credits 02

Course contents:

1. The Project to be identified and carried out under the supervision of a faculty member assigned by the college/institution based on NSS field work. The Project Report to be submitted and the same will be evaluated by University appointed examiners.
2. Records
3. Viva Voce

******

Downloaded from Vidyasagar University by 103.77.136.15 on 26 July 2023 : 13:47:46; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/BA_GENERAL/NSS(General)sem6.pdf

Vidyasagar University

Ability Enhancement Compulsory Course (AECC – Environmental Studies)

Environmental Studies Credits: 4

Unit 1: Introduction to environmental studies

- Multidisciplinary nature of environmental studies;
- Scope and importance; Concept of sustainability and sustainable development.

(2 lectures)

Unit 2: Ecosystems

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems:
  a) Forest ecosystem
  b) Grassland ecosystem
  c) Desert ecosystem
  d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit 3: Natural Resources: Renewable and Non---renewable Resources

- Land resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Joint forest management.
- Water: Use and over---exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter---state).
- Energy resources: Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

(8 lectures)

Unit 4: Biodiversity and Conservation

- Levels of biological diversity : genetic, species and ecosystem diversity; Bio-geographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega---biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity: Habitat loss, poaching of wildlife, man---wildlife conflicts, biological invasions; Conservation of biodiversity: In---situ and Ex---situ conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

(8 lectures)

Unit 5: Environmental Pollution

- Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste.
- Pollution case studies.
- Noise pollution.

(8 lectures)

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 16:33:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/AECC/AECC_Electives_Env_studies.pdf

Unit 6: Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.
- Environmental policy and gender issues.

(7 lectures)

Unit 7: Human Communities and the Environment

- Human population growth: Impacts on environment, human health and welfare.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management: floods, earthquake, cyclones and landslides.
- Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

(6 lectures)

Unit 8: Field work

- Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.
- Visit to a local polluted site---Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems---pond, river, Delhi Ridge, etc.
- Disaster management.
- Coastal ecosystem.

(Equal to 5 lectures)

Suggested Readings:

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. *This Fissured Land:An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
4. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36---37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp. 29---64). Zed Books.
8. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 16:33:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/AECC/AECC_Electives_Env_studies.pdf

11. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. *Tripathi 1992*.
14. Sengupta, R. 2003. *Ecology and economics*: An approach to sustainable development. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology*: *Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger*: *A Natural History of the Indian Subcontinent*.
18. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
19. Wilson, E. O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
20. World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press.

Downloaded from Vidyasagar University by 103.77.136.15 on 27 July 2023 : 16:33:16; Copyright : Vidyasagar University
http://www.vidyasagar.ac.in/Downloads/ShowPdf.aspx?file=/UG_Syllabus_CBCS/AECC/AECC_Electives_Env_studies.pdf

Bajkul Milani Mahavidyalaya

[Govt. Sponsored]

Estd. – 1964

P.O.-Kismat Bajkul●Dist.-Purba Medinipur●Pin Code-721655

Web: www.bajkulcollege.org

E-mail: bajkul_college@rediffmail.com

Academic calendar prepared and adhered for conduct of Examination and other related matters-2022

- Our college, Bajkul Milani Mahavidyalaya is affiliated to Vidyasagar University, one of the state universities in West Bengal. Since, we have under the affiliation of it, we must have to obey the basic rules and features of the Academic Calendar made of and provided by the mother university. Hence, following the university academic calendar, our college prepares a separate academic calendar alongwith the Holiday List for every year. Generally, each session starts with UG and PG classes in the months of July and August according to the guidelines of Vidyasagar University.
- Accordingly we schedule tentative internal assessment dates for both UG and PG courses, tentative date regarding form fill up. Internal Assessments are conducted centrally involving concerned departments in the process. College informs students about the university notices and circulars related to examinations from time to time through students' notice board, college website and also departmental notice board and also verbally by the faculty members of the respective departments. All the departments conduct Internal Assessment of students and students are well informed regarding the Internal Examinations by the departmental Teachers.
- Within two months from the new session, class tests and pre-final examination are scheduled in the academic calendar. Two class tests/ internal examination/ assessments for UG/ PG throughout the session in every paper are arranged and conducted. Yet, extra class tests are continued till the end of the session.
- As per rule of Vidyasagar University examination pattern, Internal Assessment like class test and Mid-term test are arranged by every department of the college as per university calendar. Beside this, many departments organize Pre-Final Test for both UG and PG students at the last moment of every academic year or during study leave before Final Examination/ End Semester/ End Term Examination. Generally, Pre-final examinations are conducted in the next November-December (Sem-I, III & V) and May-June (Sem-II, IV & VI) for UG and PG.

List of Holidays for 2022:

Sl. No.	Occasion	Month	Date	No. of days	Name of the day
1.	New Year's day (English)	Jan.	01	1	Saturday
2.	Birthday of Vivekananda		12	1	Wednesday
3.	Poush Parban (local)		14	1	Friday
4.	Birthday of Netaji		23	(1)	Sunday
5.	Republic Day		26	1	Wednesday
6.	Saraswati Puja	Feb.	05 & 06	2 (1)	Saturday & Sunday
7.	Shri Shri Thakur Panchanan Barma's Birthday		14	1	Monday
8.	Sivaratri (local)	March	01	1	Tuesday
9.	Doljatra		18 & 19	2	Friday & Saturday
10.	Sabebarat		18		Friday
11.	Madhukrishna Trayodoshi		30	1	Wednesday
12.	Shri Harichand Thakur's Birthday & Ramnabami	April	10	(1)	Sunday
13.	Chaitra Sankranti		14	1	Thursday
14.	Good Friday		15	1	Friday
15.	New Year's day (Bengali)				
16.	Easter Saturday		16	1	Saturday
17.	May Day	May	01	(1)	Sunday
18.	Id-Ul-Fitre		03	1	Tuesday
19.	Birthday of Rabindranath		09	1	Monday
20.	Buddha Purnima		26	1	Monday
21.	Jamaisasthi	June	05	(1)	Sunday
22.	Summer recess	16th May to 30th June		46	Except Sunday & holidays
23.	Rathajatra	July	01	1	Friday
24.	Id-ud-Zoha		10	(1)	Sunday
25.	Muharram	Aug.	09	1	Tuesday
26.	Independence Day		15	1	Monday
27.	Janmastami		19	1	Friday
28.	College Foundation Day	Sept.	03	1	Saturday
29.	Viswakarma Puja (local)		17	1	Saturday
30.	Mahalaya		25	(1)	Sunday
31.	Birthday of Vidyasagar		26	1	Monday
32.	University Foundation Day		29	1	Thursday
33.	Birthday of Gandhiji	Oct.	02	(1)	Sunday
34.	Fateha - Doaz - Daham		09	(1)	Sunday
35.	Chhatpuja		30	(1)	Sunday
36.	Puja holidays	Sept. 30 to Oct. 27		24	Except Sunday
37.	Jagadhatri Puja	Nov.	02	1	Wednesday
38.	Birthday of Guru Nanak		08	1	Tuesday
39.	Birthday of Birsa Munda		15	1	Tuesday
40.	Christmas Day	Dec.	25	(1)	Sunday
41.	Winter Recess		26 – 31	6	Except Sunday
42.	Principal's Discretion		-	4	-

Academic Calendar for UG & PG from January to June - 2022

Name of the Day	January		February		March		April		May		June	
	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD
Friday	-	-	-	-	-	-	1	FWD^{IAUG6}	-	-	-	-
Saturday	1	HD	-	-	-	-	2	HWD^{IAUG6}	-	-	-	-
Sunday	2	WHD	-	-	-	-	3	WHD	1	WHD*	-	-
Monday	3	FWD	-	-	-	-	4	FWD^{FUG}	2	FWD	-	-
Tuesday	4	FWD	1	FWD^{FUG5}	1	HD	5	FWD^{FUG}	3	HD	-	-
Wednesday	5	FWD	2	FWD^{FUG5}	2	FWD	6	FWD^{FUG}	4	FWD	1	SR*
Thursday	6	FWD	3	FWD	3	FWD	7	FWD^{FUG}	5	FWD	2	FWD^{IAUG6}
Friday	7	FWD	4	FWD	4	FWD	8	FWD^{FUG}	6	FWD	3	FWD^{IAUG6}
Saturday	8	HWD	5	HD	5	HWD	9	HWD	7	HWD	4	FWD^{IAUG6}
Sunday	9	WHD	6	WHD*	6	WHD	10	WHD*	8	WHD	5	WHD*^{O}
Monday	10	FWD	7	FWD	7	FWD	11	FWD^{FUG}	9	HD	6	SR*
Tuesday	11	FWD	8	FWD	8	FWD^{O}	12	FWD^{FUG}	10	FWD	7	SR*
Wednesday	12	HD^{O}	9	FWD^{FPG}	9	FWD	13	FWD	11	FWD	8	SR*^{O}
Thursday	13	FWD	10	FWD^{FPG}	10	FWD	14	HD	12	FWD	9	SR*
Friday	14	HD	11	FWD	11	FWD	15	HD	13	FWD^{IAUG2}	10	SR*
Saturday	15	HWD	12	HWD	12	HWD	16	HD	14	FWD^{IAUG2}	11	SR*
Sunday	16	WHD	13	WHD	13	WHD	17	WHD	15	WHD	12	WHD
Monday	17	FWD	14	HD	14	FWD^{IAUG1}	18	FWD	16	HD/SR*	13	FWD^{IAPG}
Tuesday	18	FWD	15	FWD	15	FWD^{IAUG1}	19	FWD	17	SR*	14	FWD^{IAUG}
Wednesday	19	FWD	16	FWD^{FUG3}	16	FWD^{IAUG1}	20	FWD	18	SR*	15	FWD^{IAUG}
Thursday	20	FWD	17	FWD^{FUG3}	17	FWD	21	FWD	19	SR*	16	FWD^{IAUG4}
Friday	21	FWD	18	FWD^{FUG3}	18	HD	22	FWD	20	SR*	17	FWD^{IAUG4}
Saturday	22	HWD	19	HWD	19	HD	23	HWD	21	SR*	18	FWD^{IAUG4}
Sunday	23	WHD*^{O}	20	WHD	20	WHD	24	WHD	22	WHD	19	WHD
Monday	24	FWD	21	FWD^{FUGO}	21	FWD^{FUG1}	25	FWD	23	SR*	20	SR*
Tuesday	25	FWD	22	FWD^{FUG3}	22	FWD^{FUG1}	26	FWD	24	SR*	21	SR*^{O}
Wednesday	26	HD^{O}	23	FWD	23	FWD^{FUG1}	27	FWD	25	SR*	22	SR*
Thursday	27	FWD^{FUG5}	24	FWD	24	FWD^{FUG1}	28	FWD$^{IAUG1/4}$	26	HD	23	SR*
Friday	28	FWD^{FUG5}	25	FWD	25	FWD^{FUG1}	29	FWD$^{IAUG1/4}$	27	SR*	24	SR*
Saturday	29	HWD	26	HWD	26	HWD	30	FWD$^{IAUG1/4}$	28	SR*	25	SR*
Sunday	30	WHD	27	WHD	27	WHD	-	-	29	WHD	26	WHD
Monday	31	FWD^{FUG5}	28	FWD	28	FWD	-	-	30	SR*	27	FWD^{FUG6}
Tuesday	-	-	-	-	29	FWD	-	-	31	SR*	28	FWD^{FUG6}
Wednesday	-	-	-	-	30	HD	-	-	-	-	29	FWD^{FUG6}
Thursday	-	-	-	-	31	FWD	-	-	-	-	30	FWD^{FUG6}
TWD	=	22	=	22	=	23	=	23	=	22	=	26
THD	=	04	=	02	=	04	=	03	=	04	=	00
TWHD	=	05	=	04	=	04	=	04	=	05	=	04
TD	=	31	=	28	=	31	=	30	=	31	=	30

Total Working Day of the Session = 138

TWD = Total Working Day, TD = Teaching Day, HWD = Half Working Day, FWD = Full Working Day, WHD = Weekly Holiday (Sunday), WHD *= Weekly Holiday (Sunday) cum Holiday, HD = Holiday, TWD= Total Working Days, THD= Total Holidays, TWHD= Total Weekly Holidays & TD= Total Days, FWD^{IUG}= Working Days with Teaching & Internal Assessment (UG), FWD^{IUGPG}= Working Days with Teaching & Internal Assessment (UG & PG), FWD^{FUGPG} =Working Days with Teaching & Final Examination (UG & PG), FWD^{FUG} =Working Days with Teaching & Final Examination (UG) & SR*=Summer Recess with working mode (administrative, academic & others)

Total Academic Days = 138

N.B.:

1. 1st& 2nd Internal Assessment for 1st, 3rd and 5th Semester for UG and 1st and 3rd Semester for PG: To be decided by the Institution as per central basis.

2. Final Theory Examination for both UG: As per University Schedule (probably within 2nd and 3rdweek of June)

3. Final Practical Examination for both UG: As per University Schedule (probably within 1st and 2nd week of June)

4. Final Practical Examination for both UG & PG: As per University Schedule (probably within 15 days after theory examination)

Academic Calendar for UG & PG from July to December – 2022:

Name of the Day	July		August		September		October		November		December	
	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD
Tuesday	-	-	-	-	-	-	-	-	1	FWD	-	-
Wednesday	-	-	-	-	-	-	-	-	2	HD	-	-
Thursday	-	-	-	-	1	FWD	-	-	3	FWD	1	FWD^{O}
Friday	1	HD	-	-	2	FWD	-	-	4	FWD	2	FWD
Saturday	2	HWD	-	-	3	HD^{O}	1	PHD	5	HWD	3	HWD
Sunday	3	WHD	-	-	4	WHD	2	WHD*^{O}	6	WHD	4	WHD
Monday	4	FWD^{FUG6}	1	FWD^{FUG4}	5	FWD^{O}	3	PHD	7	FWD	5	FWD
Tuesday	5	FWD^{FUG6}	2	FWD^{FUG4}	6	FWD^{O}	4	PHD	8	HD	6	FWD
Wednesday	6	FWD^{FUG6}	3	FWD^{FUG4}	7	FWD	5	PHD	9	FWD	7	FWD
Thursday	7	FWD^{FUG6}	4	FWD^{FUG4}	8	FWD	6	PHD	10	FWD	8	FWD
Friday	8	FWD^{FUG6}	5	FWD^{FUG4}	9	FWD	7	PHD	11	FWD	9	FWD
Saturday	9	FWD^{FUG6}	6	FWD^{FUGPG}	10	HWD	8	PHD	12	HWD	10	HWD
Sunday	10	WHD*	7	WHD	11	WHD	9	WHD*	13	WHD	11	WHD
Monday	11	FWD$^{FUG2/6}$	8	FWD^{FUGPG}	12	FWD	10	PHD	14	FWD	12	FWD
Tuesday	12	FWD$^{FUG2/6}$	9	HD	13	FWD	11	PHD	15	HD	13	FWD
Wednesday	13	FWD^{FUG6}	10	FWD^{FUGPG}	14	FWD	12	PHD	16	FWD	14	FWD
Thursday	14	FWD^{FUGPG}	11	FWD	15	FWD	13	PHD	17	FWD	15	FWD
Friday	15	FWD^{FUGPG}	12	FWD^{FUGPG}	16	FWD	14	PHD	18	FWD	16	FWD
Saturday	16	HWD^{FUG6}	13	HWD^{FUGPG}	17	HD	15	PHD	19	HWD	17	HWD
Sunday	17	WHD	14	WHD	18	WHD	16	WHD	20	WHD	18	WHD
Monday	18	FWD^{FUGPG}	15	HD^{O}	19	FWD	17	PHD	21	FWD	19	FWD^{IAUG5}
Tuesday	19	FWD^{FUGPG}	16	FWD^{FUG2}	20	FWD	18	PHD	22	FWD	20	FWD^{IAUGPG}
Wednesday	20	FWD^{FUGPG}	17	FWD	21	FWD	19	PHD	23	FWD	21	FWD^{IAUGPG}
Thursday	21	FWD	18	FWD^{FUG2}	22	FWD	20	PHD	24	FWD	22	FWD^{IAUGPG}
Friday	22	FWD^{FUGPG}	19	HD	23	FWD	21	PHD	25	FWD	23	FWD^{IAUG1}
Saturday	23	HWD	20	HWD	24	HWD^{O}	22	PHD	26	HWD^{O}	24	HWD
Sunday	24	WHD	21	WHD	25	WHD*	23	WHD	27	WHD	25	WHD*
Monday	25	FWD^{FUGPG}	22	FWD^{FUG2}	26	HD	24	PHD	28	FWD^{IAUG3}	26	WR*
Tuesday	26	FWD^{FUGPG}	23	FWD^{FUG2}	27	FWD	25	PHD	29	FWD^{IAUG3}	27	WR*
Wednesday	27	FWD^{FUGPG}	24	FWD^{FUG2}	28	FWD	26	PHD	30	FWD^{IAUG3}	28	WR*
Thursday	28	FWD	25	FWD^{FUG2}	29	HD	27	PHD	-	-	29	WR*
Friday	29	FWD^{FUGPG}	26	FWD^{FUG2}	30	PHD	28	FWD	-	-	30	WR*
Saturday	30	FWD^{FUG4}	27	FWD^{FUG2}	-	-	29	HWD	-	-	31	WR*
Sunday	31	WHD	28	WHD	-	-	30	WHD*	-	-	-	-
Monday	-	-	29	FWD^{FUGO}	-	-	31	FWD	-	-	-	-
Tuesday	-	-	30	FWD^{FUG2}	-	-	-	-	-	-	-	-
Wednesday	-	-	31	FWD^{FUG2}	-	-	-	-	-	-	-	-
TWD	=	25	=	24	=	21	=	03	=	23	=	21
THD	=	01	=	03	=	05	=	23	=	03	=	06
TWHD	=	05	=	04	=	04	=	05	=	04	=	04
TD	=	31	=	31	=	30	=	31	=	30	=	31

Total Working Day of the Session = 117

TWD = Total Working Day, TD = Teaching Day, HWD = Half Working Day, FWD = Full Working Day, WHD = Weekly Holiday (Sunday), WHD* = Weekly Holiday cum Holiday, HD = Holiday, PHD = Puja Holiday, TWD= Total Working Days, THD= Total Holidays, TWHD= Total Weekly Holidays & TD= Total Days.

Total Academic Days = 117

N.B.:

1. 1st& 2nd Internal Assessment for 1st, 3rd and 5th Semester for UG and 1st and 3rd Semester for PG: To be decided by the Institution as per central basis.

2. Final Theory Examination for both UG & PG: As per University Schedule (probably within 3rd week of December & 1st week of January)

3. Final Practical Examination for both UG: As per University Schedule (probably within 1st and 2nd week of December)

4. Final Practical Examination for both UG & PG: As per University Schedule (probably within 15 days after theory examination)

Tentative Academic Calendar for Different Socio-cultural and Other Programmes during the session, 2021-2022 (July to June):

Sl. No.	Academic Programmes	Organized by	Date	Remarks
1.	Thalaseamia Screening Camp and Awareness Programme	IQAC, BMM	2nd/ 3rd Week of August, 2021	Social Work & Programme
2.	'Manav Bandhan Utsav'	Students' Union, IQAC, NCC & NSS	21th/ 23rd August, 2021	Social Work Programme
3.	Blood Donation Camp		23rd/ 24th August, 2021	
4.	Independence Day	Dept. of NSS & College	15th/ 16th August, 2021	Nation's Day Observation
5.	National Sports Day Observation	Dept. of Physical Education, BMM	29th/ 30th August, 2021	National Sports Day Observation as per Central Govt. Order
6.	Teachers' Day Celebration	Students' Union	5th/ 6th September, 2021	Celebrating for giving the Tribute/ Admiration towards Teaching Communities
7.	College Excursion to the Selected Tourist Spots or Historical Places in West Bengal or in Neighbourhood States like Bihar, Jharkhanda and Orissa	College & Students' Union	2nd/ 3rd Week of September, 2021	Excursion/ Academic Tour
8.	NSS Day	I, II & III Units & Dept. of NSS	24th September, 2021	Established Day Observation
9.	'Agamani' Utsav	College & Students' Union	8th/ 9th October, 2021	'Sharad Suvechchha' Celebration
10.	Grand Feast Celebration & Student-Staff Reunion	College & Students' Union	2nd Week of November, 2021	Student-Staff Convergence
11.	"Nabin Baran"/ Fresher's Welcome	College & Students' Union	2nd Week of November, 2021	Academic cum Cultural Meet and Programme among fresher, older students and staffs
12.	World AIDS Day Celebration	I, II & III Units & Dept. of NSS	1st December, 2021	Social Work Programme
13.	Winter Special Camp-2020	I, II & III Units of NSS	25th -30th December, 2021	Special Camp
14.	World Youth Day	Dept. of NSS & College	12th January, 2022	National Day Observation/ Celebration of Swami Vivekananda's Birth Day
15.	Parakram Diwas	Dept. of NSS & College	23rd/ 24th January, 2022	National Day Observation/ Celebration of Netaji Sbhash Chandra Bose's Birth Day
16.	Republic Day	Dept. of NSS & College	26th/ 27th January, 2022	National Day Observation/ Celebration of Constitutional Day
17.	Annual Sports Programme	College & Students' Union	1st / 2nd Week of January, 2022	College Annual Programme
18.	Inter Annual Sports Programme	College Students' Union, BMM	1st / 2nd Week of January, 2022	Programmes relating Teaching Staff, Non-teaching Staff and Students of the college
19.	Annual Cultural Programme	College & Students' Union	2nd/ 3rd Week of January, 2022	College Annual Programme
20.	Saraswati Puja	College & Students' Union	5th – 6th February, 2022	Academic Spiritual Day Celebration
21.	Annual Award Distribution Ceremony & 'Milani' Publication	College & Students' Union	7th/ 8th February, 2022	Annual Programme

22.	**Career Counseling Programme**	**Dept. of Mathematics & IQAC**	**3rd Week of February, 2022**	**Career Advancement Programme**
23.	**'Matri Vasha Diwas'**	**Dept. of Bengali & Dept. of NSS**	**21st February, 2022**	**International Mother Language Day Observation**
24.	**International Women's Day**	**I, II & III Units & Dept. of NSS**	**8th March, 2022**	**Respecting the women and creating the institutional and social knowledge or working background of gender empowerment and gender equity**
25.	**"Basanta Utsav"**	**College & Students' Union, BMM**	**3rd Week of March (16th/ 17th March), 2022**	**Colour Festival/ Spring Welcome Programme**
26.	**World Environment Day**	**Departments of Earth Science (Geography) & Bioscience (Botany & Zoology), BMM**	**5th/ 6th June, 2022**	**Making the knowledge background and rising awareness towards environment and environmental issues and for playing the human roles and responsibility in self of its protection and conservation**

Bajkul Milani Mahavidyalaya

[Govt. Sponsored]

Estd. – 1964

P.O.-Kismat Bajkul●Dist.-Purba Medinipur●Pin Code-721655

Web: www.bajkulcollege.org

E-mail: bajkul_college@rediffmail.com

Academic calendar prepared and adhered for conduct of Examination and other related matters-2021

- Our college, Bajkul Milani Mahavidyalaya is affiliated to Vidyasagar University, one of the state universities in West Bengal. Since, we have under the affiliation of it, we must have to obey the basic rules and features of the Academic Calendar made of and provided by the mother university. Hence, following the university academic calendar, our college prepares a separate academic calendar alongwith the Holiday List for every year. Generally, each session starts with UG and PG classes in the months of July and August according to the guidelines of Vidyasagar University.
- Accordingly we schedule tentative internal assessment dates for both UG and PG courses, tentative date regarding form fill up. Internal Assessments are conducted centrally involving concerned departments in the process. College informs students about the university notices and circulars related to examinations from time to time through students' notice board, college website and also departmental notice board and also verbally by the faculty members of the respective departments. All the departments conduct Internal Assessment of students and students are well informed regarding the Internal Examinations by the departmental Teachers.
- Within two months from the new session, class tests and pre-final examination are scheduled in the academic calendar. Two class tests/ internal examination/ assessments for UG/ PG throughout the session in every paper are arranged and conducted. Yet, extra class tests are continued till the end of the session.
- As per rule of Vidyasagar University examination pattern, Internal Assessment like class test and Mid-term test are arranged by every department of the college as per university calendar. Beside this, many departments organize Pre-Final Test for both UG and PG students at the last moment of every academic year or during study leave before Final Examination/ End Semester/ End Term Examination. Generally, Pre-final examinations are conducted in the next November-December (Sem-I, III & V) and May-June (Sem-II, IV & VI) for CBCS Curriculum based UG and PG.

List of Holidays for 2021:

Sl. No.	Occasion	Month	Date	No. of days	Name of the day
1.	New Year's day (English)	Jan.	01	1	Friday
2.	Birthday of Vivekananda		12	1	Tuesday
3.	Poush Parban (local)		14	1	Thursday
4.	Birthday of Netaji		23	(1)	Saturday
5.	Republic Day		26	1	Tuesday
6.	Saraswati Puja	Feb.	16 & 17	2	Tuesday & Wednesday
7.	Sivaratri (local)	March	11	1	Thursday
8.	Doljatra		28 & 29	2 (1)	Sunday & Monday
9.	Sabebarat		30	1	Tuesday
10.	Good Friday	April	02	1	Friday
11.	Easter Saturday		03	1	Saturday
12.	Chaitra Sankranti		14	1	Wednesday
13.	New Year's day (Bengali)		15	1	Thursday
14.	Ramnabami		21	1	Wednesday
15.	May Day	May	01	1	Saturday
16.	Birthday of Rabindranath		03	1	Tuesday
17.	Id-Ul-Fitre		09	1	Monday
18.	Summer Recess		16 - 31	16	Including Sunday & Holidays
19.	Buddha Purnima		26	1	Wednesday
20.	Summer Recess	June	1- 30	30	Including Sunday & Holidays
21.	Jamaisasthi		16	1	Wednesday
22.	Rathajatra	July	12	1	Monday
23.	Id-ud-Zoha		21	1	Wednesday
24.	Independence Day	Aug.	15	(1)	Sunday
25.	Muharram		19	1	Thursday
26.	Janmastami		30	1	Monday
27.	College Foundation Day	Sept.	03	1	Friday
28.	Viswakarma Puja (local)		17	1	Friday
29.	Birthday of Vidyasagar		26	(1)	Sunday
30.	University Foundation Day		29	1	Wednesday
31.	Birthday of Gandhiji	Oct.	02	1	Saturday
32.	Mahalaya		06	1	Wednesday
33.	Fateha - Doaz - Daham		19	1	Tuesday
34.	Puja holidays	Oct. 10 to Nov. 06		24	Except Sunday
35.	Chhatpuja	Nov.	10		Wednesday
36.	Jagadhatri Puja		13	1	Saturday
37.	Birthday of Guru Nanak		19	1	Friday
38.	Christmas Day	Dec.	25	1	Saturday
39.	Winter Recess		26 – 31	6	Except Sunday
40.	Principal's Discretion		-	4	-

Academic Calendar for UG & PG from January to June - 2021

Name of the Day	January		February		March		April		May		June	
	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD
Thursday	-	-	-	-	-	-	1	FWD	-	-	-	-
Friday	1	HD	-	-	-	-	2	HD	-	-	-	-
Saturday	2	FWD	-	-	-	-	3	HD	1	HD	-	-
Sunday	3	WHD	-	-	-	-	4	WHD	2	WHD	-	-
Monday	4	FWD	1	FWD	1	FWD	5	FWD^{FUGPG}	3	FWD	-	-
Tuesday	5	FWD	2	FWD	2	FWD	6	FWD^{FUGPG}	4	FWD	1	SR*
Wednesday	6	FWD	3	FWD	3	FWD^{IUG}	7	FWD^{FPG}	5	FWD	2	SR*
Thursday	7	FWD	4	FWD	4	FWD^{IUGPG}	8	FWD^{FUGPG}	6	FWD	3	SR*
Friday	8	FWD	5	FWD	5	FWD^{IUGPG}	9	FWD^{FUGPG}	7	FWD	4	SR*
Saturday	9	HWD	6	HWD	6	HWD^{IUGPG}	10	FWD^{FUG}	8	HWD	5	SR*^{O}
Sunday	10	WHD	7	WHD	7	WHD	11	WHD	9	WHD*	6	WHD
Monday	11	FWD	8	FWD	8	FWD^{O}	12	FWD^{FUGPG}	10	FWD	7	SR*
Tuesday	12	HD^{O}	9	FWD	9	FWD	13	FWD^{FUGPG}	11	FWD	8	SR*^{O}
Wednesday	13	FWD	10	FWD	10	FWD	14	HD	12	FWD	9	SR*
Thursday	14	HD	11	FWD	11	HD	15	HD	13	FWD	10	SR*
Friday	15	FWD	12	FWD	12	FWD	16	FWD^{FUGPG}	14	HD	11	SR*
Saturday	16	HWD	13	HWD	13	HWD	17	HWD^{FPG}	15	HWD	12	SR*
Sunday	17	WHD	14	WHD	14	WHD	18	WHD	16	WHD	13	WHD
Monday	18	FWD	15	FWD	15	FWD	19	FWD^{FUGPG}	17	SR*	14	SR*
Tuesday	19	FWD	16	HD	16	FWD	20	FWD^{FUGPG}	18	SR*	15	SR*
Wednesday	20	FWD	17	HD	17	FWD	21	HD	19	SR*	16	HD
Thursday	21	FWD	18	FWD^{IUG}	18	FWD	22	FWD^{FPG}	20	SR*	17	SR*
Friday	22	FWD	19	FWD^{IUG}	19	FWD	23	FWD^{FPG}	21	SR*	18	SR*
Saturday	23	HD^{O}	20	HWD	20	HWD	24	FWD^{FPG}	22	SR*	19	SR*
Sunday	24	WHD	21	WHD^{O}	21	WHD	25	WHD	23	WHD	20	WHD
Monday	25	FWD	22	FWD^{IUG}	22	FWD^{FUG5}	26	FWD	24	SR*	21	SR*^{O}
Tuesday	26	HD^{O}	23	FWD^{IUG}	23	FWD^{FUG5}	27	FWD	25	SR*	22	SR*
Wednesday	27	FWD	24	FWD	24	FWD^{FUG5}	28	FWD	26	HD	23	SR*
Thursday	28	FWD	25	FWD	25	FWD^{FUG5}	29	FWD	27	SR*	24	SR*
Friday	29	FWD	26	FWD	26	FWD	30	FWD	28	SR*	25	SR*
Saturday	30	HWD	27	HWD	27	HWD	-	-	29	SR*	26	SR*
Sunday	31	WHD	28	WHD	28	WHD*	-	-	30	WHD	27	WHD
Monday	-	-	-	-	29	HD	-	-	31	SR*	28	SR*
Tuesday	-	-	-	-	30	FWD	-	-	-	-	29	SR*
Wednesday	-	-	-	-	31	FWD	-	-	-	-	30	SR*
TWD	=	21	=	22	=	25	=	21	=	23	=	25
THD	=	05	=	02	=	02	=	05	=	03	=	01
TWHD	=	05	=	04	=	04	=	04	=	05	=	04
TD	=	31	=	28	=	31	=	30	=	31	=	30

Total Working Day of the Session = 137

TWD = Total Working Day, TD = Teaching Day, HWD = Half Working Day, FWD = Full Working Day, WHD = Weekly Holiday (Sunday), WHD *= Weekly Holiday (Sunday) cum Holiday, HD = Holiday, TWD= Total Working Days, THD= Total Holidays, TWHD= Total Weekly Holidays & TD= Total Days, FWD^{IUG}= Working Days with Teaching & Internal Assessment (UG), FWD^{IUGPG}= Working Days with Teaching & Internal Assessment (UG & PG), FWD^{FUGPG} =Working Days with Teaching & Final Examination (UG & PG), FWD^{FUG} =Working Days with Teaching & Final Examination (UG) & SR*=Summer Recess with working mode (administrative, academic & others)

Total Academic Days = 137

N.B.:

1. 1st& 2nd Internal Assessment for 1st, 3rd and 5th Semester for UG and 1st and 3rd Semester for PG: To be decided by the Institution as per central basis.

2. Final Theory Examination for both UG: As per University Schedule (probably within 2nd and 3rdweek of June)

3. Final Practical Examination for both UG: As per University Schedule (probably within 1st and 2nd week of June)

4. Final Practical Examination for both UG & PG: As per University Schedule (probably within 15 days after theory examination)

Academic Calendar for UG & PG from July to December – 2021:

Name of the Day	July		August		September		October		November		December	
	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD
Monday	-	-	-	-	-	-	-	-	1	PHD	-	-
Tuesday	-	-	-	-	-	-	-	-	2	PHD	-	-
Wednesday	-	-	-	-	1	FWD^{FUG}	-	-	3	PHD	1	FWD^{O}
Thursday	1	FWD	-	-	2	FWD^{FUG}	-	-	4	PHD	2	FWD
Friday	2	FWD	-	-	3	FWD^{FUG}/ HD^{O}	1	FWD	5	PHD	3	FWD
Saturday	3	HWD	-	-	4	HWD	2	HD^{O}	6	PHD	4	HWD
Sunday	4	WHD	1	WHD	5	WHD^{O}	3	WHD	7	WHD	5	WHD
Monday	5	FWD	2	FWD^{FUG5}	6	$FWD^{FUG/O}$	4	FWD	8	FWD	6	FWD
Tuesday	6	FWD	3	FWD^{FUG5}	7	FWD^{FUG}	5	FWD	9	FWD	7	FWD
Wednesday	7	FWD	4	FWD^{FUG5}	8	FWD^{FUG}	6	HD	10	HD	8	FWD
Thursday	8	FWD	5	FWD^{FUG5}	9	FWD^{FUG}	7	FWD	11	FWD	9	FWD
Friday	9	FWD	6	FWD^{FUG5}	10	FWD^{FUG}	8	FWD	12	FWD	10	FWD
Saturday	10	HWD	7	HWD^{FUG5}	11	FWD^{FUG}	9	HWD	13	HD	11	HWD
Sunday	11	WHD	8	WHD	12	WHD	10	WHD	14	WHD	12	WHD
Monday	12	HD	9	FWD^{FUG5}	13	FWD^{FUG}	11	PHD	15	FWD	13	FWD
Tuesday	13	FWD	10	FWD^{FUG5}	14	FWD^{FUG}	12	PHD	16	FWD	14	FWD
Wednesday	14	FWD	11	FWD^{FUG5}	15	FWD^{FUG}	13	PHD	17	FWD	15	FWD
Thursday	15	FWD	12	FWD	16	FWD	14	PHD	18	FWD	16	FWD
Friday	16	FWD	13	FWD	17	HD	15	PHD	19	HD	17	FWD
Saturday	17	HWD	14	HWD	18	HWD	16	PHD	20	HWD	18	HWD
Sunday	18	WHD	15	WHD^{*O}	19	WHD	17	WHD	21	WHD	19	WHD
Monday	19	FWD	16	FWD^{FPG}	20	FWD	18	PHD	22	FWD	20	FWD
Tuesday	20	FWD	17	FWD^{FPG}	21	FWD	19	PHD	23	FWD	21	FWD
Wednesday	21	HD	18	FWD^{FUG}	22	FWD	20	PHD	24	FWD	22	FWD
Thursday	22	FWD	19	HD	23	FWD	21	PHD	25	FWD	23	FWD
Friday	23	FWD	20	FWD^{FPG}	24	FWD^{O}	22	PHD	26	FWD^{O}	24	FWD
Saturday	24	HWD	21	HWD^{FPG}	25	HWD	23	PHD	27	HWD	25	HD
Sunday	25	WHD	22	WHD	26	WHD*	24	WHD	28	WHD	26	WHD
Monday	26	FWD	23	FWD	27	FWD	25	PHD	29	FWD	27	WR*
Tuesday	27	FWD	24	FWD^{FUG}	28	FWD	26	PHD	30	FWD	28	WR*
Wednesday	28	FWD	25	FWD^{FUG}	29	HD	27	PHD	-	-	29	WR*
Thursday	29	FWD	26	FWD^{FUG}	30	FWD	28	PHD	-	-	30	WR*
Friday	30	FWD	27	FWD^{FUGPG}	-	-	29	PHD	-	-	31	WR*
Saturday	31	HWD	28	FWD^{FUGPG}	-	-	30	PHD	-	-	-	-
Sunday	-	-	29	WHD^{O}	-	-	31	WHD	-	-	-	-
Monday	-	-	30	HD	-	-	-	-	-	-	-	-
Tuesday	-	-	31	FWD^{FUGPG}	-	-	-	-	-	-	-	-
TWD	=	25	=	24	=	23	=	06	=	17	=	21
THD	=	02	=	02	=	03	=	20	=	09	=	06
TWHD	=	04	=	05	=	04	=	05	=	04	=	04
TD	=	31	=	31	=	30	=	31	=	30	=	31

Total Working Day of the Session = 117

TWD = Total Working Day, TD = Teaching Day, HWD = Half Working Day, FWD = Full Working Day, FWD^{O} = Full Working Day with Special Day Observation/ Celebration, FWD^{FUG} = Full Working Day with UG Final Examination, FWD^{FUGPG} = Full Working Day with UG and PG Final Examinations, $FWD^{FUG/O}$ = Full Working Day with Examination and Special Day Celebration/ Observation, WHD = Weekly Holiday (Sunday), WHD^{O} = Weekly Holiday (Sunday) cum Observation/ Celebration, WHD* = Weekly Holiday cum Holiday, WHD^{*O} = Weekly Holiday cum Holiday with Special Day Observation/ Celebration, HD = Holiday, HD^{O} = Holiday with Observation/ Celebration, PHD = Puja Holiday, TWD= Total Working Days, THD= Total Holidays, TWHD= Total Weekly Holidays & TD= Total Days.

Total Academic Days = 117

N.B.:

1. 1^{st}& 2^{nd} Internal Assessment for 1^{st}, 3^{rd} and 5^{th} Semester for UG and 1^{st} and 3^{rd} Semester for PG: To be decided by the Institution as per central basis.

2. Final Theory Examination for both UG & PG: As per University Schedule (probably within 3^{rd} week of December & 1^{st} week of January)

3. Final Practical Examination for both UG: As per University Schedule (probably within 1^{st} and 2^{nd} week of December)

4. Final Practical Examination for both UG & PG: As per University Schedule (probably within 15 days after theory examination)

Tentative Academic Calendar for Different Socio-cultural and Other Programmes during the session, 2020-2021 (July to June):

Sl. No.	Academic Programmes	Organized by	Date	Remarks
1.	Thalaseamia Screening Camp and Awareness Programme	IQAC, BMM	1st/ 2nd Week of August, 2020	Social Work & Programme
2.	'Manav Bandhan Utsav'	Students' Union, IQAC, NCC & NSS	3rd August, 2020	Social Work Programme
3.	Blood Donation Camp		1st Week August, 2020	
4.	Independence Day	Dept. of NSS & College	15th August, 2020	Nation's Day Observation
5.	National Sports Day Observation	Dept. of Physical Education, BMM	29th August, 2020	National Sports Day Observation as per Central Govt. Order
6.	Teachers' Day Celebration	Students' Union	5th September, 2020	Celebrating for giving the Tribute/ Admiration towards Teaching Communities
7.	College Excursion to the Selected Tourist Spots or Historical Places in West Bengal or in Neighbourhood States like Bihar, Jharkhanda and Orissa	College & Students' Union	2nd/ 3rd Week of September, 2020	Excursion/ Academic Tour
8.	NSS Day	I, II & III Units & Dept. of NSS	24th September, 2020	Established Day Observation
9.	'Agamani' Utsav	College & Students' Union	20th/ 21st October, 2020	'Sharad Suvechchha' Celebration
10.	Grand Feast Celebration & Student-Staff Reunion	College & Students' Union	3rd Week of November, 2020	Student-Staff Convergence
11.	"Nabin Baran"/ Fresher's Welcome	College & Students' Union	3rd Week of November, 2020	Academic cum Cultural Meet and Programme among fresher, older students and staffs
12.	World AIDS Day Celebration	I, II & III Units & Dept. of NSS	1st December, 2020	Social Work Programme
13.	Winter Special Camp-2020	I, II & III Units of NSS	25th -30th December, 2020	Special Camp
14.	World Youth Day	Dept. of NSS & College	12th January, 2021	National Day Observation
15.	Annual Sports Programme	College & Students' Union	1st / 2nd Week of January, 2021	College Annual Programme
16.	Inter Annual Sports Programme	College Students' Union, BMM	1st / 2nd Week of January, 2021	Programmes relating Teaching Staff, Non-teaching Staff and Students of the college
17.	Annual Cultural Programme	College & Students' Union	2nd/ 3rd Week of January, 2021	College Annual Programme
18.	Saraswati Puja	College & Students' Union	16th – 17th February, 2021	Academic Spiritual Day Celebration
19.	Annual Award Distribution Ceremony & 'Milani' Publication	College & Students' Union	17th/ 18th February, 2021	Annual Programme
20.	Career Counseling Programme	Dept. of Mathematics & IQAC	3rd/ 4th Week of February, 2021	Career Advancement Programme
21.	'Matri Vasha Diwas'	Dept. of Bengali & Dept. of NSS	21st February, 2021	International Mother Language Day Observation
22.	International Women's Day	I, II & III Units & Dept. of NSS	8th March, 2021	Respecting the women and creating the institutional and social knowledge or working background of gender empowerment and

				gender equity
23.	"Basanta Utsav"	College & Students' Union, BMM	4th Week of March (25th/ 26th/ 27th March), 2021	Colour Festival/ Spring Welcome Programme
24.	World Environment Day	Departments of Earth Science (Geography) & Bioscience (Botany & Zoology), BMM	5th June, 2021	Making the knowledge background and rising awareness towards environment and environmental issues and for playing the human roles and responsibility in self of its protection and conservation

Bajkul Milani Mahavidyalaya

(under Vidyasagar University)

Academic Calendar for UG & PG from July to December – 2019:

Name of the Day	July		August		September		October		November		December	
	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD
Monday	1	FWD	-	-	-	-	-	-	-	-	-	-
Tuesday	2	FWD	-	-	-	-	1	FWD	-	-	-	-
Wednesday	3	FWD	-	-	-	-	2	HD	-	-	-	-
Thursday	4	HD	1	FWD	-	-	3	PHD	-	-	-	-
Friday	5	FWD	2	FWD	-	-	4	PHD	1	FWD	-	-
Saturday	6	HWD	3	HWD	-	-	5	PHD	2	HD	-	-
Sunday	7	WHD	4	WHD	1	WHD	6	WHD*	3	WHD	1	WHD
Monday	8	FWD	5	FWD	2	FWD	7	PHD	4	FWD	2	FWD
Tuesday	9	FWD	6	FWD	3	HD	8	PHD	5	FWD	3	FWD
Wednesday	10	FWD	7	FWD	4	FWD	9	PHD	6	HD	4	FWD
Thursday	11	FWD	8	FWD	5	FWD	10	PHD	7	FWD	5	FWD
Friday	12	FWD	9	FWD	6	FWD	11	PHD	8	FWD	6	FWD
Saturday	13	HWD	10	HWD	7	HWD	12	PHD	9	HWD	7	HWD
Sunday	14	WHD	11	WHD	8	WHD	13	WHD*	10	WHD*	8	WHD
Monday	15	FWD	12	HD	9	FWD	14	PHD	11	FWD	9	FWD
Tuesday	16	FWD	13	FWD	10	HD	15	PHD	12	HD	10	FWD
Wednesday	17	FWD	14	FWD	11	FWD	16	FWD	13	FWD	11	FWD
Thursday	18	FWD	15	HD	12	FWD	17	FWD	14	FWD	12	FWD
Friday	19	FWD	16	FWD	13	FWD	18	FWD	15	FWD	13	FWD
Saturday	20	HWD	17	HWD	14	HWD	19	HWD	16	HWD	14	HWD
Sunday	21	WHD	18	WHD	15	WHD	20	WHD*	17	WHD	15	WHD
Monday	22	FWD	19	FWD	16	FWD	21	FWD	18	FWD	16	FWD
Tuesday	23	FWD	20	FWD	17	FWD	22	FWD	19	FWD	17	FWD
Wednesday	24	FWD	21	FWD	18	HD	23	FWD	20	FWD	18	FWD
Thursday	25	FWD	22	FWD	19	FWD	24	FWD	21	FWD	19	FWD
Friday	26	FWD	23	HD	20	FWD	25	FWD	22	FWD	20	FWD
Saturday	27	HWD	24	HWD	21	HWD	26	HWD	23	HWD	21	HWD
Sunday	28	WHD	25	WHD	22	WHD	27	WHD*	24	WHD	22	WHD
Monday	29	FWD	26	FWD	23	FWD	28	PHD	25	FWD	23	FWD
Tuesday	30	FWD	27	FWD	24	FWD	29	PHD	26	FWD	24	FWD
Wednesday	31	FWD	28	FWD	25	FWD	30	PHD	27	FWD	25	HD
Thursday	-	-	29	FWD	26	HD	31	FWD	28	FWD	26	FWD
Friday	-	-	30	FWD	27	FWD	-	-	29	FWD	27	FWD
Saturday	-	-	31	HWD	28	HD	-	-	30	HWD	28	HWD
Sunday	-	-	-	-	29	WHD*	-	-	-	-	29	WHD
Monday	-	-	-	-	30	FWD	-	-	-	-	30	FWD
Tuesday	-	-	-	-	-	-	-	-	-	-	31	FWD
TWD	=	26	=	24	=	20	=	12	=	23	=	25
THD	=	01	=	03	=	05	=	15	=	03	=	01
TWHD	=	04	=	04	=	05	=	04	=	04	=	05
TD	=	31	=	31	=	30	=	31	=	30	=	31

Total Working Day of the Session = 140

TWD = Total Working Day, TD = Teaching Day, HWD = Half Working Day, FWD = Full Working Day, WHD = Weekly Holiday (Sunday), WHD* = Weekly Holiday cum Holiday, HD = Holiday, PHD = Puja

Holiday, TWD= Total Working Days, THD= Total Holidays, TWHD= Total Weekly Holidays & TD= Total Days.

Total Academic Days = 140

N.B.:

1. 1st& 2nd Internal Assessment for 1st, 3rd and 5th Semester for UG and 1st and 3rd Semester for PG: To be decided by the Institution as per central basis.

2. Final Theory Examination for both UG & PG: As per University Schedule (probably within 3rd week of December & 1st week of January)

3. Final Practical Examination for both UG: As per University Schedule (probably within 1st and 2nd week of December)

4. Final Practical Examination for both UG & PG: As per University Schedule (probably within 15 days after theory examination)

Academic Calendar for UG & PG from January to June - 2020

Name of the Day	January		February		March		April		May		June	
	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD
Wednesday	1	HD	-	-	-	-	1	FWD	-	-	-	-
Thursday	2	FWD$^{F/PF}$	-	-	-	-	2	HD	-	-	-	-
Friday	3	FWD^{PF}	-	-	-	-	3	FWD	1	HD	-	-
Saturday	4	FWD^{PF}	1	HWD	-	-	4	HWD	2	HWD	-	-
Sunday	5	WHD	2	WHD	1	WHD	5	WHD	3	WHD	-	-
Monday	6	FWD^{PF}	3	FWD^{F}	2	FWD	6	FWD	4	FWD	1	FWD
Tuesday	7	FWD	4	FWD^{F}	3	FWD	7	FWD	5	FWD	2	FWD
Wednesday	8	FWD	5	FWD^{F}	4	FWD	8	FWD	6	FWD	3	FWD
Thursday	9	FWD^{F}	6	FWD^{F}	5	FWD	9	HD	7	HD	4	FWD
Friday	10	FWD^{F}	7	FWD^{F}	6	FWD	10	HD	8	HD	5	FWD
Saturday	11	HWD	8	HWD	7	HWD	11	HD	9	HWD	6	HWD
Sunday	12	WHD*	9	WHD	8	WHD	12	WHD	10	WHD	7	WHD
Monday	13	FWD^{F}	10	FWD$^{I/F}$	9	HD	13	HD	11	HWD	8	FWD
Tuesday	14	FWD^{F}	11	FWD$^{I/F}$	10	HD	14	HD	12	FWD	9	FWD
Wednesday	15	HD	12	FWD^{I}	11	FWD	15	FWD	13	FWD	10	FWD
Thursday	16	FWD^{F}	13	FWD^{I}	12	FWD	16	FWD	14	FWD	11	FWD
Friday	17	FWD^{F}	14	FWD^{F}	13	FWD	17	FWD	15	FWD	12	FWD
Saturday	18	HWD	15	HWD	14	HWD	18	HWD	16	HWD	13	HWD
Sunday	19	WHD	16	WHD	15	WHD	19	WHD	17	WHD	14	WHD
Monday	20	FWD^{F}	17	FWD^{F}	16	FWD	20	FWD	18	FWD	15	FWD
Tuesday	21	FWD^{F}	18	FWD	17	FWD	21	FWD	19	FWD	16	FWD
Wednesday	22	FWD^{F}	19	FWD	18	FWD	22	FWD	20	FWD	17	FWD
Thursday	23	HD	20	FWD	19	FWD	23	FWD	21	FWD	18	FWD
Friday	24	FWD	21	HD	20	FWD	24	FWD	22	FWD	19	FWD
Saturday	25	HWD	22	HWD	21	HWD	25	HWD	23	HWD	20	HWD
Sunday	26	WHD*	23	WHD	22	WHD	26	WHD	24	WHD	21	WHD
Monday	27	FWD^{F}	24	FWD	23	FWD	27	FWD	25	HD	22	FWD
Tuesday	28	FWD	25	FWD	24	FWD	28	FWD	26	FWD	23	HD
Wednesday	29	HD	26	FWD	25	FWD	29	FWD	27	FWD	24	FWD
Thursday	30	HD	27	FWD	26	FWD	30	FWD	28	HD	25	FWD
Friday	31	FWD	28	FWD	27	FWD	-	-	29	FWD	26	FWD
Saturday	-	-	29	HWD	28	HWD	-	-	30	HWD	27	HWD
Sunday	-	-	-	-	29	WHD	-	-	31	WHD	28	WHD
Monday	-	-	-	-	30	FWD	-	-	-	-	29	FWD
Tuesday	-	-	-	-	31	FWD	-	-	-	-	30	FWD
TWD	=	22	=	24	=	24	=	20	=	21	=	25
THD	=	05	=	01	=	02	=	06	=	05	=	01

TWHD	=	04	=	04	=	05	=	04	=	05	=	04
TD	=	31	=	29	=	31	=	30	=	31	=	30

Total Working Day of the Session = 136

TWD = Total Working Day, TD = Teaching Day, HWD = Half Working Day, FWD = Full Working Day, WHD = Weekly Holiday (Sunday), WHD *= Weekly Holiday (Sunday) cum Holiday, HD = Holiday, TWD= Total Working Days, THD= Total Holidays, TWHD= Total Weekly Holidays & TD= Total Days, FWD^{I}= Working Days with Teaching & Internal Assessment (UG), FWD^{PF} =Working Days with Teaching & Practical Final Examination (UG), FWD^{F} =Working Days with Teaching & Final Examination (UG)

Total Academic Days = 136

N.B.:

1. 1st& 2nd Internal Assessment for 1st, 3rd and 5th Semester for UG and 1st and 3rd Semester for PG: To be decided by the Institution as per central basis.

2. Final Theory Examination for both UG: As per University Schedule (probably within 2nd and 3rdweek of June)

3. Final Practical Examination for both UG: As per University Schedule (probably within 1st and 2nd week of June)

4. Final Practical Examination for both UG & PG: As per University Schedule (probably within 15 days after theory examination)

5. Saffron shade indicates lock down situation of the college due to unexpected national and global outbreak of COVID-19 pandemic.

Bajkul Milani Mahavidyalaya

(under Vidyasagar University)

Academic Calendar for Under Graduate from July to December – 2018:

Academic Calendar for Under Graduate (UG) from July to December - 2018

Name of the Day	July		August		September		October		November		December	
	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD
Sunday	1	WHD	-	-	-	-	-		-	-	-	-
Monday	2	FWD	-	-	-	-	1	FWD	-	-	-	-
Tuesday	3	FWD	-	-	-	-	2	HD	-	-	-	-
Wednesday	4	FWD	1	FWD	-	-	3	FWD	-	-	-	-
Thursday	5	FWD	2	FWD	-	-	4	FWD	1	PHD	-	-
Friday	6	FWD	3	FWD		-	5	FWD	2	PHD	-	-
Saturday	7	HWD	4	HWD	1	HWD	6	HWD	3	PHD	1	HWD
Sunday	8	WHD	5	WHD	2	WHD	7	WHD	4	WHD	2	WHD
Monday	9	FWD	6	FWD	3	HD	8	HD	5	PHD	3	FWD
Tuesday	10	FWD	7	FWD	4	FWD	9	FWD	6	PHD	4	FWD
Wednesday	11	FWD	8	FWD	5	FWD	10	FWD	7	PHD	5	FWD
Thursday	12	FWD	9	FWD	6	FWD	11	FWD	8	PHD	6	FWD
Friday	13	FWD	10	FWD	7	FWD	12	FWD	9	PHD	7	FWD
Saturday	14	HD	11	HWD	8	HWD	13	HWD	10	HWD	8	HWD
Sunday	15	WHD	12	WHD	9	WHD	14	WHD	11	WHD	9	WHD
Monday	16	FWD	13	FWD	10	FWD	15	PHD	12	FWD	10	FWD
Tuesday	17	FWD	14	FWD	11	FWD	16	PHD	13	HD	11	FWD
Wednesday	18	FWD	15	HD	12	FWD	17	PHD	14	FWD	12	FWD
Thursday	19	FWD	16	FWD	13	FWD	18	PHD	15	FWD	13	FWD
Friday	20	FWD	17	FWD	14	FWD	19	PHD	16	FWD	14	FWD
Saturday	21	HWD	18	HWD	15	HWD	20	PHD	17	HD	15	HWD
Sunday	22	WHD	19	WHD	16	WHD	21	WHD	18	WHD	16	WHD
Monday	23	FWD	20	FWD	17	HD	22	PHD	19	FWD	17	FWD
Tuesday	24	FWD	21	FWD	18	FWD	23	PHD	20	FWD	18	FWD
Wednesday	25	FWD	22	HD	19	FWD	24	PHD	21	HD	19	FWD
Thursday	26	FWD	23	FWD	20	FWD	25	PHD	22	FWD	20	FWD
Friday	27	FWD	24	FWD	21	HD	26	PHD	23	HD	21	FWD
Saturday	28	HWD	25	HWD	22	HWD	27	PHD	24	HWD	22	HWD
Sunday	29	WHD	26	WHD	23	WHD	28	WHD	25	WHD	23	WHD
Monday	30	FWD	27	FWD	24	FWD	29	PHD	26	FWD	24	FWD
Tuesday	31	FWD	28	FWD	25	FWD	30	PHD	27	FWD	25	HD
Wednesday	-	-	29	FWD	26	HD	31	PHD	28	FWD	26	WR*
Thursday	-	-	30	FWD	27	FWD	-	-	29	FWD	27	WR*
Friday	-	-	31	FWD	28	FWD	-	-	30	FWD	28	WR*
Saturday	-	-	-	-	29	HD	-	-	-	-	29	WR*
Sunday	-	-	-	-	30	WHD	-	-	-	-	30	WHD
Monday	-	-	-	-	-	-	-	-	-	-	31	WR*
TWD	=	25	=	25	=	20	=	10	=	14	=	20

Total Working Day of the Session = 114

TWD = Total Working Day, TD = Teaching Day, HWD = Half Working Day, FWD = Full Working Day, WHD = Weekly Holiday (Sunday), HD = Holiday, OD = Observation Day, PHD = Puja Holiday, WR* = Winter Recess.

Total Academic Days = 114

Academic Calendar for UG & PG from July to December – 2019:

Name of the Day	July		August		September		October		November		December	
	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD	Day	TD
Monday	1	FWD	-	-	-	-	-	-	-	-	-	-
Tuesday	2	FWD	-	-	-	-	1	FWD	-	-	-	-
Wednesday	3	FWD	-	-	-	-	2	HD	-	-	-	-
Thursday	4	HD	1	FWD	-	-	3	PHD	-	-	-	-
Friday	5	FWD	2	FWD	-	-	4	PHD	1	FWD	-	-
Saturday	6	HWD	3	HWD	-	-	5	PHD	2	HD	-	-
Sunday	7	WHD	4	WHD	1	WHD	6	WHD*	3	WHD	1	WHD
Monday	8	FWD	5	FWD	2	FWD	7	PHD	4	FWD	2	FWD
Tuesday	9	FWD	6	FWD	3	HD	8	PHD	5	FWD	3	FWD
Wednesday	10	FWD	7	FWD	4	FWD	9	PHD	6	HD	4	FWD
Thursday	11	FWD	8	FWD	5	FWD	10	PHD	7	FWD	5	FWD
Friday	12	FWD	9	FWD	6	FWD	11	PHD	8	FWD	6	FWD
Saturday	13	HWD	10	HWD	7	HWD	12	PHD	9	HWD	7	HWD
Sunday	14	WHD	11	WHD	8	WHD	13	WHD*	10	WHD*	8	WHD
Monday	15	FWD	12	HD	9	FWD	14	PHD	11	FWD	9	FWD
Tuesday	16	FWD	13	FWD	10	HD	15	PHD	12	HD	10	FWD
Wednesday	17	FWD	14	FWD	11	FWD	16	FWD	13	FWD	11	FWD
Thursday	18	FWD	15	HD	12	FWD	17	FWD	14	FWD	12	FWD
Friday	19	FWD	16	FWD	13	FWD	18	FWD	15	FWD	13	FWD
Saturday	20	HWD	17	HWD	14	HWD	19	HWD	16	HWD	14	HWD
Sunday	21	WHD	18	WHD	15	WHD	20	WHD*	17	WHD	15	WHD
Monday	22	FWD	19	FWD	16	FWD	21	FWD	18	FWD	16	FWD
Tuesday	23	FWD	20	FWD	17	FWD	22	FWD	19	FWD	17	FWD
Wednesday	24	FWD	21	FWD	18	HD	23	FWD	20	FWD	18	FWD
Thursday	25	FWD	22	FWD	19	FWD	24	FWD	21	FWD	19	FWD
Friday	26	FWD	23	HD	20	FWD	25	FWD	22	FWD	20	FWD
Saturday	27	HWD	24	HWD	21	HWD	26	HWD	23	HWD	21	HWD
Sunday	28	WHD	25	WHD	22	WHD	27	WHD*	24	WHD	22	WHD
Monday	29	FWD	26	FWD	23	FWD	28	PHD	25	FWD	23	FWD
Tuesday	30	FWD	27	FWD	24	FWD	29	PHD	26	FWD	24	FWD
Wednesday	31	FWD	28	FWD	25	FWD	30	PHD	27	FWD	25	HD
Thursday	-	-	29	FWD	26	HD	31	FWD	28	FWD	26	FWD
Friday	-	-	30	FWD	27	FWD	-	-	29	FWD	27	FWD
Saturday	-	-	31	HWD	28	HD	-	-	30	HWD	28	HWD
Sunday	-	-	-	-	29	WHD*	-	-	-	-	29	WHD
Monday	-	-	-	-	30	FWD	-	-	-	-	30	FWD
Tuesday	-	-	-	-	-	-	-	-	-	-	31	FWD
TWD	=	26	=	24	=	20	=	12	=	23	=	25
THD	=	01	=	03	=	05	=	15	=	03	=	01
TWHD	=	04	=	04	=	05	=	04	=	04	=	05
TD	=	31	=	31	=	30	=	31	=	30	=	31

Total Working Day of the Session = 140
TWD = Total Working Day, TD = Teaching Day, HWD = Half Working Day, FWD = Full Working Day, WHD = Weekly Holiday (Sunday), WHD* = Weekly Holiday cum Holiday, HD = Holiday, PHD = Puja Holiday, TWD= Total Working Days, THD= Total Holidays, TWHD= Total Weekly Holidays & TD= Total Days.
Total Academic Days = 140
N.B.: ***1. 1st& 2nd Internal Assessment for 1st, 3rd and 5th Semester for UG and 1st and 3rd Semester for PG: To be decided by the Institution as per central basis.*** ***2. Final Theory Examination for both UG & PG: As per University Schedule (probably within 3rd week of December & 1st week of January)*** ***3. Final Practical Examination for both UG: As per University Schedule (probably within 1st and 2nd week of December)*** ***4. Final Practical Examination for both UG & PG: As per University Schedule (probably within 15 days after theory examination)***

Automobile Maintenance

Teaching Plan: Department of Automobile Maintenance: SEMESTER-I(HONOURS)

UNITS	PAPER: CC1 T Principles of Automobiles	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
Unit-I	Basic concept of thermodynamics, 1st and 2nd laws, reversible, irreversible process and adiabatic, Isothermal Process. Thermodynamic Cycle: Carnot, Otto, Diesel, Dual cycles and their air standard efficiency, Numerical Problems.	75	PARTHA SAKHA JANA	01.10.2021-24.02.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Unit-II	Classification of I.C Engines, S.I. and C.I Engines, 2 Stroke, 4-Stroke engines and their working Principle.				
Unit-III	Engine specifications-Bore, Stroke-length, MEP, I.H.P, B.H.P, S.F.C, mechanical and thermal efficiencies.				
Unit-IV	Valve timing diagram-2-stroke and 4 stroke engine.				
Unit-V	Fuel used in I.C Engines, Properties of Fuel, Petrol and Diesel, Fuel additives and- fuel rating (Octane and cetane numbers)				
Unit-VI	Combustion Process in I.C engines Auto ignition and chemical reaction, pre-ignition MAN and open combustion chambers, effect of knocking, calorific value of fuels, requirement of oxygen for complete combustion.				
Unit-VII	Stress, strain, their types, Numerical problems on principle of stresses,				

UNITS	PAPER: CC1 P Principles of Automobiles	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS REMARKS
Unit-I	**Engineering drawing:** Scales, projections of solid, surface developments, Isomentric and oblique views, elevations, plans and end views off different objects and design.		KRISHNENDU BERA	01.10.2021-24.02.2022	
Unit-II	**2-stroke and 4 stroke (C.I &S.I engine):** Valve, Valve seat, Rocker arm, Push rod, Cam shaft, Crank shaft, Piston, piston ring, Connecting rod, Oil pump, fuel pump, Distributor, Oil filter, Fuel filter, Starter motor, alternator, Dynamo, Solex carburettor, inlet manifold, exhaust manifold, water pump, fly-wheel, vibration damper, spark plug, heater plug, injector, F.I.P pump. Adjustment:- C.B point, piston ring joined, piston ring groove, Cylinder bore, fan belt adjustment, valve tappet.		PRIYANSHU JANA & RANAJIT BERA		
Unit-III	**Cooling system**: Radiator cleaning, thermostat valve, testing fan valve adjust, water pump service, pressure cap testing, over hauling viscous fan.		PRIYANSHU JANA		
Unit-IV	Electrical safety precaution ,Electrical hand tools, Electrical measuring instrument practice(Volt Metre, Ammeter, Ohm metre, AVO Metre), Wire cutting and joint practice (Basic wire joints, soldering, Lug joint), Wire checking, use of terminal block, Magnetic effect of current, Practice using relay.		PRADIP SANTRA		
UNITS	PAPER: CC2 T Constructional details and working of I.C engines	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	

Unit-I	Layout of an automobile: Main Components and assemblies.	75	Partha Sakha Jana	01.10.2021-24.02.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Unit-II	Constructional features and functions of 2& 4 wheelers, Cylinder block, Crankcase, Cylinder head, Oil Pump, Gasket, Crank Shaft, Main Bearing, Vibration dampers, Exhaust system, Inlet and exhaust manifolds, fly-whell, Piston, Piston rings, Piston Pin, Connecting rod, Cams and Camshaft, Valve and Valve mechanism.				
Unit-III	S.I Engines: Combustion process, types of fuel feed system, various components of fuel system, fuel tank, fuel filters and screens, fuel losses, fuel gauges, fuel pumps, air cleaners, carburettor and its working its working, trouble shooting, servicing adjustments and M.P.F.I system.				
Unit- IV	C.I engines: Combustion and combustion chambers, fuel injection system, fuel tanks, fuel feed pumps, fuel injectors, nozzles and their types, details of nozzles and fuel injector unit, CRDI system.				
Unit-V	Cooling System: Importance, types, various components and accessories with troubles shooting.				
Unit-VI	Lubrication system: Importance, lubricants and their properties, their selections, lubrication system and their working, filters, lubrications in other parts of an automobiles, trouble shooting.				
UNITS	PAPER: CC 2P Constructional details and working of I.C engines	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS

Unit-I	Fuel system (Petrol engine): Over hauling fuel pump, carburettor, fuel fitter and air cleaner, practice in engine tune up in a vehicle.		PRIYANSHU JANA	01.10.2021-24.02.2022	
Unit-II	Lubrication system: Oil pump over-hauling and refitting, Replacing oil filter, Drawing engine oil, Repairs oil galleries.		RANAJIT BERA		
Unit-III	Fuel system (Diesel engine): Fuel feed pump over hauling, F.I.P pump single & multi cylinder over hauling, over hauling injector, testing the injector, Fuel bleeding, cleaning the injector.		RANAJIT BERA		
Unit-IV	Basic idea and details of fitting shop, First aid, 5S concept, fire, Measuring instruments, Gauge Measurement, Cutting tool's Operation, Heat Treatment, Drill and Grinding Machine Operation.		AVIJIT BERA		

Teaching Plan: Department of Automobile Mentainance: SEMESTER-II(HONOURS)

UNITS	PAPER: CC3 T Theory of Machine	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
Unit-I	Friction: Introduction, types of friction, coefficient of friction, limiting friction, laws of solid friction and kinetic friction, screw jack.	75	Partha Sakha Jana	01.04.2022-09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal
Unit-II	Belt, Rope and Chain Drive: Introduction, Belt drive, types of belts, Materials used, Velocity ratio, Slip, Length of belt, Comparison, flat and v-belt, Rope drive & Chain Drive.				

Unit-III	Gear and Gear Trains: Fundamental laws of gearing, spur, bevel and worm gears, gear train, Interference, epicyclic gear trains.				examination on 2nd week of July,2022
Unit-IV	Cam: Types, displacement diagrams.				
Unit-V	Flywheels: Turning moment diagrams, fluctuations of energy and speed.				
Unit-VI	Governors: Types, Principles, working, Characteristics and performance. .				
Unit-VII	Torsion and tensional effect, Shear force and bending moment diagram, bending stress				
UNITS	**PAPER: CC3P Theory of Machine**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
Unit-I	Valve timing: C.I. & S.I. valve timing adjustment of 2-stroke & 4-stroke.		RANAJIT BERA	01.04.2022-09.07.2022	
Unit-II	Firing order set (Multi cylinder S.I. & C.I. 4-stroke) petrol- tappet timing, gear timing, chain timing, ignition timing. Diesel- tappet timing, gear timing, fuel timing.		PRIYANSHU JANA		
Unit-III	Electronics components checking (Resistor, Capacitor, Diode, Transistor, and I.C), Construction of D.C Generator, Starter motor, Wiper Motor, Alternator, Transformer.		PRADIP SANTRA		
UNITS	PAPER: CC4T Suspension system, Steering system, Ignition system and Auto Air conditioning	**FULL MARKS**	NAME OF THE TEACHER	**MONTH OF TEACHING**	
Unit-I	Suspension system:- Objectives, principles of working, types of suspension system, independent and rigid axle suspension system, shock absorber and damper, troubles in a suspension system.	75	Partha Sakha Jana	01.04.2022-09.07.2022	**1st internal examination on 2nd**

Unit-II	Steering system:- Steering geometry, their effect, steering angle, steering mechanism, steering linkages, power steering , trouble shooting.				week of May, 2022 and 2nd internal examination on 2nd week of July,2022
Unit-III	Ignition System: Battery, electrical, magneto and electronic ignition systems and their troubles				
Unit-IV	Auto Air conditioning: Introduction, Air conditioning system, components, effect of Air conditioning of fuel economy, car Air conditioning system, Truck Air conditioning, trouble shooting.				
UNITS	PAPER: CC4P Suspension system, Steering system, Ignition system and Auto Air conditioning	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	
Unit-I	Suspension system: Replacing shock absorber, servicing shackle, over hauling leaf spring, over hauling coil spring, over hauling front suspension system.		RANAJIT BABU	01.04.2022-09.07.2022	
Unit-II	Spark plug cleaning and testing: Spark plug cleaning, spark plug gap setting and spark plug testing.		PRIYANSHU JANA		
Unit-III	Use of general hand tools (Vice, Screw driver, Spanner, Pliers etc.), identify of various types (Bolts, Nuts, Washers, Keys, pins, Bearing, Pulley , Gear etc.), Limit, Fit and Tolerance, Transmission of power.		AVIJIT DAS		
Unit-IV	Practice to Operate the lathe machine tools , Welding(Arc), sheet metal work and Forging.				
Teaching Plan: Department of Automobile Mentainance: SEMESTER-III(HONOURS)					
UNITS	PAPER: CC5 T CC-5: Transmission system Part -I	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	INTERNAL EXAMINATION
Unit-I	General principle, objectives and types (Manual, Semi-automatic, Automatic, Hydraulic transmission)	75	PARTHA SAKHA JANA	01.10.2021-05.02.2022	

Unit-II	Gear boxes, resistance to motion of a vehicle, power required for propulsion				
Unit-III	acceleration and hill climbing, necessity of gear box, function and types of gears, synchromesh gear box, free wheel drive, gear lubrication, transmission troubles.				
UNITS	**PAPER: CC5 P** **CC-5: Transmission system Part -I**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**1st internal 4th week of November,2021** **&** **2nd Internal 1st week of January, 2022**
Unit-I	Over hauling, sliding mesh, constant mesh and synchromesh gear box and other gear box.		PRIYANSHU JANA	01.10.2021-05.02.2022	
Unit-II	Moulds – Describe of Mould materials, Types of sand, Sand moulding, Pit moulding, machine moulding.				
Unit-III	Melting practice. Types of furnaces with specific application Cupola furnace, Electric arc furnace.		AVIJIT DAS		
Unit-IV	Special casting processes die casting, centrifugal casting, investment casting, Shell moulding				
Unit-V	Casting defects & its remedies. Green sand mould making process				
Unit-VI	Patterns - Material used, types, Patterns allowances, Cores, Core allowances. Core Prints.				
UNITS	PAPER: CC6 T Transmission System Part –II	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
Unit-I	Clutch System: Function, types, clutch linkage, clutch facing &friction material, common faults.	75	PARTHA SAKHA JANA	01.10.2021-05.02.2022	
Unit-II	Propeller Shaft: Types, fluid drives, Hotchkiss drive, universal & slip joint, Torque convertors.				
Unit-III	Final drive and rear axle: Types of final drives, differential gears and its principles of operation, rear axle and its types.				
Unit- IV	Front Axle: Types and their components, swivelling mechanism, front form of motor cycle.				

UNITS	PAPER: CC6 P Transmission System Part –II	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING
Unit-I	Clutch: Over hauling single plate, multi plate, diaphragm clutch and other clutch.		RANAJIT BERA	01.10.2021-05.02.2022
Unit-II	Steering System and power steering: Overhauling steering linkage, steering gear box adjustment, power steering overhauling.		PRIYANSHU JANA	
Unit-III	Servicing tyre: Repairing tube and tyre puncture.		RANAJIT BERA	
UNITS	PAPER: CC7 T Manufacturing process or Production Engineering - 1	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING
Unit-I	Mechanical properties of metals, ferrous and non ferrous metals used in engineering practice, Influence of carbon on iron and steel. Heat treatment of metals-different process-heat treatment equipments and materials.	75	PARTHA SAKHA JANA	01.10.2021-05.02.2022
Unit-II	Hand tools used in different shops, bench work and fitting shop, Hand tools used in fitting shops, chipping, filing, scraping, measuring tools and gauges, limit, fit, allowance and clearance, jug stand and fixtures.			
Unit-III	Definition and concept of different mechanical process like rolling, drawing, spinning, firging, casting, welding, brazing, and soldering.			
Unit-IV	Machine shops- Elementary ideas about different machines like Lathe, Shaper, Grinder, Drill & Milling.			
UNITS	PAPER: CC7 P Manufacturing process or Production Engineering - 1	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING
Unit-I	Forgeable material and forgeability, forging temperature, Grain flow in forged parts, Types of Presses and hammers.		PRIYANSHU JANA	01.10.2021-05.02.2022
Unit-II	Forging Processes – Drop forging, Upset forging, Die forging or press forging. Hot working & Cold working.			
Unit-III	Types of dies - Open Die, Closed Die (Single Impression and Multi impression) Closed Die forging operations - Fullering, Edging, Bending, Blocking, Finishing.		AVIJIT DAS	

Unit-IV	Types of rolling mills: 2 Hi, 3 Hi & 4 Hi mills. Different rolled sections.			
UNITS	PAPER: SEC-1Assembling Simple Electronics Circuits	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING
Unit- I	Semiconductor and Diode P-type and N-type semiconductor, Junction of P-type & N type i.e. PN junction, Barrier voltage , depletion region ,Junction Capacitance, Forward biased & reversed biased junction, Diode symbol ,circuit diagram for characteristics (forward & reversed),Characteristics of PN junction diode, Specifications:-Forward voltage drop , Reversed saturation current, maximum forward current , power dissipation, Package view of diodes of different power ratings (to be shown during practical hours) Zener diode: Construction, Symbol, Circuit diagram for characteristics of zener diode (Forward & Reverse),Zener & Avalanche Breakdown, Zener diode specifications – zener voltage, power dissipation, break over current, dynamic resistance & maximum reverse current.	50	PRADIP SANTRA	01.10.2021-05.02.2022
Unit- II	Rectifiers, Filters and Power Supply Need of rectifier , definition ,Types of rectifier – Half wave rectifier, Full wave rectifier,(Bridge & centre tapped) Circuit operation Input/output waveforms for voltage & current, Average (dc) value of current & voltage (no derivation), Ripple , ripple factor , ripple frequency , PIV of diode used , efficiency of rectifier.(no derivation only definition), Comparison of three types of rectifier, Need of filters, Types of filters- A] shunt capacitor, B] Series inductor, C] LC filter , D] - filter --- only circuit operation (no mathematical derivation),limitations & advantages 2.5 Voltage regulator-Simple voltage regulator circuit using zener, familirisation with IC regulator circuit (like 78XX , 79XX series etc.), IC 723 adjustable power supply, concept of Switch mode power supply (SMPS) block diagram only.		UJJWAL BHUNIA	

Unit-III	Transistors, Switching and Optoelectronics Devices Bipolar Junction Transistor (BJT): Symbol of NPN & PNP types, Construction, Different types of package, Operation of NPN and PNP transistor – current flow, relation between different currents ,Transistor configurations – CB, CE, CC circuit diagram for input & output characteristics of each configuration, Input & output characteristics, Comparison between three configuration, Transistor parameters – input & output resistance and relation between them. Transistor specification – VCE Sat, IC Max, VCEO, ICEO, VCE Breakdown, Power dissipation. Field effect Transistor (FET): Symbol, Construction of JFET, Working principle and V-I characteristics of JFET, pinch- off voltage, drain résistance, trans conductance, amplification factor and their relationship, Enhancement and depletion type MOSFET. TRIAC, DIAC, Silicon control rectifier (SCR):-Symbol, working, application (elementary ideas only) Comparison between Transistor and SCR. Elementary ideas of LED, LCD, photodiode, phototransistor and solar cell and their applications only.		PRADIP SANTRA	01.10.2021-05.02.2022
Unit- IV	Transistor Biasing Need of biasing, concept of DC load line and AC load line, selection of Q point and Stabilization, Types of biasing circuits (no mathematical derivation) – a) Fixed biased circuit, b) Collector-to-base biased circuit, c) Voltage divider bias circuit		UJJWAL BHUNIA	01.10.2021-05.02.2022
Unit – V	Small Signal Transistor Amplifiers Concept of amplification----Small signal amplifier using BJT, Determination of current, voltage & power gain, Input & output resistance. Single stage CE amplifier with voltage divider bias. Its explanation. Frequency response of single stage CE Amplifier, Bel and Decibel unit. Bandwidth & its significance. Cascade Amplifiers (Multistage Amplifier), Need of Multistage Amplifiers, Gain of amplifier. Types of amplifier coupling – RC, transformer & direct coupling. Two stage amplifier circuit diagram, working (briefly), frequency response, merits & demerits & applications of each.		PRADIP SANTRA	

Unit- VI	Oscillator Oscillator – Requirement of oscillator circuit, Barkhauson's criteria of oscillator, circuit diagram and its application only - .Phase shift oscillator, Hartley oscillator, Colpitts oscillator, Crystal oscillator		UJJWAL BHUNIA		
Unit – VII	Op-Amp OP-Amp Block diagram and use of op amp as - Inverting, non inverting, summing amplifier, differentiator, integrator, buffer, comparator, Schmitt's trigger.				
Teaching Plan: Department of Automobile Mentainance: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC8 T** Chassis, Frame &Body, Brake & Braking System, Wheel &Tyres.	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	Internal examination
Unit-I	**Chassis, Frame and Body:** Chassis layout and its main components, design features, types of chassis and frames, materials and dimensions for auto body work, method of manufacturing and space requirements.	75	PARTHA SAKHA JANA	15.03.2022-25.06.2022	1st internal: 4th week of April,2022 & 2nd internal :3rd week of June,2022
Unit-II	**Brake and braking system:** Principles of brakes, braking mechanisms, classifications, bleeding in hydraulic system, brake troubles.				
Unit-III	**Wheels and tyres:** Types of tyres and their specification, tubeless tyres, radial tyres, friction due to pavement and earth in relation to wear, care and maintenance of tyres and tubes, repair and retreading of tyres.				
UNITS	**PAPER: CC8 P Chassis, Frame &Body, Brake & Braking System, Wheel &Tyres.**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
Unit-I	Wheel alignment and wheel balancing: toe-in, toe-out, caster angle, camber angle, king pin, inclination, adjustment and setting and wheel balance.		PRIYANSHU JANA	15.03.2022-25.06.2022	

Unit-II	Brake system: Over hauling master cylinder, wheel cylinder, front and rear brake, air servo unit, unloaded valve, release valve, hand brake, vacuum 2uffer, single brake chamber,			
Unit-III	Brake bleeding, Relining, brake shoes, servicing air tank, servicing brake valve and disc brake, demonstration of working of ABS system, sensors.			
UNITS	PAPER: CC9 T Engine Servicing And Tuning, Garage & Service Station, Electrical System and Motor Vehicles Act.	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING
Unit-I	Engine servicing and tuning: Basic requirements of automobiles engine servicing types and procedures.	75	PARTHA SAKHA JANA	15.03.2022-25.06.2022
Unit-II	Garage and service station: Location and layout, equipment required in a service station, types of service.			
Unit-III	Servicing of Motor vehicles: Signification of servicing and its types, engine tuning and various instruments used, decarbonizing of engine parts, servicing of batteries,			
Unit-IV	Electrical systems, servicing of fuel injection and ignition system, lubrication system, cooling system, braking system and other accessories.			
Unit-V	Inspection and Testing of motor vehicles, types of inspection , inspection card , inspection and repair accident inspection , diagnosis of faults , Laboratory road testing of motor vehicles.			
Unit-VI	Concept of Motor vehicles Act, different rules of Motor vehicles Act, Motor vehicle Act with special reference to pollution control and measure required to safe drive, Effect of pollutant.			
UNITS	PAPER: CC9 P Engine Servicing And Tuning, Garage & Service Station, Electrical System and Motor Vehicles Act.	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING

Unit-I	Specifications of drilling machine. Types of drills and reamers		PRIYANSHU JANA	15.03.2022-25.06.2022
Unit-II	Basic parts and their functions – Pillar drilling machine & Radial drilling machine.			
Unit-III	drilling, boring, reaming, Counter boring, countersinking, chamfering, Spot facing, Trepanning			
Unit-IV	Arc Welding – working Principle, component, working Applications=		AVIJIT DAS	
Unit-V	Principle & Application of Shielded metal arc welding, Submerged arc welding. TIG / MIG welding			
Unit-VI	Principle & Application of process Resistance welding.(Principle & Application) – Spot welding, Seam welding, Projection welding			
Unit-VII	Types of Brazing and soldering application process, Inspection of Welding defects.			
UNITS	PAPER: CC10 T Manufacturing Process and Machine Tools-ll	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING
Unit-I	Casting process, Permanent mould casting, semi permanent mould casting, die casting,centrifugal casting , investment casting, continuous casting , defect in casting ,inspection ofcasting ,cleaning of casting.	75	PARTHA SAKHA JANA	15.03.2022-25.06.2022
Unit-II	Definition and concept of smithy and forging, sheet metal work, rivets and screws,			
Unit-III	Machine Shops:- Elementary ideas about different machines like Slotting machine,planning machine , boring machine , broaching machine , press machine.			
Unit- IV	Elementary ideas about different non-traditional machine like Ultrasonic machining(USM) , Electro chemical machining (ECM) , Electrical discharge machining (EDM) , Laser beam machining (LBM)			

Unit-V	Definition and concept of N.C Machine tools and C.N.C Machine tools.			
UNITS	**PAPER: CC10 P** Manufacturing Process and Machine Tools-ll	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	Transmission system: Over hauling universal joint, differential, remove and refitting propeller shaft over hauling slip joint.		RANAJIT BERA	15.03.2022-25.06.2022
Unit-II	Cutting tool nomenclature & tool signature of single point cutting tool. Orthogonal & oblique cutting, chip formation & type of chips		AVIJIT DAS & PRIYANSHU JANA	
Unit-III	Types of lathes – Centre lathe, Capstan & Turret Lathe, CNC Lathe Specification of Centre lathe. Basic parts and their functions of centre lathe.			
Unit-IV	Operations and tools Centering, facing, Turning, parting off, undercutting, grooving, Knurling, boring, thread cutting			
UNITS	**PAPER: SEC-2 Electro Magnetism and Digital Electronics**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	Steady electric current: Current density, equation of continuity, condition for the steady current, Kirchhoff's laws and analysis of multi loop circuits.	50	PRADIP SANTRA	15.03.2022-25.06.2022
Unit-II	Magneto statics: Force on a moving charge, Lorentz force and definition of B, force on a straight current carrying conductor in a uniform magnetic field, torque on a current loop. Biot Savart law, Ampere's circuital law, determination of magnetic fields (B) due to a straight current mcarrying conductor, a circular coil, a solenoid, magnetic field due to a small current loop, concept of magnetic dipole as a tiny current loop.		UJJWALBHUNIA	

Unit-III	Magnetic fields in matter- magnetization (M), relation between B, H, and M, magnetic susceptibility and permeability, diamagnetic, paramagnetic and ferromagnetic materials, Curie's law, hysteresis in ferromagnetic material.				
Unit-IV	Electromagnetic induction and Maxwell's Equations: Faraday's law (both the integral and the differential forms), self and mutual inductances, transformers, energy stored in a coil of self inductance L, displacement current, Maxwell's equations.		PRADIP SANTRA		
Unit-V	Transients in DC: Growth and decay of current in LR circuit, charging and discharging of capacitor in CR circuit, time constants.			15.03.2022-25.06.2022	
Unit-VI	Alternating current: LR and CR circuits, complex number and their applications in AC circuits, impedance and reactance, series and parallel resonances, Q– factor, power dissipation in AC circuit, power factor.				
Unit-VII	Digital Electronics - binary number system, conversion from decimal to binary and vice versa. Logic gates- OR, AND, NOT gates, truth tables, de Morgan's theorem, NOR and NAND universal gates. Combinational logic - Half adder, full adder, digital comparator, decoder, encoder (ROM), digital to analog conversion, analog to digital conversion, multiplexer. Sequential logic - Flip - Flops - RS, D, JK, JKMS, edge triggering and locked operation, shift registers, ripple counter (binary and decade).		UJJWAL BHUNIA		

Teaching Plan: Department of Automobile Mentainance: SEMESTER-V(HONOURS)

UNITS	PAPER: CC11 T Electrical System	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal examination
Unit-I	**Generator, Alternator and Batteries, Maintenance** Various electrical Instruments in an automobile, Automobile batteries and its maintenance and	75	PARTHA SAKHA JANA	14.09.2021-18.01.2022	

	function of generator, alternator, battery charging system, voltage and current regulator, selfstarter and bendix drive, ignition system and its components, ignition timing, setting of contact breaker gap, spark plug, firing order, checking electrical system.				1st internal:1st week of November,2021 & 2nd internal:3rd week of December,2021
Unit – II	**Lighting System** Concept of Wring system, wring diagram, colour coding with diagram.				
Unit-III	**Accessories and control** Horn and its type, wind screens, wiper, direction indicators and flashing units, signalling system, lamps and their types, starter switch, Speedo meter , Antitheft devices, fuel gauge, oil pressure gauge, Temperature gauge.				
UNITS	**PAPER: CC11 P Electrical System**	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	
Unit-I	**Disassemble the engine component:** Overhauling cylinder head rockenarm piston, connecting rod, crankshaft pulley, timing geals-chain, fly wheel, crank shaft, of multi-cylinder engine. Injector testing with bench tester Fresing and calibration of diesel engine		RANAJIT BERA	14.09.2021-18.01.2022	
Unit-II	**Electrical system** Battery, battery testing, ignition circuit , lighting circuit, battery charging circuit, dynamo circuit, alternator circuit, Overhauling starter motor, dynamo alternator, Wiper motors, horn operation		PRIYANSHU JANA		

Unit-III	**M.P.F.I system** Fuel pump overhauling, common rail service, injector testing and service, M.P.F.I Total Sensor System, Fuel line service. . Bleed air from the fuel lines		**RANAJIT BERA**	
Unit-IV	**ECU** Carryout Identification of Electronic control Unit, Perform Set up for testing, Testing of Electronic Control Circuit. Perform Identification of various sensors installed in engine & it'smounting. Check instruments & Gauges on dash board & replace defective gauges. Test Temperature sensor, Pressure senor, potentiometer, magnetic induction sensor, cam shaft sensor, crankshaft position sensor and all sensor		**PRIYANSHU JANA**	
Unit-V	**Turbocharger & super charger** Overhauling turbo charger & supercharger unit, impalas shaft inspect and impeller service.		**RANAJIT BERA**	14.09.2021-18.01.2022
Unit-VI	**Total light circuit** Trace the light circuit - test bulbs, align head lamps, aiming headlights. Changing a headlight bulb, checking of a head light switch and to replace if faulty Check the all wiring wire with MultiMate, service head light, fog light, indicator light, parking light, break light tell light ,check ignition switch		**PRIYANSHU JANA**	
UNITS	**PAPER: CC12 T Estimating, Costing and Machine Design**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	**Estimating and Costing** Definition of estimating and costing, elements of costing, Determination of weight of various	75	PARTHA SAKHA JANA	14.09.2021-18.01.2022

	parts such as block, cylinder, nuts, bolts, rivets, Estimate of machining price of several parts			
Unit-II	**Machine Design** Concept and definition of machine Design, Types of stress, strain such as tension, compression, shear, bearing pressure.			
Unit-III	**Design of simple machine parts** Design of Rivets joint such as single rivet lap joint, Double rivet lap joint, single rivet butt joint, Double rivet butt joint. Flange coupling, universal coupling, Gears.			
UNITS	**PAPER: DSE-1 T** Alternate Fuels and Energy Systems	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	**Introduction to alternate fuels and energy systems**: Estimation of petroleum reserve; Need for alternate fuel; Availability and properties of alternate fuels; general use of alcohols, LPG, Hydrogen, Ammonia, CNG, and LNG; Vegetable oils and Biogas; Merits and demerits of various alternate fuels.	75	PARTHA SAKHA JANA	14.09.2021-18.01.2022
Unit-II	**Alcohols:** Properties as engine fuels; alchohols and gasoline blends; Combustion characteristics in engines; emission characteristics			
Unit-III	**Natural Gas, LPG, Hydrogen and Biogas** Availability of CNG, properties modification required to use in engines-performance and emission characteristics of CNG using LPG in SI & CI engines. Performance and emission for LPG, Hydrogen; Storage and handling, performance and safety aspects; Vegetable Oils - Various			

	vegetable oils for engines, esterification, performance and emission characteristics			
Unit-IV	**Electrical and Solar Powered Vehicles:** Layout of an electric vehicle, Advantage and limitations, Specifications-System component,Electronic control system-High energy and power density batteries, Hybrid vehicle, Solar powered vehicles			
UNITS	**PAPER: DSE-1 P** Alternate Fuels and Energy Systems	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	Physical demonstration of engines powered with alternative fuels/ energies		PRIYANSHU JANA	14.09.2021-18.01.2022
Unit-II	Perform Checking of petroleum and alternate fuel engine		RANAJIT BERA	
Unit-III	Training on Solar/ Electrical powered vehicle.		RANAJIT BERA	
Unit-IV	Laboratory note book and Viva Voce: Students will be required to maintain records of all works done in connection with the topic taught in this paper.		PRIYANSHU JANA	
Unit-V	Visit to industry / Project work			
UNITS	**PAPER: DSE-2 T Motor Vehicle Act & Pollution Control**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit I	**Motor vehicle act** Various section of the motor vehicle act, Licensing of drivers of motor vehicles, Registration of motor vehicles, Control of transport vehicles, Control of traffic, Insurance of motor vehicles, Offence - Penalties and Procedure, Mandatory sings, Accident claims, Accident claims tribunals.	75	PARTHA SAKHA JANA	14.09.2021-18.01.2022
Unit II	**Introduction**			

	Vehicle population assessment in metropolitan cities and contribution to pollution, effects on human health and environment, global warming, types of emission, transient operational effects on pollution.			
Unit III	**Pollutant Formation in SI Engines** Pollutant formation in SI Engines, mechanism of HC and CO formation in four stroke and two stroke SI engines, NOx formation in SI engines, effects of design and operating variables on emission formation, control of evaporative emission. Two stroke engine pollution.			
Unit IV	**Pollutant Formation in CI Engines** Pollutant formation in CI engines, smoke and particulate emissions in CI engines, effects of design and operating variables on CI engine emissions, Nox formation and control. Noise pollution from automobiles, measurement and standards	75	PARTHA SAKHA JANA	14.09.2021-18.01.2022
Unit V	**Measurement Techniques Emission Standards and Test Procedure** NDIR, FID, Chemiluminescent analyzers, Gas Chromatograph, smoke meters, emission standards, driving cycles - USA, Japan, Euro and India. Test procedures - ECE, FTP Tests. SHED Test - chassis dynamometers, dilution tunnels			
UNITS	**PAPER: DSE-2 P Motor Vehicle Act & Pollution Control**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	Identification of Informatory, Warning and Mandatory Road Signs.		RANAJIT BERA	14.09.2021-18.01.2022
Unit-II	Knowing various traffic signals		PRIYANSHU JANA	
Unit-III	Familiarising with layout and identifying various items and parts of various emission controlling system e.g :-EGR system, Cat Con , PCV System and Fuel vapour Purge Control System.		RANAJIT BERA	

Unit-IV	Laboratory note book and Viva Voce		PRIYANSHU JANA		
Teaching Plan: Department of Automobile Mentainance: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13 T** Automotive Air Conditioning	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal examination**
Unit-I	**Air-conditioning Fundamentals** Basic air conditioning system - location of air conditioning components in a car, schematic layout of a refrigeration system, compressor components, condenser and high pressure service ports, thermostatic expansion valve, expansion valve calibration, controlling evaporator temperature, evaporator pressure regulator, evaporator temperature regulator.	75	PARTHA SAKHA JANA	21.02.2022-10.06.2022	**1st internal: 1st week of April,2022** **&** **2nd Internal:1st week ofJune,2022**
Unit – II	**Air Conditioner** - Heating System Automotive heaters, manually controlled air conditioner, heater system, automatically controlled air conditioner and heater systems, automatic temperature control, air conditioning protection, engine protection. **Refrigerant:** Containers handling refrigerants, tapping into the refrigerant container, refrigeration system diagnosis, diagnostic procedure, ambient conditions affecting system pressures				
Unit-III	**Air Routing and Temperature Control** Objectives, evaporator airflow through the recirculating unit, automatic temperature control, duct system, controlling flow, vacuum reserve, testing the air control and handling systems.				

Unit-IV	**Air Conditioning Service** Air conditioner maintenance and service, servicing heater system removing and replacing components, trouble shooting of air controlling system, compressor service.			
UNITS	**PAPER: CC13 P** Automotive Air Conditioning	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	Layout of car AC system		PRIYANSHU JANA	21.02.2022-10.06.2022
Unit-II	Construction and operation of condenser and evaporator.			
Unit-III	Construction and operation of heating system.			
Unit-IV	Case study of AC system.			
Unit-V	Controlling system of AC			
Unit-VI	Servicing of AC system.			
UNITS	**PAPER: CC14 T** Vehicle Performance and Testing	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	**Vehicle Performance Parameters** Vehicle Performance parameters, Fuel economy, acceleration, deceleration, grad ability, top speed, handling, comfort, life durability, EGR systems, and Vehicular systems: Suspension steering, Brakes & carriage unit testing, test procedure. Test procedure for gear box noise and shifting force.	75	PARTHA SAKHA JANA	21.02.2022-10.06.2022
Unit-II	**Vehicle Testing** Vehicle Testing - Road test, Free acceleration test, Coast down test, Passer by noise test, Wheel alignment and balancing test, Test tracks û proving ground testing, high speed track, pavement track, corrugated track, mud track, steering pad, gradient track, deep wading through shallow water, Laboratory testing û testing on chassis dynamometer transition testing- Euro III onwards, accelerated testing, Virtual testing, Evaporative emission testing, Oil consumption testing.			

Unit-III	**Collisions and Crash Testing** Crash testing: Human testing, Dummies, crashworthiness, pole crash testing, rear crash testing, vehicle to vehicle impact, side impact testing, crash test sensors, sensor mounting, crash test data acquisition, Braking distance test.			
Unit-IV	**Noise Vibration** Noise & vibration: Mechanism of noise generation, engine noise & vibration, causes and remedies, road shocks wind noise & measurement, vehicle measurement testing. Instrumentation for functional tests, Battery testing, endurance test.			21.02.2022-10.06.2022
UNITS	**PAPER: CC14 P** Vehicle Performance and Testing	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	Engine / vehicle performance, P.V. diagram, mechanical efficiency, volumetric efficiency and losses of fuel economy.		PRIYANSHU JANA	21.02.2022-10.06.2022
Unit-II	Construction and working principle of EGR and catalytic convertor. Testing procedure of suspension, brake and steering system.		RANAJIT BERA	
Unit-III	Exhaust emission testing, oil consumption testing and road test.		PRIYANSHU JANA	
Unit-IV	Construction and operation of automatic clutch epicyclic transmission ad troque converter. Testing of clutch, gear box, final drive and differential		RANAJIT BERA	
Unit-V	Safety of driver and occupants like seat belt, air bags, GPS, ESP, functions and operations.		PRIYANSHU JANA	
UNITS	**PAPER: DSE-3 T** Two and Three Wheelers	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	**Power system:** Two stroke SI engine, four stroke SI engine; merits and demerits, Symmetrical and unsymmetrical port timing diagrams, Types of scavenging processes, merits and demerits, scavenging pumps, Rotary valve engine; Fuel system, Lubrication system. Magneto coil and battery coil	75	PARTHA SAKHA JANA	21.02.2022-10.06.2022

	spark ignition system, electronic ignition system; Starting system, Kick starter system.			
Unit-II	**Chassis Systems:** Mainframe and its types. Chassis and shaft drive, Single, multiple plates and centrifugal clutches. Gear box and gear controls. Front and rear suspension systems; Shock absorbers; Panel meters and controls on handle bar.			
Unit-III	**Brakes, Wheels and Tyres** Drum brakes, disc brakes, front and rear brake links, layouts, Spoked wheel, cast wheel, disc Wheel, disc types; Tyres and tubes.			
Unit-IV	**Case studies:** Two Wheelers: Case study of major Indian models of motorcycles, scooters and mopeds, TVS mopeds and motorcycles, Hero Honda motorcycles, Bajaj scooters and motorcycles, Yamaha, Enfield motorcycles; Servicing and maintenance. **Three Wheelers:** Case study of Indian models, Auto rickshaws, pickup van, delivery van and trailer, Maintenance: daily, weekly, monthly, Fault tracing.			
UNITS	**PAPER: DSE-3 P** Two and Three Wheelers	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	Construction and operation of 4stroke SI engine.		RANAJIT BERA	21.02.2022-10.06.2022
Unit-II	Construction and operation of 2stroke petrol.			
Unit-III	Fuel supply circuit of 2 wheeler and 3 wheeler.			
Unit-IV	Operation of lubricating system.			
Unit-V	Operation of Magneto coil and Magneto coil ignition.			
Unit-VI	Operation electronic ignition.		PRIYANSHU JANA	

Unit-VII	Starting system and operation.			
Unit-VIII	Construction and working of clutching system.			
Unit-IX	Construction and operation of Transmission Gear box.			
Unit-X	Construction and operation of suspension system.		PRIYANSHU JANA	
Unit-XI	Construction and operation of Braking system.			
Unit-XII	Fitment and operation of wheels, tyre and tube.		RANAJIT BERA	
Unit-XIII	Case study of motor cycles and scooter.			
UNITS	**PAPER: DSE-4 P** Industrial Training	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**
Unit-I	Industrial Training of 4 (four) weeks	75	4 WEEK INDUSTRIAL TRAINING GUIDENCE BY:- PARTHA SAKHA JANA & PRIYANSHU JANA POSTPONED due to COBID -19	21.02.2022-10.06.2022
Unit-II	Training may be done from industries/Skill knowledge providers (SKPs)/Sector Skill Councils (SSCs)/Training centers/Institutes dealing with automotive			
Unit-III	Trainings are to be carried out during summer vacations or Semester break			
Unit-IV	Training Report submission			
Unit-V	Viva - Voce.			

Bengali

Teaching Plan: Department of Bengali: SEMESTER-I(M.A) 25.10.2021-20.01.2022

		FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal Examination
UNITS	PAPER: 101 Vasar itihas O porichoy.	40		25.10.2021-20.01.2022	**3rd week of December,2021**
	1. Indo-Uropiun-Vasabansa abong Tar Parichay,Prach1in varatiya vasa samuha oTar parichay		Asutosh Barui		
	2. Madhavaratiya ArghaVasa Samuha		Asutosh Barui		
	3. Nabyavaratiya Arghavasar Bargikaran,Maghadhi Prakrita Udvuta Vasa Samuher Sangkhipta Parichay		Chandan Barik		
	4. LipirUdhvab o Bikash,Bangla Lipi		Chandan Barik		
UNITS	PAPER: 102 Madhyajuger Itihas.	40		25.10.2021-20.01.2022	

	1. Bangali Gatir Itihas o Dharma Darmadarsan,Madhaguger Bhibinna Sahitya Dharar Parichay.		Raka Maiti		
	2. Anubad Sahitya, Jiboni Sahitya,Baisanab Sahitya		Srilekha Dan		
	3. Nath sahitya,Arakan Ragsavar Sahitya,Mangal Sahity, Saktya Padabali.Kabigan.		Manas Maity		
UNITS	PAPER: 103 Prachin O adimadhyajuger sahitya path.	40		25.10.2021-20.01.2022	
	1. Bangalar Srighaman Prakirna Slokh.SadharanParichay; Joydeb[Gitgobinda], Prakritapaingal,Subhasita Ratnakosh,Saduktikarnamrita,Arghasaptasati,Gathasaptasati.		Srilekha Dan		
	2. Chargapada.		Raka Maiti		
	3. Srikrishnakirtan.		Manas Maity		
UNITS	PAPER: 104 Antya-madhyajuger sahity path.	40		25.10.2021-20.01.2022	
	1. Baisnab Padaboli.		Santigopal Kar		
	2. Chitynacharitamrita.		Manas Maity		

	3. Sibayansahitya.		Srilekha Dan		
UNITS	PAPER: 105 Unish-bish shatoker prabandha sahityer dhara.	40		25.10.2021- 20.01.2022	
	1. Unish oBish Sataker Prabhandha Sahityaer Dhara.		Raka Maiti		
	2. Prabhandha Sahitya path.		Srilekha Dan		
	3. Kamlakanter Daptar.		Manas Maity		
	4. Sakuntala.		Chadan Barik		
Teaching Plan: Department of Bengali: SEMESTER-II(MA) 07.02.2022-11.07.2022					
UNITS	PAPER: 201 Sadharon vasa bijyan.	40		07.02.2022- 11.07.2022	**2nd week of June,2022**
	1. Dhanitattya.		Asutosh Barui		
	2. Rupatattya.		Asutosh Barui		
	3. Anaytattya.		Chadan Barik		
	4. Samag Vasabigyian.		Chadan Barik		
UNITS	PAPER: 202 Unish-bish shataker kabyakobita path.	40		07.02.2022- 11.07.2022	

	1. Meghnadbadh kabya.		Raka Maiti		
	2. Banalata Sen.		Srilekha Dan		
	3. Utpakhi. Sangati. Phul phutuk na phutuk. Swarnavasma.Babarer Prarthna.Jete pari kintu keno jabo.Janani jhantra.		Manas Maity		
UNITS	PAPER: 203 Rabindra sahityapath.	40		07.02.2022-11.07.2022	
	1. Shamali..		Manas Maity		
	2. Raktakarabi		Raka Maiti		
	3. Chaturanga		Srilekha Dan		
	4. Rabindra Chato Ghalpa-Postmastar,Kabuliola,Khudita pashan,Akratri,Laboratori		Santanu Pradhan		
UNITS	PAPER: 204 CBCS- Bangla vasatattwa O sahitya path.	40		07.02.2022-11.07.2022	
	1. Bhasatattya.		Raka Maiti		
	2. Chaghapada.		Chandan Bharik		
	3. Madhyagug:Gouriya Baisnab Darsan		Manas Maity		

	4. Prahasan:Buro Saliker Gharey roo.		Santigopal Kar	07.02.2022- 11.07.2022	
UNITS	PAPER: 205 Gabesanadharmi prkalpa rachana. Katha sahitya (project Paper)	50	 Raka Maiti Srilekha Dan Manas Maity Santigopal Kar		
	Vasatattwa. (project Paper)		Chandan Barik Asutosh Barui		
Teaching Plan: Department of Bengali: SEMESTER-III(MA) 15.09.2021-20.01.2022					
UNITS	PAPER: 301 Unish O bish sataker uponyaser itihas O path.	40		15.09.2021- 20.01.2022	**3rd week of December,2021**
1	Unish O bish shatoker uponyaser dhara. Swarna kumkari debi, sharatchandra chattopadhya, tarashankar bandyopaduyaya, Bibhutibhusan, Manik, Narayan Gangopadhyaya, Banaful, Sharadindu,Satinath, Mahashweata, Samares basu, Akhtaraujjaman etc.		Asutosh Barui		
2	Upanyas		Srilekha Dan		

	Krishnakanter uil, Pather Panchali, Pratham Pratishruti.				
UNITS	PAPER: 302 Unish O bish sataker chhotogalper itihas O path.	40		15.09.2021- 20.01.2022	
1	Unish O bish shataker choto galper dhara. Pravatkumar, Tarashankar, Manik,Jagadish Gupta , Bibhutibhusan, Narayan gangopadhyayya, Jyotirindra nandi, Bimal kar,Premendtra mitra, Ashapurna debi, Parashuram, Satinath vadurhi. Narendranath Mitra, Subodh Ghosh, SAmares basu, Mahashweta debi, Saiyad Oyaliullah, Hasan ajijul hak.		Raka Maiti		
2.	Chhoto galpo Chikitsya sankat -Parashuram Daini – Tarashankar Sharisrip- Manik Hoyto- Premendra Mitra Budhni- Banful Banajyotsna- Narayan gangryopadhyaya		Manas Maity		

	Shanabauriri kathakatha- samares basu Chaturrtha panipather juddha- Subodh ghosh Janani- BImal kar.				
3	Anudita chhotogalpa Mopasa- Nekles O henri- Gift of the mejjai CHekav- Deth Of a Clerk Premchanda – Sadgati Kalindicharan panigrahi- Bijay Utsab Mahim Bara- Mach O manus U.R.ananta murti- Ghatashraddha. Krrisanchnadar- Peshoyar express		Chandan Barik		
UNITS	PAPER: 303-Bangla natak O prhasan: unish O bish shatak.	40		15.09.2021- 20.01.2022	

1	Bangla Natyasahityer itihas- Ramnarayan, Dinabandhu, Girishchandra, D.l. roy, jyotindranath thakur, Manmatha ray, Manoj mitra		Santigopal Kar		
2.	Buroshaloker ghare ron- Maikel Madhuisudhan		Asutosh Barui		
3	Jana- girishchandra Nabanna – bijan Bhattacharja		Santigopal Kar		
UNITS	PAPER: 304 CBCS- Prachya sahitya tattwa O bangla sahityer bibidha path.	40		15.09.2021- 20.01.2022	
1	Prachya sahitya tattwa Dhwanibad, Bakroktibad, Ouchityabad		Chandan Barik		
2	Uponyas Aronyak- BIbhutibhusan		Manas Maity		
3	Prabandha Bidyapati O Joydev-Bankimchandra Sportser biruddhe- Buddhadev basu Interviw- Saiyad mujtaba ali		Asutosh Barui		

	Roma rolan- Annadashankar roy				
4	GAlpo O kobita Postmaster Avagir swarga Lambakarna		Santigopal Kar		
5	Kobita(Rabindranath Tagore) Niruddesh yatra Gitanjoli Nimantran Camelia Brishti- Amiyo chakraborti Bodh- Jibannada dash		Srilekha Dan		
UNITS	PAPER: 305 A- Vasa bijyan O vasa Samiksha. (project Paper)	50	Chandan Barik Asutosh Barui	15.09.2021- 20.01.2022	

	PAPER: 305 F – Kathasahityha. (project Paper)		Raka Maiti Srilekha Dan Manas Maity		
	PAPER: 305 E- Lokosahitya O lokosanskriti1. (project Paper)		Santigopal Kar		
Teaching Plan: Department of Bengali: SEMESTER-IV(MA) 07.02.2022-11.07.2022					
UNITS	**PAPER: 401** Bangla sahitya rupantar, pathantar, anubad sahitya prerana.	40		07.02.2022- 11.07.2022	**2nd week of June,2022**
1.	Rajani-Bankim Chandra		Raka Maiti		
2.	Madhusudan,Rabindra Nath,Jibananda-Prachya oPrachyata Prabhab.		Manas Maity		
3.	Meghdut-Rajshekhar Basu		Santigopal Kar		
UNITS	**PAPER: 402** prachya sahityatattwa.	40		07.02.2022- 11.07.2022	

1.	Prachya Sahiyatta Tattya		Raka Maiti		
2.	SahiytaDarpan		Asutosh Barui		
3.	RabindraSahiytaTattya Bisayak Nirbachita Prabandha		Manas Maity		
UNITS	PAPER: 403-Pashachatya sahityahtattwa.	40		07.02.2022- 11.07.2022	
1.	Prachya sahituya tatwa O bichar padhhoti		Asutosh Barui		
2	Poetics- Aristtotal		Srilekha Dan		
3	On the Earth of poetry- Hores		Srilekha Dan		
UNITS	PAPER: 404 Bahirbangiya bangla sahitya charcha O vasa andolan.	40		07.02.2022- 11.07.2022	
1	Bihar O jharkhander bangla sahitya charrcha		Santanu Pradhan		
2	Assam O tripurar bnagla sahitya charcha		Santanu Pradhan		
3	Bangla vasa kendrik andolan		Santanu Pradhan		
UNITS	PAPER: 405 A Vasa shamiksha O vasa bigyan.	50			

	1 Shoili bingan		Chandan Barik	07.02.2022- 11.07.2022	
	2 Manovasabingan		Chandan Barik		
	3 Vasacharchar itihas O paddhoti		Asutosh Barui		
	4 Upovasatattwa		Asutosh Barui		
	PAPER: 405 F Katha sahitya.				
	Bangla uponyas O chhotogalpo		Chandan Barik		
	Shrikanta –sharatchandra		Srilekha Dan		
	Hansulibanker upoklatha tarashankar.		Raka Maiti		
	Galpo;-		Manas Maity		
	Damru charit Aruper ras Simanta Hira Abataranika				

	Bharatbarsa Nilur Dukkha.				
Teaching Plan: Department of Bengali: SEMESTER-I(HONOURS) 01.10.2021-24.02.2022					
UNITS	PAPER: CC1:BANGLA VASAR UDVAB O PORICHAY	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal Examination
1	Bangla vasar udvab, Bangla vasar bivinna star, Bangla shabda vandar,Shabdarthatattwa	60	Asutosh Barui	01.10.2021- 24.02.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	Dhoni poribartaner karan o sutra, Bangla pad		Raka Maiti		
	Bangla karak o bivakti, Bangla lokovasa o bangla upovasa		Santigopal kar		
UNITS	PAPER: CC2 BANGLA SAHITTYER ITIHAS (PRACHIN O MADDHYA JUG)				1st internal examination on 4th week of December,
	Srijjyaman banglar prokirna nidarsan	60	Chandan Barik		

	Charjapad		Santigopal Kar	01.10.2021- 24.02.2022	**2022 and 2nd internal examination on 2nd week of March,2022**
	Srikrishna kirtan		Manas Maity		
	Choitanny chorit sahittya		Srilekha Dan		
	Anubad sahittya		Nabanita Ghorai		
	Boisnab padaboli sahittya		Manas Maity		
	Mongol kabbya dhara		Santigopal Kar		
	Arakan raj savar sahittya, Shakta padaboli, Nath sahittya		Nabanita Ghorai		
	Baulgiti		Santigopal Kar		
UNITS	**PAPER: GE-1 BANGLA VASAR BIVINNA STAR O BANGLA VASA CHARCHA**	60		01.10.2021- 24.02.2022	**1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022**
	1.Prithibir pradhan pradhan banser sadharan porichay, Indo eoropiya vasa bansar sadharan porichay Bangla vasar udvaber itihas, Bangla vasar bivinna starer boishista		Chandan Barik		

	2.Bangla upovasa, Bangla sadhu cholit vasa, Bangla bakkyer gathan (prathagata), Bangla shabda vandar 3.Dhwani poribartaner karan o sutra samuha, Shabdartha paribartaner karan o sutra samuha.		Asutosh Barui Raka Maiti		

Teaching Plan: Department of Bengali: SEMESTER-II(HONOURS) 01.04.2022-09.07.2022

UNITS	PAPER: CC3:PRACHIN O MADDHY JUGER PADPATH	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
1	1.Charjapad (patthyapad-(1,2,5,7,8,10,14,24,28)	60	Chadan Barik	01.04.2022-09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2	2.Baisnab padabali (nirbachita 8ti pad) Biddyapati - e sakhi hamari dukher nahi or, Aju Rajani hum vage pohailu Chondidas- jata nibariye tay nibar na jay re,		Manas Maity		

	Radhar ki hailo antare byatha Gyandas- Rup lagi anakhi jhure gune mon vor, Gobindadas- gaganahi nimagana dinamoni Knati Kontaka gari kamal-sama padatal Balaramdas- shridam sudam dam shuna ore Balaram				
3	3.shakta padaboli (nirbachita 8ti pad) Ramprasad Sen - ohe prananath giribar, Giri ebar amar uma, Ma amay ghurabi kata, Kebal asar asha Kamalakanta Bhattacharya - ore nabami nishi, Ohe Giriraj,gouri aviman, Ki holo nabami nishi, Bare bare kaha Rani		Raka maiti		
UNITS	PAPER: CC4:CHAITANNY JIBANI O MONGOL KABBY SAHITTYA PATH	60		01.04.2022- 09.07.2022	1st internal examination on 2nd

					week of May, 2022 and 2nd internal examination on 2nd week of July,2022
1	1. Chaitannye vagbat (adikhanda)- Brindaban Das		Srilekha Dan		
2	2.Chandimangal (akhetikkhanda)- Mukunda chakraborty		Nabanita Ghorai		
3	3.Annadamangal- Bharatchandra		Asutosh Barui		
UNITS	PAPER: GE-2 : KABBY SAHITTYER DHARA O BAISHNAB PADABALI PATH	60		01.04.2022-09.07.2022	
1	1.Prachin o maddhy juger sahittyer dhara: Charjapad, srikrishnakirtan, Mongalkabbya,Baishnab padabali		Asutosh Barui		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2	2.Adhunik kabbya sahittyer dhara: Madhusudan Dutta, Rabindranath Tagore, Jibanananda Dash		Manas maity		
	Najrul Islam, sudhindranath Datta,Amiya chakraborty,Vishnu Dey, Shakti chattopadhyay		Chandan Barik		

3	3.Baisnab padabali path Biddyapati- chira chandan ure har na dela, e sakhi hamari dukher nahi or, Chandidas- Sai keba shunaila sham nam,emon piriti kabhu nahi dekhi shuni Gandas- Rup lagi anakhi jhure,Bandhu tomar garabe garabini hum		Santigopal Kar		
Teaching Plan: Department of Bengali: SEMESTER-III(HONOURS) 01.10.2021-05.02.2022					
UNITS	**PAPER: CC5 Unish-bish shataker prbondho O kabya sahityer itihas abong akhyan sahity path.**	60		01.10.2021- 05.02.2022	**1st internal 4th week of November,2021 & 2nd Internal 1st week of January, 2022**
	Unish O Bish Shataker Prabandha Sahityer Dhara		Raka Maiti		
	Unish O Bish Shataker kabya Sahityer Itihas		Srilekha Dan		
	Akhkhyan Sahitya Path		Manas Maity		
UNITS	**PAPER: CC6 Chhando-alonkar O nirbachito kabita path.**	60		01.10.2021- 05.02.2022	
	Chanda		Santigopal Kar		
	Alonkar		Nabanita Ghorai		

	Nirbachita Kobita path-		Asutosh Barui		
UNITS	PAPER: CC7 Prabondho sahity path.	60		01.10.2021- 05.02.2022	
	Bibidha Prabandha		Chandan Barik		
	Nirbachita Prabondho Path		Santigopal Kar		
	Chorit Katha		Manas Maity		
UNITS	PAPER: SEC-1 Bangla byakoran O anubad tattwo.	40		01.10.2021- 05.02.2022	
	Bangla Byakoron Anubadtatta		Santigopal Kar		
UNITS	PAPER: GE-3 Bangla prabondho O kathapsahityer dhara ebong prabondho path.	60		01.10.2021- 05.02.2022	
	Bangla Prabandha Sahityer dhara		Nabanita Ghorai		
	Bangla katha Sahityer Dhara		Asutosh Barui		
	Lokorahossya		Santigopal Kar		

Teaching Plan: Department of Bengali: SEMESTER-IV(HONOURS) 15.03.2022-25.06.2022

UNITS	PAPER: CC8 Unish O Bish shotoker natya O kathasahityer itihas ebong chhotogalpo path	60		15.03.2022- 25.06.2022	Internal Examination
1	A. Unish O Bish shotoker natya sahityer dhara 1. Unish O Bish shotoker uponyaser dhara i) Bankimchandra chatyopadhyay, Rabindranath Thkur, sharatchandra chatyopadhyay, Bibhutibhushab Bandyopadhyay, Tarashankar Bandyopadhyay		Santigopal Kar		**4th week of April,2022** **&** **3rd week of June,2022**
	ii) Banaful, Sharadindu Bandyopadhyay, Mahashweta Devi		Manas Maity		
	2. Chhotogolper dhara i) Rabindranath Thkur, Prabhatkumar mukhopadhyay, Parashuram, Jagadish Gupta ii) Premendr Mitra, Banaful		Srilekha Dan		
	iii) Subodh ghosh, Norendrnath Mitra, Samaresh Basu, Narayan Gngopadhyay, Jyotirindrnath Nandi, Sharadindu Bandyopadhyay, Bimal kar, Ashapurna Devi		Nabanita Ghorai		

2	Chhotogalpo path i) a. Atithi- Rabindranath Thakur b. Samapti- Rabindranath Thakur c. Umarani- Bibhutibhushab Bandyopadhyay d. Tarini Majhi- Tarashankar Bandyopadhyay		Manas Maity		
	e. Kachi Sansad- Rajshekher basu f) Fasil—Subodh Ghosh g) Telenapota abiskar		Nabanita Ghorai		
UNITS	PAPER: CC9 Kabyapath	60		15.03.2022- 25.06.2022	
1	Birangana Kavya- Maikel Madhusudhan Datta		Raka Maiti		
2	Balaka- Rabindranath Thakur		Srilekha Dan		
3	Banalata Sen—Jibanananda dash		Manas Maity		

UNITS	**PAPER: CC10 Upanyas Path**	60		15.03.2022- 25.06.2022	
1	A. Kapal Kundala- Bankimchandra chatyopadhyay—		Chadan Barik		
2	B. Shesher kobita-- - Rabindranath Thakur—		Srilekha Dan		
3	C. Kabi -- Tarashankar Bandyopadhyay—		Santanu Pradhan		
UNITS	**PAPER: SEC-2 Chitranattya Rochona O Sampratik Bishleshan**	40		15.03.2022- 25.06.2022	
	Chitranattya Likhan, Sampratik bishleshan		Manas Maity		
UNITS	**PAPER: GE-4 Bangla Gitisahitya, Shishusahirta O Ramyarachanar Dhara**	60		15.03.2022- 25.06.2022	
1	A. Bangla Giti(sangit sahitya) Dhara		Manas Maity		
2	B. Bangle shishusahityer Dhara 1. Vidyasagar, madanmohan tarrkalankar, Shibnath Shastri, Dakshinaranjan Mitramajumdar		Nabanita Ghorai		

	2. Rabindranath Thakur, Abanindranath Thakur, yogindranath sarkar, Upendrakishor Raychoudhri, Satyajit ray, Sukumar ray, Lila		Chadan Barik		
	3. Majumdar, Narayan gongopadhyay, Premendra Mitra, Troilokyanath mukhopadhyay, Sukhalata ray		Chadan Barik		
3	C. Ramya rachanar Dhara Hutom pyancha, Pramatha Choudhri, Kalpyancha, Mujtaba ali, sanjib Chatyopadhyay		Santigopal Kar		
Teaching Plan: Department of Bengali: SEMESTER-V(HONOURS) 14.09.2021-18.01.2022					
UNITS	PAPER: CC11 Natya path.	60		14.09.2021- 18.01.2022	Internal examination
	Dakghor		Srilekha Dan		**1st week of November, 2021 & 4th week of December,2021**
	Sajahan		Nabanita Ghorai		
	Sadhabar Ekadoshi		Santigopal Kar		
UNITS	PAPER: CC12 Kabyotattwo, pashchattwo sahitya samoalochana tattwo O sahityer rupriti.	60		14.09.2021- 18.01.2022	
	Kabyatatta		Manas Maity		

	Paschatya Sahitya Somalochona		Asutosh Barui		
	Sahityer Rup Riti		Chandan Barik		
UNITS	**PAPER: DSE-1 Bangla sahity pravab.**	60		14.09.2021- 18.01.2022	
	Bangla sahitye sanskrit sahityer pravab		Santigopal Kar		
	Bangla sahitye Europiya sahityer pravab		Srilekha Dan		
	Bangla sahityikder upor loksahityer Pravab		Chadan Barik		
UNITS	**PAPER: DSE-2 Chhoto galpo, vramon kahini O goyenda kahini path.**	60		14.09.2021- 18.01.2022	
	Chotogolpa		Raka Maiti		
	Marutirtha Hinlaj		Nabanita Ghorai		
	Sajarur Kanta		Manas Maity		
Teaching Plan: Department of Bengali: SEMESTER-VI(HONOURS) 21.02.2022-10.06.2022					
UNITS	**PAPER: CC13 Loksahitya**	60		21.02.2022- 10.06.2022	
1	Lokosahitya sanga, swarup o boishishtya		Santigopal Kar		

	(Chhara, dhnadhna, prabad, lokokatha, lokogiti, lokonatak samparkita alochana)				**1st week of April,2022 & 1st week of June,2022**
2	Mahuya pala		Raka Maiti		
3	Banglar Brato- abanindranath thakur		Nabanita Ghorai		
UNITS	PAPER: CC14 Sangskrita, ingraji O prtibeshi sahityer itihas .	60		21.02.2022- 10.06.2022	
1	. Sanskrita sahityer itihaas (Boidik sahitya, Ramayan, Mahabharat, Kalidas , Ashwaghosh, Vas)		Srilekha Dan		
2	Ingreji sahityer itihas (Shekspiyar, oyardsoyarth, Charles Dickens, Byron, Sally , T.S Eliot)		Asutosh Barui		
3	Anyanya pratibeshi sahityer itihas		Santanu Pradhan		

	(Hindi vakti sahitya, premchandra, Mahadevi Barma, Fakirmohan Senapati, Ramakanta Rath, Kalindicharan Panigrahi, lakshmikanta jebbarua, Ramakanta Bardaloi, birinchikumar barua)				
UNITS	PAPER: DSE-3 Natya sahity path.	60		21.02.2022- 10.06.2022	
1	Chandragupta - Dwijendralal Ray		Santigopal Kar		
2	Sajano bagan - manoj mitra		Manas Maity		
3	Ekanka natak		Nabanita Ghorai		
UNITS	PAPER: DSE-4 Uponyas sahity path.	60		21.02.2022- 10.06.2022	
1	Putul nacher Itikatha- Manik Bandyopadhyay		Manas Maity		
2	Tungavadrar tire- Sharadindu Bandyopadhyay		Nabanita Ghorai		

3	Tanaporen- Samaresh Basu		Ashutosh Barui		
Teaching Plan: Department of Bengali: SEMESTER-I(GENERAL) 01.10.2021-24.02.2022					
UNITS	PAPER: DSC-1A/2A Bangla sahityer itihas O bangla vasatattwo.	60		21.02.2022-10.06.2022	
	1.Prachin o maddhy jug- charjagiti, srikrishnakirtan,krittibas,kashiram,mukundaram,varatchandra,		Santigopal Kar		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	2.Unish shataker goddya- fort uiliyam college,shrirampurmishan,Rammohon Ray,Biddyasagar,Pyarichand Mitra,Kaliprasanna Singha,Bonkim Chandra chattyapadhay,		Raka maiti		
	3. Kobita - Madhusudan Dutta, Rabindranath Tagore,Najrul Islam, Jibanananda Dash,		Manas Maity		
	4. Kathasahittya- Bankimchandra chattyapaddhay, Rabindranath Tagore, SharatChandrachattyapaddhay, Bivutivushan Bandyapaddhay,		Nabanita Ghorai		
	5.Bangla vasar udvab,Bangla vasar bivinna starer boishistya,shabdarther poribartan, Bangla shabda vandar,dhawani poribartan, Bangla upovasa		Asutosh Barui		

UNITS	PAPER: AECC (Compulsory)	40		21.02.2022- 10.06.2022	
1	1.Vasa porikalpana 2.Dharma,pesha, linga vittik Bangla samaj vasa 3.Bartaman adarsa katthya-Banglar prokriti		Chadan Barik		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
2	Anubad (Bengali theke English, English theke Bengali)		Asutosh Barui		
3	Kathan-dakkhata: 1.sakkhatkar (Interview) 2.Baktrita (public speech) dakkhata		Nabanita Ghorai		
Teaching Plan: Department of Bengali: SEMESTER-II(GENERAL) 01.04.2022-09.07.2022					
UNITS	PAPER: DSC-1B/2B DSC-1B:KABBY-KOBITA	60		01.04.2022- 09.07.2022	
1	1.Baishnab padabali (atti nirbachita pad) Biddyapati- e sakhi hamari dukher nahi or,		Raka Maiti		1st internal examination on 2nd

	Aju rajani hum vage pohailu Chandidas- jata nibariye chai nibar na jay Radhar ki hailo antare byatha Gyandas- Rup lagi anakhi jhure Gobindadas-gaganahi nimagana dinamoni Knati Kantaka gari kamal-sama padatala Balaram Das - Shridam sudam shuna ore Balaram				week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2	2.Shakta padaboli (chhati nirbachita pad) Ore nabami nishi - Kamala kanta Bhattacharya Ohe Giriraj gouri aviman - Kamala kanta Bhattacharya Ki holo nabami nishi - Kamala kanta Bhattacharya Bare bare kaha Rani - Kamala kanta Bhattacharya Ohe prananath giribar - Ramprashad sen Giri ebar amar uma - Ramprasad Sen		Santigopal Kar		

3	3.Adhunik juger kabby kobita: (1)Birangana kabbya (Dusanter proti shakuntala,somer prati tara,dasharather prati kekai,Lokhmaner prati surpanakha,Dwarakanather prati Rukmini, Niladwajer prati Jana)		Asutosh Barui		
	(2) Adhunik kabita sankalan (nirbachita kobita dashti) Madhusudan Dutta- Atmabilap Rabindranath Tagore- Sonar Tari Satyendra nath Datta- Champa Jatindranath sengupta- Dukkhobadi Dinesh Das - kaste Sudhindranath Datta - shashwati		Srilekha Dan Nabanita Ghorai		
	Subhas mukhapaddhya- Jata dure jai Shakti chattopadhyay - abani bari achho Sunil gangapaddhya - nirar jannyo kobitar vumika		Manas Maity		
UNITS	PAPER: MIL-1 AECC (CORE) CL 1:KABITA O CHHOTO GALPA	60		01.04.2022- 09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal

1	1.Bangla kabita(nirbachita panch ti) Ami - Rabindranath Tagore		Srilekha Dan		examination on 2nd week of July,2022
	Mahuyar desh- Samar sen		Asutosh Barui		
	Sammyabadi- Najrul Islam		Santigopal Kar		
	Barababur kachhe nibedan- Amiya chakraborty Utpakhi- sudhindra nath datta		Manas Maity		
2	2.Bangla chhoto galpa (birbachita panch ti) Mahesh- Sharat Chandra chattyapadhay Lambakarna- parashuram Puimancha- Bivutivushan Bandyapaddhay		Nabanita Ghorai		
	Girgiti- Jyoti rindra nandi Tichar- Manik Bandyapaddhay Tarini Majhi - Tarasankar Bandyapaddhay		Raka Maiti		
Teaching Plan: Department of Bengali: SEMESTER-III(GENERAL) *01.10.2021-05.02.2022*					

UNITS	PAPER: DSC-1C/2C Bangla kathasahitya path, natok O prbondho.	60		01.10.2021-05.02.2022	1st internal 4th week of November,2021 & 2nd Internal 1st week of January, 2022
	Sajahan		Nabnita Ghorai		
	Nirbachita Prabandha		Srilekha Dan		
	Bangla Chotogolpa		Santigopal Kar		
	Pother Panchali		Chandan Barik		
UNITS	PAPER: SEC-1 Likhon noipunyo briddhi.	40		01.10.2021-05.02.2022	
	Likhan Noipunnya Bridhdhi		Asutosh Barui		

Teaching Plan: Department of Bengali: SEMESTER-IV(GENERAL) 15.03.2022-25.06.2022

UNITS	PAPER: DSC-1D/2D Sahityatattwa O sahitya Nirmankala	60		01.10.2021-05.02.2022	
	A. Ras O Dhani(Kavyajingasa)		Raka Maiti		
	B. Chhanda		Chandan Barik		
	C. Alankar		Nabanita Ghorai		

UNITS	PAPER: SEC-2 Bangla Dhwanitattwa O Ruptattwa	40		01.10.2021- 05.02.2022	**4th week of April,2022**
	A. Dhanitattwa		Asutosh Barui		**&**
	B. Ruptattwa		Chandan Barik		**3rd week of June,2022**
UNITS	PAPER: MIL-2 Prabandha O Lokosahitya path	60		01.10.2021- 05.02.2022	
1	Mahuya pala		Raka Maiti		
2	Prabandha Path 1. Vidyasagar 2. Gitikavya		Manas Maity		
	3. Vabbar Katha 4. Musalmani Bangla		Nabanita Ghorai		

Teaching Plan: Department of Bengali: SEMESTER-V(GENERAL) 14.09.2021-18.01.2022

UNITS	PAPER: DSE-1A/2A Bangla natok O kobita.	60		14.09.2021- 18.01.2022	**1st week of November, 2021 &4th week of December,2021**
	Krishnakumai		Nabanita Ghorai		
	Kobita		Manas Maity		
UNITS	PAPER: SEC-3 Shoili, kabyashoili bichar, godya shoili O natya shoili bichar.	40		14.09.2021- 18.01.2022	
	Shoili, kabyashoili Bichar		Asutosh Barui		
	Godyashoili, O Natyashoili Bichar		Chandan Barik		
UNITS	PAPER: GE-1 Shishusahitya O goyenda kahini.	60			
	Shishusahitya		Asutosh Barui		
	Shishusahitya		Chandan Barik		
Teaching Plan: Department of Bengali: SEMESTER-VI(GENERAL) 21.02.2022-10.06.2022					
UNITS	PAPER: DSE-1B/2B Uponyas O chhoto galpo.	60		21.02.2022- 10.06.2022	**1st week of April,2022 & 1st week of June,2022**
1	Uponyas Radha - Tarashankar Bandyopadhyay		Nabanita Ghorai		

2	Chhotogalpo path 1. Bedini - Tarashankar Bandyopadhyay		Raka Maity		
3	2. Mayakurangi - Sharadindu Bandyopadhyay		Manas Maity		
4	3. Kachisangsad - Rajshekhar Basu		Santanu Pradhan		
5	4. Avagir Swagra, Sharatchandra chattopadhyay		Ashutosh Barui		
6	5. Vikhari Saheb - Pravatkumar Mukhopadhyay		Manas Maity		
UNITS	PAPER: SEC-4 Bishoyvittik alochana O alochana patra uposthapon.	40		21.02.2022- 10.06.2022	
	Bishay vittik alochana O alochana Patra upasthapan A. Prakalppatra rachana o prakalpa Patra upasthapana		Chandan Barik		

UNITS	PAPER: GE-2 Ekanka natok O goyenda kahini.	60		21.02.2022- 10.06.2022	
	Ekanka Natak o goyenda kahini path A. Ekanka natak path		Manas Maity		
	B. Sajarur kanta - Sharadindu Bandyopadhyay		Nabanita Ghorai		

Botany

Teaching Plan: Department of Botany: SEMESTER-I (HONOURS)

UNITS	PAPER: CC1	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
Unit-I	Introduction to microbial world	Theory-40 Practical-20 Internal-10 Class assessment -5	Debsankar Das Suvasree Sahu Moumita Barik Subir Pramanik Subhamita Das	1.10.2021-24.02.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Unit-II	Virus				
3	Bacteria				
4	Algae				
5	Cyanophyta and Xanthophyta				
6	Chlorophyta and Charophyta				
7	Phaeophyta and Rhodophyta				
UNITS	PAPER: CC2	Theory-40			1st internal examination on 4th
1	Biomolecules		Chandan Acharya		

2	Bioenergetics	Practical-20 Internal-10 Class assessment-5	Subrata Giri	1.10.2021-24.02.2022	week of December, 2022 and 2nd internal examination on 2nd week of March,2022
3	Enzyme		Chandan Acharya		
4	The cell		Debsankar Das		
5	Cell wall and plasma membrane		Suvasree Sahu		
6	Cell organelles		Anjana Maity		
7	Cell division		Suvasree Sahu		
UNITS	PAPER: GE-1				
1	Microbes	Theory-40 Practical-20 Internal-10 Class assessment-5	Debsankar Das	1.10.2021-24.02.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
2	Algae		Moumita Barik		
3	Fungi		Moumita Barik		
4	Introduction of archegoniates		Subir Pramanik		
5	Bryophytes		Subrata Giri		
6	Pteridophytes		Subir Pramanik		
7	Gymnosperm		Debsankar Das		

Teaching Plan: Department of Botany: SEMESTER-II (HONOURS)

UNITS	PAPER: CC3	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
1	Introduction of true fungi	Theory-40 Practical-20 Internal-10 Class assessment-5	Debsankar Das	01.04.2022-09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2	Chitridiomycota and zygomycota				
3	Ascomycota		Subhamita Das		
4	Basidiomycota				
5	Allied fungi		Subir Pramanik		
6	Oomycota				
7	Symbiotic association		Moumita Barik		
8	Applied mycology				
9	Phyto-pathology		Subrata Giri		
UNITS	PAPER: CC4	Theory-40 Practical-20 Internal-10			
1	Introduction		Chandan Acharya	01.04.2022-09.07.2022	1st internal examination on 2nd week of May, 2022
2	Bryophytes				
3	Type studies –Bryophytes				

4	Pteridophytes	Class assessment -5	Anjana Maity		and 2nd internal examination on 2nd week of July,2022
5	Type studies –Pteridophytes				
6	Gymnosperms		Suvasree Sahu		
UNITS	PAPER: GE-2				1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
1	Introduction	Theory-40 Practical-20 Internal-10 Class assessment -5	Moumita Barik	01.04.2022-09.07.2022	
2	Ecological factors				
3	Plant communities				
4	Ecosystem		Anjana Maity		
5	Phytogeography				
6	Introduction to plant taxonomy		Debsankar Das		
7	Identification		Suvasree Sahu		
8	Taxonomic evidence...				
9	Taxonomic hierarchy				
10	Botanical nomenclature		Subrata Giri		
11	Classification		Debsankar Das		
12	Biometrics, numerical taxonomy and cladistics				
Teaching Plan: Department of Botany: SEMESTER-III (HONOURS)					
UNITS	PAPER: CC5				1st internal 4th week of November,2021 & 2nd Internal 1st week of January, 2022
1	Introduction and scope of plant anatomy	Theory-40 Practical-20 Internal-10 Class assessment -5	Subrata Giri	1.10.2021-05.02.2022	
2	Structure and development of plant body				
3	Tissues		Moumita Barik		
4	Apical meristems				
5	Vascular cambium and wood		Subhamita Das		
6	Adaptive and protective system		Chandan Acharya		
UNITS	PAPER: CC6				
1	Origin of cultivated plants	Theory-40 Practical-20 Internal-10	Anjana Maity	1.10.2021-05.02.2022	
2	Cereals				
3	Legumes				
4	Sources of sugars and starches			1.10.2021-05.02.2022	
5	Spices				
6	Beverages		Subhamita Das		

7	Sources of oils and fats	Class assessment -5		1.10.2021-05.02.2022
8	Natural rubber			
9	Drug yielding plants		Moumita Barik	
10	Timber plants			
11	Fibres			
UNITS	PAPER: CC7			1.10.2021-05.02.2022
1	Mendelian genetics and its extension	Theory-40 Practical-20 Internal-10 Class assessment -5	Subir Pramanik	
2	Extra chromosomal inheritance		Suvasree Sahu	
3	Linkage, crossing over and chromosomal mapping			
4	Variation in chromosome number and structure		Chandan Acharya	
5	Gene mutation			
6	Fine structure of gene		Debsankar Das	
7	Population and evolutionary genetics			
UNITS	PAPER: SEC-1			
1	General account about microbes used as bio fertilizers	Theory-40 Internal-5 Class assessment -5	Subrata Giri	1.10.2021-05.02.2022
2	Azospirillum			
3	Cyanobacteria			
4	Mycorrhizal association			
5	Organic farming			
UNITS	PAPER: GE-3			1.10.2021-05.02.2022
1	Origin of cultivated plants	Theory-40 Practical-20 Internal-10 Class assessment -5	Anjana Maity	
2	Cereals			
3	Legumes			
4	Spices		Anjana Maity	
5	Beverages		Moumita Barik	
6	Oils and fats			
7	Fibre yielding plants			
8	Introduction to biotechnology		Chandan Acharya	
9	Plant tissue culture			
10	Recombinant DNA technology		Subrata Giri	
Teaching Plan: Department of Botany: SEMESTER-IV(HONOURS)				

UNITS	PAPER: CC8	Theory-40 Practical-20 Internal-10 Class assessment-5			**4th week of April,2022 &3rd week of June,2022**
1	Nucleic acid		Suvasree Sahu	15.03.2022-25.06.2022	
2	The Structure of DNA and RNA				
3	The Replication of DNA		Subir Pramanik		
4	Central dogma and Genetic Code				
5	Transcription		Debsankar Das		
6	Processing and modification of RNA		Debsankar Das		
7	Translation		Suvasree Sahu		
UNITS	PAPER: CC9				
1	Introduction	Theory-40 Practical-20 Internal-10 Class assessment-5	Anjana Maity	15.03.2022-25.06.2022	
2	Soil				
3	Water				
4	Light, temp, wind and fire				
5	Ecosystem		Moumita Barik		
6	Population ecology				
7	Plant communities				
8	Biotic interaction		Subhamita Das		
9	Functional aspects of ecosystem				
10	Phyto-geography				
UNITS	PAPER: CC10	Theory-40 Practical-20 Internal-10 Class assessment-5			
1	Significance of plant systematics		Chandan Acharya	15.03.2022-25.06.2022	
2	Taxonomic hierarchy				
3	Botanical nomenclature		Subir Pramanik		
4	Systems of classification		Debsankar Das		
5	Biometrics, numerical taxonomy and cladistics		Subrata Giri		
6	Phylogeny of angiosperm				
UNITS	PAPER: SEC-2	Theory-40 Internal-5 Class assessment-5		15.03.2022-25.06.2022	
1, 2,3,4	Mushroom culture technology		Subrata Giri		

UNITS	PAPER: GE-4				
1	Plant-water relations	Theory-40 Practical-20 Internal-10 Class assessment-5	Debsankar Das	15.03.2022-25.06.2022	
2	Mineral nutrition				
3	Translocation in phloem.		Subhamita Das		
4	Photosynthesis		Anjana Maity		
5	Respiration				
6	Enzymes		Subhamita Das		
7	Nitrogen metabolism		Subir Pramanik		
8	Plant growth regulators				
9	Plant response to light and temperature		Subrata Giri		
Teaching Plan: Department of Botany: SEMESTER-V(HONOURS)					
UNITS	PAPER: CC11				**1st week of November, 2021 &4th week of December,2021**
1	Introduction	Theory-40 Practical-20 Internal-10 Class assessment-5	Subrata Giri	14.09.2021-18.1.2022	
2	Reproductive devt.				
3	Anther and pollen biology		Suvasree Sahu		
4	Ovule		Subrata Giri		
5	Pollination and fertilization		Suvasree Sahu		
6	Self -incompatibility		Moumita Barik		
7	Embryo , endosperm				
8	Polyembryony and apomixis		Subhamita Das		
UNITS	PAPER: CC12				
1	Plant water relationship	Theory-40 Practical-20 Internal-10 Class assessment-5	Debsankar Das	14.09.2021-18.1.2022	
2	Mineral nutrition				
3	Nutrient uptake				
4	Translocation in the phloem		Subhamita Das		
5	Plant growth regulators		Anjana Maity		
6	Physiology of flowering				
7	Phytochrome, cytochrome and phototropin				
UNITS	PAPER: DSE-1				

1	Biostatistics	Theory-40 Practical-20 Internal-10 Class assessment -5cal-20	Chandan Acharya	14.09.2021-18.1.2022	
2	Collection of data, primary and secondary				
3	Measures of central tendencies				
4	Correlation				
5	Statistical inference				
UNITS	PAPER: DSE-2	Theory-40 Practical-20 Internal-10 Class assessment -5			
1	Plant breeding		Subir Pramanik		
2	Methods of crop improvements				
3	Quantitative inheritance				
4	Inbreeding depression and heterosis.		Suvashree Shau		
5	Crop improvement and breeding				
Teaching Plan: Department of Botany: SEMESTER-VI (HONOURS)					
UNITS	PAPER: CC13	Theory-40 Practical-20 Internal-10 Class assessment -5	Chandan Acharya	21.02.2022-10.06.2022	**1st week of April,2022 & 1st week of June,2022**
1	Concept of metabolism				
2	Carbon assimilation				
3	Carbohydrate metabolism				
4	Carbon oxidation		Debsankar Das		
5	ATP Synthesis				
6	Lipid metabolism				
7	Nitrogen metabolism		Anjana Maity		
8	Mechanism of signal transduction				
UNITS	PAPER: CC14				
1	Plant Tissue culture	Theory-40 Practical-20 Internal-10	Suvashree Sahu	21.02.2022-10.06.2022	
2	Recombinant DNA technology				
3	Gene cloning				
4	Methods of Gene transfer				
5	Application of Biotechnology		Subhamita Das		

		Class assessment -5			
UNITS	PAPER: DSE-3				
1	Scope of microbes in industry and environment	Theory-40 Practical-20 Internal-10 Class assessment -5	Anjana Maity		
2	Bioreactors /fermenters and fermentation process				
3	Microbial productions of industrial products		Subhamita Das		
4	Microbial enzymes of industrial interest				
5	Microbes and quality of environment		Suvashree Sahu	21.02.2022-10.06.2022	
6	Microbial flora of water				
7	Microbes in agriculture				
UNITS	PAPER: DSE-4				
1	Imaging and related technique	Theory-40 Practical-20 Internal-10 Class assessment -5	Subrata Giri		
2	Cell fractionation				
3	Radio isotopes		Subir Pramanik		
4	Spectrophotometry			21.02.2022-10.06.2022	
5	Chromatography		Chandan Acharya		
6	Characterization of protein and neuclic acids		Debsankar Das		
7	Biostatistics		Chandan Acharya		
Teaching Plan: Department of Botany: SEMESTER-I (GENERAL)					
UNITS	PAPER: DSC-1A				
1	Microbes	Theory-40 Practical-20 Internal-10 Class assessment -5	Suvashree Sahu		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
2	Algae				
3	Fungi				
4	Introduction of Archegoniates		Debsankar Das	1.10.2021-24.02.2022	
5	Bryophytes		Subrata Giri		
6	Pteridophytes		Debsankar Das		
7	Gymnosperm		Suvashree Sahu		
Teaching Plan: Department of Botany: SEMESTER-II (GENERAL)					
UNITS	PAPER: DSC-2B				
1	Introduction	Theory-40	Anjana Maity		1st internal examination on 2nd
2	Ecological factors				

3	Plant communities	Practical-20 Internal-10 Class assessment -5		01.04.2022-09.07.2022	week of May, 2022 and 2nd internal examination on 2nd week of July,2022
4	Ecosystem		Subhamita Das		
5	Phytogeography				
6	Introduction to plant taxonomy		Debsankar Das		
7	Identification		Suvashree Sahu		
8	Palinological evidance from paly....				
9	Taxonomic hierarchy		Debsankar Das		
10	Botanical nomenclature				
11	Classification		Subrata Giri		
12	Biometrics, numerical taxonomy and cladistics				
Teaching Plan: Department of Botany: SEMESTER-III (GENERAL)					
UNITS	PAPER: DSC-3C			1.10.2021-05.02.2022	**4th week of November,2021 &1st Week of January,2022**
1	Meristematic and permanent tissue	Theory-40 Practical-20 Internal-10 Class assessment -5	Subrata Giri		
2	Organs				
3	Secondary growth		Subhamita Das		
4	Adaptive and protective systems				
5	Structural organization of flower		Suvashree Sahu		
6	Pollination and fertilization				
7	Embryo and endosperm		Moumita Barik		
8	Apomixes and polyembryony				
UNITS	PAPER: SEC-1				
1, 2, 3,4,5	Bio-fertilizers	Theory-40 Internal-5 Class assessment -5	Chandan Acharya, Subrata Giri		
Teaching Plan: Department of Botany: SEMESTER-IV(GENERAL)					
UNITS	PAPER: DSC-1D/2D/3D				**4th week of April,2022 &3rd week of June,2022**
1	Plant-water relations	Theory-40 Practical-20 Internal-10	Subrata Giri	15.03.2022-25.06.2022	
2	Mineral nutrition				
3	Translocation in phloem.		Subhamita Das		
4	Photosynthesis				

5	Respiration	Class assessment -5			
6	Enzymes		Anjana Maity		
7	Nitrogen metabolism		Subir Pramanik		
8	Plant growth regulators		Debsankar Das		
9	Plant response to light and temperature				
UNITS	PAPER: SEC-2				
1, 2,3,4	Mushroom culture technology	Theory-40 Internal-5 Class assessment -5	Chandan Acharya, Subir Pramanik	15.03.2022-25.06.2022	
Teaching Plan: Department of Botany: SEMESTER-V (GENERAL)					
UNITS	PAPER: DSE-1A/2A/3A				**1st week of November, 2021 &4th week of December,2021**
1	Origin of cultivated plants	Theory-40 Practical-20 Internal-10 Class assessment -5	Anjana Maity	14.09.2021-18.1.2022	
2	Cereals				
3	Legumes				
4	Spices				
5	Beverages		Moumita Barik		
6	Oils and fats				
7	Fibre yielding plants				
8	Introduction to biotechnology		Chandan Acharya		
9	Plant tissue culture				
10	Recombinant DNA technology		Subrata Giri		
UNITS	PAPER: SEC-3				
1-7	Floriculture	Theory-40 Internal-5 Class assessment -5	Subrata Giri, Moumita Barik	14.09.2021-18.1.2022	
Teaching Plan: Department of Botany: SEMESTER-VI (GENERAL)					

UNITS	PAPER: DSE-1B/2B/3B				**1st week of April,2022 & 1st week of June,2022**
1	Heredity	Theory-40 Practical-20 Internal-10 Class assessment -5	Subir Pramanik	21.02.2022-10.6.2022	
2	Sex-determination and Sex-linked Inheritance		Suvashree Sahu		
3	Linkage and Crossing over		Chandan Acharya		
4	Mutations and Chromosomal Aberrations				
5	Plant Breeding		Moumita Barik		
6	Methods of crop improvement				
7	Quantitative inheritance				
8	Inbreeding depression and heterosis				
9	Crop improvement and breeding				
UNITS	PAPER: SEC-4				
1-3	Medicinal Botany	Theory-40 Internal-5 Class assessment -5	Chandan Acharya, Subir Pramanik	21.02.2022-10.6.2022	

Computer Science

Teaching Plan: Department of Computer Science: SEMESTER-I(HONOURS)

UNITS	PAPER: GE-1: Computer Fundamentals	FULL MARKS	NAME OF TEACHER	MONTH OF TEACHING	REMARKS
1.	**Introduction:** Introduction to computer system, uses, types	**75**	Prasenjit Mura	**01/10/2021 to 24/02/2022**	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
2.	**Data Representation:** Number systems and character representation, binary 12L arithmetic		Prasenjit Mura		
3.	**Human Computer Interface:** Types of software, Operating system as user interface, utility programs		SubhasisMahapatra		
4.	**Devices:** Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter		SubhasisMahapatra		
5.	**Memory:** Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks		Kuheli Ray Mahapatra		
6.	**Computer Organisation and Architecture:** C.P.U., registers, system bus, main memory unit, cache		Kuheli Ray Mahapatra		

	memory, Inside a computer, SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, processors.				
7.	**Overview of Emerging Technologies:** Bluetooth, cloud computing, big data, data mining, mobile computing and embedded systems.		SandipanSamanta		
GE-I P: Computer Fundamentals Lab			SubhasisMahapatra		
Teaching Plan: Department of Computer Science: SEMESTER-I(GENERAL)					
UNITS	**PAPER: DSC-1A/2A/3A: Problem Solving using Computers(Theory)**	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	**REMARKS**
1.	**Computer Fundamentals:** Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers. Basic Computer Organization – Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices.	75	SubhasisMahapatra	**01/10/2021 to 24/02/2022**	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
2.	**Planning the Computer Program:** Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.		Prasenjit Mura		
3.	**Techniques of Problem Solving:** Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.		Prasenjit Mura		
4.	**Overview of Programming:** Structure of a Python Program, Elements of Python.		Kuheli Ray Mahapatra		
5.	**Introduction to Python:** Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).		Kuheli Ray Mahapatra		
6.	**Creating Python Programs:** Input and Output Statements, Control statements (Looping- while Loop, for Loop, Loop Control, Conditional Statement- if...else, Difference between break, continue and pass).		SandipanSamanta		

7.	**Structures:** Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.		Kuheli Ray Mahapatra		
8.	**Introduction to Advanced Python:** Objects and Classes, Inheritance, Regular Expressions, Event Driven Programming, GUI Programming.		Prasenjit Mura		
DSC-(1A/2A/3A)P: Software Lab using Python(Lab)					
1.	Section: A (Simple programs)		Prasenjit Mura		
2.	Section: B (Visual Python): interval.		SandipanSamanta		
Teaching Plan: Department of Computer Science: SEMESTER-II(HONOURS)					
UNITS	**PAPER: GE-2: Introduction to Database System**	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	**REMARKS**
1.	**Database:** Introduction to database, relational data model, DBMS architecture, data independence, DBA, database users, end users, front end tools	**75**	SandipanSamanta	**01/04/2022 to 09/07/2022**	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2.	**E-R Modeling:** Entity types, entity set, attribute and key, relationships, relation types, E- R diagrams, database design using ER diagrams		SandipanSamanta		
3.	**Relational Data Model:** Relational model concepts, relational constraints, primary and foreign key, normalization: 1NF, 2NF, 3NF		Prasenjit Mura		
4.	**Structured Query Language:**SQL queries, create a database table, create relationships between database tables, modify and manage tables, queries, forms, reports, modify, filter and view data.		Kuheli Ray Mahapatra		
GE2 P : Introduction to Database System (Lab)			Kuheli Ray Mahapatra		
Teaching Plan: Department of Computer Science: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B/3B:** Database Management Systems	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	**REMARKS**
1.	Introduction to Database Management Systems: Characteristics of database approach, data models, DBMS architecture and data independence.	75	Prasenjit Mura	**01/04/2022 to 09/07/2022**	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2.	Entity Relationship and Enhanced ER Modeling: Entity types, relationships, SQL- 99: Schema Definition, constraints, and object modeling.		Kuheli Ray Mahapatra		
3.	Relational Data Model: Basic concepts, relational constraints, relational algebra, SQL queries.		SandipanSamanta		
4.	Database design: ER and EER to relational mapping, functional dependencies, normal forms up to third normal form.		Prasenjit Mura		

DSC-1BP/2BP/3BP: Software Lab based on Database Management Systems (Lab)			SandipanSamanta		
Teaching Plan: Department of Computer Science: SEMESTER-III					
UNITS	**PAPER:** GE-3: Introduction to Programming	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	**Internal examination**
1.	**Introduction to C and C++ :** History of C and C++, Overview of Procedural Programming and Object-Orientation Programming, Using main() function, Compiling and Executing Simple Programs in C++.		Kuheli Ray Mahapatra		1st internal 4th week of November,2021 & 2nd Internal 1st week of January, 2022
2.	**Data Types, Variables, Constants, Operators and Basic I/O** Declaring, Defining and Initializing Variables, Scope of Variables, Using Named Constants, Keywords, Data Types, Casting of Data Types, Operators (Arithmetic, Logical and Bitwise), Using Comments in programs, Character I/O (getc, getchar, putc, putcharetc), Formatted and Console I/O (printf(), scanf(), cin, cout), Using Basic Header Files (stdio.h, iostream.h, conio.hetc).		Kuheli Ray Mahapatra		
3.	**Expressions, Conditional Statements and Iterative Statements** Simple Expressions in C++ (including Unary Operator Expressions, Binary Operator Expressions), Understanding Operators Precedence in Expressions, Conditional Statements (if construct, switch-case construct), Understanding syntax and utility of Iterative Statements (while, do-while, and for loops), Use of break and continue in Loops, Using Nested Statements (Conditional as well as Iterative)	**75**	SandipanSamanta	01/10/2021 to 05/02/2022	
4.	**Functions and Arrays** Utility of functions, Call by Value, Call by Reference, Functions returning value, Void functions, Inline Functions, Return data type of functions, Functions parameters, Differentiating between Declaration and Definition of Functions, Command Line Arguments/Parameters in Functions, Functions with variable number of Arguments. Creating and Using One Dimensional Arrays (Declaring and Defining an Array, Initializing an Array, Accessing individual elements in an Array, Manipulating array elements using loops), Use Various types of arrays (integer, float and character arrays / Strings) Two-dimensional		Prasenjit Mura		

	Arrays (Declaring, Defining and Initializing Two Dimensional Array, Working with Rows and Columns), Introduction to Multi-dimensional arrays				
5.	**Derived Data Types (Structures and Unions)** Understanding utility of structures and unions, Declaring, initializing and using simple structures and unions, Manipulating individual members of structures and unions, Array of Structures, Individual data members as structures, Passing and returning structures from functions, Structure with union as members, Union with structures as members.		Kuheli Ray Mahapatra		1st internal 4th week of November,2021 & 2nd Internal 1st week of January, 2022
6.	**File I/O, Preprocessor Directives** Opening and closing a file (use of fstream header file, ifstream, ofstream and fstream classes), Reading and writing Text Files, Using put(), get(), read() and write() functions, Random access in files, Understanding the Preprocessor Directives (#include, #define, #error, #if, #else, #elif, #endif, #ifdef, #ifndef and #undef), Macros		SandipanSamanta		
7.	**Using Classes in C++** Principles of Object-Oriented Programming, Defining & Using Classes, Class Constructors, Constructor Overloading, Function overloading in classes, Class Variables &Functions, Objects as parameters, specifying the Protected and Private Access, Copy Constructors, Overview of Template classes and their use.		Prasenjit Mura		
8.	**Inheritance and Polymorphism** Introduction to Inheritance and Polymorphism		Prasenjit Mura		
	GE3P: Introduction to c/c++ Programming Lab		Prasenjit Mura,SandipanSamanta ,Kuheli Ray Mahapatra		
Teaching Plan: Department of Computer Science: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C:** Operating Systems	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	1st internal 4th week of November,2021 & 2nd Internal 1st week of January, 2022
1.	**Introduction:** System Software, Resource Abstraction, OS strategies.	75	Sandipan Samanta	01/10/2021 to 05/02/2022	
2.	**Types of operating systems -** Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.		Sandipan Samanta		
3.	**Operating System Organization:** Factors in operating system design, basic OS functions, implementation consideration; process modes,		Kuheli Ray Mahapatra		

	methods of requesting system services – system calls and system programs.			
4.	**Process Management :** System view of the process and resources, initiating the OS, process address space, process abstraction, resource abstraction, process hierarchy, Thread model		Prasenjit Mura	
5.	**Scheduling:** Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.		Prasenjit Mura	
6.	**Memory Management:** Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory		Kuheli Ray Mahapatra	
7.	**Shell introduction and Shell Scripting :** What is shell and various type of shell, Various editors present in linux Different modes of operation in vi editor What is shell script, Writing and executing the shell script Shell variable (user defined and system variables) System calls, Using system calls Pipes and Filters Decision making in Shell Scripts (If else, switch), Loops in shell Functions Utility programs (cut, paste, join, tr , uniq utilities) Pattern matching utility (grep)		SandipanSamanta	
	DSC1CP: Software Lab based on Operating Systems (Lab)		Kuheli Ray Mahapatra,	
UNITS	**PAPER: SEC-1: HTML Programming**			
1.	Unit-I: Introduction		Prasenjit Mura	
2.	Unit-II: The Basics The Head, the Body Colors, Attributes Lists, ordered and unordere		SubhasisMahapatra	
3.	Unit-III: Links Introduction Relative Links, Absolute Links Link Attributes Using the ID Attribute to Link Within a Document	50	Kuheli Ray Mahapatra,	01/10/2021 to 05/02/2022
4.	Unit-IV: Images Putting an Image on a Page		SandipanSamanta	

	Using Images as Links Putting an Image in the Background				
5.	Unit V: Tables Creating a Table Table Headers Captions Spanning Multiple Columns Styling Table		Prasenjit Mura		
6.	Unit VI: Forms Basic Input and Attributes Other Kinds of Inputs Styling forms with CSS Where To Go From Here		SubhasisMahapatra		
SEC1P: Software Lab Based on HTML			SubhasisMahapatra		

Teaching Plan: Department of Computer Science: SEMESTER-IV					
UNITS	**PAPER: GE-4: Programming in Python**	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	**REMARKS**
1.	**Planning the Computer Program:** Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.	75	Prasenjit Mura	**15/03/2022 to 25/06/2022**	**4th week of April,2022 &3rd week of June,2022**
2.	**Techniques of Problem Solving:** Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.		Prasenjit Mura		
3.	**Overview of Programming :** Structure of a Python Program, Elements of Python		SandipanSamanta		
4.	**Introduction to Python:** Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators(Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator)		SandipanSamanta		
5.	**Creating Python Programs:** Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.), Defining Functions, default arguments, Errors and Exceptions.		SandipanSamanta		
6.	**Iteration and Recursion:** Conditional execution, Alternative execution, Nested conditionals, The return statement, Recursion, Stack diagrams for recursive		SubhasisMahapatra		

	functions ,Multiple assignment, The while statement, Tables, Two-dimensional tables Strings and Lists: String as a compound data type, Length, Traversal and the for loop, String slices, String comparison, A find function, Looping and counting, List values, Accessing elements, List length, List membership, Lists and for loops, List operations, List deletion. Cloning lists, Nested lists Object Oriented Programming: Introduction to Classes, Objects and Methods, Standard Libraries. Data Structures: Arrays, list, set, stacks and queues. Searching and Sorting: Linear and Binary Search, Bubble, Selection and Insertion sorting.				
7.	**Strings and Lists:** String as a compound data type, Length, Traversal and the for loop, String slices, String comparison, A find function, Looping and counting, List values, Accessing elements, List length, List membership, Lists and for loops, List operations, List deletion. Cloning lists, Nested lists		Kuheli Ray Mahapatra,		
8.	**Object Oriented Programming:** Introduction to Classes, Objects and Methods, Standard Libraries		Prasenjit Mura		
9.	**Data Structures:** Arrays, list, set, stacks and queues.		Kuheli Ray Mahapatra,		
10.	**Searching and Sorting:** Linear and Binary Search, Bubble, Selection and Insertion sorting.		Kuheli Ray Mahapatra,		
	GE4P: Programming in Python Lab		Prasenjit Mura, Kuheli Ray Mahapatra, SandipanSamanta		
Teaching Plan: Department of Computer Science: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D/3D:** Computer System Architecture	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	
1.	**Introduction:** Logic gates, boolean algebra, combinational circuits, circuit simplification, flipflops and sequential circuits, decoders, multiplexors, registers, counters and memory units.		Kuheli Ray Mahapatra		
2.	**Data Representation and basic Computer Arithmetic:** Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.	75	SubhasisMahapatra	**15/03/2022 to 25/06/2022**	
3.	**Basic Computer Organization and Design:** Computer registers, bus system, instruction set,		Prasenjit Mura		

	timing and control, instruction cycle, memory reference, input-output and interrupt.				
4.	**Central Processing Unit:** Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.		Prasenjit Mura		
5.	**Programming the Basic Computer:** Instruction formats, addressing modes, instruction codes, machine language, and assembly language, input output programming.		SandipanSamanta		
6.	**Input-output Organization:** Peripheral devices, I/O interface, Modes of data transfer, direct memory access.		SandipanSamanta		
DSC1DP: Computer System Architecture Lab			SandipanSamanta,Kuheli Ray Mahapatra		
UNITS	**PAPER: SEC-2: PHP Programming**				
1.	Introduction to PHP: PHP introduction, inventions and versions, important tools and software requirements (like Web Server, Database, Editors etc.) PHP with other technologies, scope of PHP Basic Syntax, PHP variables and constants Types of data in PHP , Expressions, scopes of a variable (local, global) PHP Operators: Arithmetic, Assignment, Relational, Logical operators, Bitwise, ternary and MOD operator. PHP operator Precedence and associativity	50	Kuheli Ray Mahapatra	**15/03/2022 to 25/06/2022**	
2.	Handling HTML form with PHP: Capturing Form Data GET and POST form methods Dealing with multi value fields Redirecting a form after submission		SubhasisMahapatra		
3.	PHP conditional events and Loops: PHP IF Else conditional statements (Nested IF and Else) Switch case, while ,For and Do While Loop Goto , Break ,Continue and exit		Prasenjit Mura		
4.	PHP Functions: Function, Need of Function , declaration and calling of a function PHP Function with arguments, Default Arguments in Function		SandipanSamanta		

	Function argument with call by value, call by reference Scope of Function Global and Local				
5.	String Manipulation and Regular Expression: Creating and accessing String , Searching & Replacing String Formatting, joining and splitting String , String Related Library functions Use and advantage of regular expression over inbuilt function Use of preg_match(), preg_replace(), preg_split() functions in regular expression		SandipanSamanta		
6.	Array: Anatomy of an Array ,Creating index based and Associative array ,Accessing array Looping with Index based array, with associative array using each() and foreach() Some useful Library function		Kuheli Ray Mahapatra		
SEC2P: PHP Programming (Lab)			**SubhasisMahapatra**		
Teaching Plan: Department of Computer Science: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A/3A: Computer Networks**	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	
1.	**Basic concepts :** Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite.	75	Kuheli Ray Mahapatra	14/09/2021 to 18/01/2022	**1st week of November, 2021 &4th week of December,2021**
2.	**Physical Layer:** Cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway.		SubhasisMahapatra		
3.	**Data Link Layer :** Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.		Prasenjit Mura		
4.	**Network Layer :** Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive)		Sandipan Samanta		
5.	**Transport Layer:** Transport services, Transport Layer protocol of TCP and UDP		Sandipan Samanta		
6.	**Application Layer :** Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP		Kuheli Ray Mahapatra		

7.	**Network Security :** Common Terms, Firewalls, Virtual Private Networks		Sandipan Samanta		
DSE1P: Computer Networks			Prasenjit Mura		
UNITS	**PAPER: SEC-3: Programming with Matlab**				
1.	MATLAB Basics The MATLAB environment - Basic computer programming - Variables and constants, operators and simple calculations - Formulas and functions - MATLAB toolboxes	50	Prasenjit Mura	14/09/2021 to 18/01/2022	
2.	Matrices and vectors Matrix and linear algebra review - Vectors and matrices in MATLAB - Matrix operations and functions in MATLAB		SandipanSamanta		
3.	Computer programming Algorithms and structures - MATLAB scripts and functions (m-files) - Simple sequential algorithms - Control structures		Kuheli Ray Mahapatra		
4.	MATLAB programming and Numerical Simulations Matlab Programming. Reading and writing data, file handling - Personalized functions - Toolbox structure - MATLAB graphic functions. Numerical simulations. Numerical methods and simulations - Random number generation – Monte carlo methods		Prasenjit Mura		
Teaching Plan: Department of Computer Science: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B/3B: Cloud Computing**	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	**Internal examination**
1.	Cloud Introduction: Cloud Computing Fundamentals: Cloud Computing definition, Types of cloud, Cloud services: Benefits and challenges of cloud computing, Evolution of Cloud Computing , usage scenarios and Applications , Business models around Cloud – Major Players in Cloud Computing - Issues in Cloud - Eucalyptus - Nimbus - Open Nebula, CloudSim.	75	Kuheli Ray Mahapatra	**21/02/2022 to 10/06/2022**	**1st week of April,2022 & 1st week of June,2022**
2.	Cloud Services And File System: Types of Cloud services: Software as a Service - Platform as a Service – Infrastructure as a Service - Database as a Service - Monitoring as a Service – Communication as services. Service providers- Google App Engine, Amazon EC2, Microsoft Azure, Sales force. Introduction to MapReduce, GFS, HDFS, Hadoop Framework.)		SandipanSamanta		
3.	Collaborating With Cloud: Collaborating on Calendars, Schedules and Task Management – Collaborating on Event Management, Contact Management, Project Management – Collaborating on Word Processing, Databases – Storing and Sharing Files- Collaborating		SubhasisMahapatra		

	via Web-Based Communication Tools – Evaluating Web Mail Services – Collaborating via Social Networks – Collaborating via Blogs and Wikis. 185 CS-Engg&Tech-SRM-2013				
4.	Virtualization For Cloud :Need for Virtualization – Pros and cons of Virtualization – Types of Virtualization – System Vm, Process VM, Virtual Machine monitor – Virtual machine properties - Interpretation and binary translation, HLL VM - Hypervisors – Xen, KVM , VMWare, Virtual Box, Hyper-V.		Prasenjit Mura		
5.	Security, Standards, And Applications Security in Clouds: Cloud security challenges – Software as a Service Security, Common Standards: The Open Cloud Consortium – The Distributed management Task Force – Standards for application Developers – Standards for Messaging – Standards for Security, End user access to cloud computing, Mobile Internet devices and the cloud.		SandipanSamanta		
DSE2P: Cloud Computing (Lab)			SandipanSamanta		
UNITS	**PAPER: SEC-4: XML Programming**	**FULL MARKS**	**NAME OF TEACHER**	**MONTH OF TEACHING**	
1.	Introduction: Understanding Mark-up Languages, Introduction to XML and its Goals.		Prasenjit Mura		
2.	XML Basics: XML Structure and Syntax, Document classes and Rules.		Sandipan Samanta		
3.	Other XML Concepts: Scripting XML, XML as Data, Linking with XML.	50	Subhasis Mahapatra	**21/02/2022 to 10/06/2022**	
4.	XML with Style: XSL –Style Sheet Basics, XSL basics, XSL style sheets.		Kuheli Ray Mahapatra		
	SEC4P: Software Lab Based on XML		Prasenjit Mura		

Economics

Teaching Plan: Department of ECONOMICS: SEMESTER-I(HONOURS)

UNITS	**PAPER: CC -1 Introductory Microeconomics**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal exanination**

I	Why Study Economics? Nature and Scope, Thinking like an economist, what to produce, how to produce, production possibility curve, marginal benefit and marginal costs, competitive model, property rights, incentives information, rationing, working with graphs.	75	Mr. Amitabha Sarkar	01/10/2021 to 24/02/2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
II	Elementary theory of demand, individual and market demand, determinants of demand, shift of demand. Elementary theory of supply, individual and market supply, determinants of supply, shift of supply. Market price, equilibrium price, excess demand function, existence, uniqueness, stability of equilibrium, consumer and producer surplus, market failure, government intervention, price ceiling and floor.		Mr. Amitabha Sarkar		
III	The households: The theory of consumer behaviour, cardinal and ordinal utility, Indifference curve and its properties, consumption decision, budget constraint, consumption income and price change, consumers optimal choice, income and substitution effect, compensated and uncompensated demand curves, Price consumption and income consumption curves, Engel curve, choice between leisure and consumption.		Mr. Amitabha Sarkar		

	The Firm and perfect completion: The legal forms of firm, profit maximization hypothesis, contractual and organizational theories of firm, short run and long run.			
IV	The imperfect market structure: Monopoly and antitrust policy, monopoly power, government policies towards competition, various types of imperfect completion. Input Markets: Rent-Ricardo, Marshall, and modern theory of rent, land and labour markets, marginal productivity theory, labour market and public policy.		Mr. Amitabha Sarkar	
UNITS	**PAPER: CC-2: Mathematical methods in Economics-1**	75		
I	Login and proof techniques, sets and operations, relations, functions, number systems, convex sets, functions and convex functions, quasi convex functions, limit continuity.		Syed Saddam Ali	
II	Functions of one real variable: continuous functions of different types, quadratic, polynomial, power, exponential, logarithms, derivatives of first and second order, convex concave and linear functions, economic applications.		Syed Saddam Ali	

	Single variable optimization: local and global optima, geometric characterization, characterization using calculus, applications in economics, profit maximization and minimization.			
III	Integrations of functions: Integrations of different types of functions, methods of substitution by parts, Applications in economics. Difference equation: finite difference, equations of first and second orders, Cobweb model.		Syed Saddam Ali	
IV	Probability: sample space events, probability axioms and properties, conditional probability, Bayes rule, random variable and probability distribution- discrete and continuous, expectation.		Syed Saddam Ali	
UNITS	**PAPER: GE-1: Introductory Microeconomics.**	75		
I	Exploring the subject matter of economics: Why Study Economics? Nature and Scope, Thinking like an economist, what to produce, how to produce, production possibility curve, marginal benefit and marginal costs, competitive model, property rights, incentives information, rationing, working with graphs.		Mr. Amitabha Sarkar	
II	Supply and demand: markets and competition, individual demand and supply, market demand and supply, demand and supply together, how prices		Mr. Amitabha Sarkar	

	allocate resources, elasticity and its application, taxes and costs of taxation, consumer and producer surplus, efficiency of market. The households:, Indifference curve and its properties, consumption decision, budget constraint, consumption income and price change, consumers optimal choice, income and substitution effect, compensated and uncompensated demand curves, Price consumption and income consumption curves, Engel curve, choice between leisure and consumption			
III	The firm and perfect market structure: Behaviour of profit maximization firm, short run costs and output decisions in the short and long run. Imperfect market structure: monopoly and antitrust policies, government policies towards competition, imperfect competition.		Syed Saddam Ali	
IV	Input market: labour and land markets, derived demand, marginal productivity theory, marginal revenue product, competitive labour market, public policy.		Syed Saddam Ali	

Teaching Plan: Department of Economics: SEMESTER-II(HONOURS)

UNITS	PAPER: CC-3 : Introductory Macroeconomics	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal examination
I	Macroeconomic data- National Income accounting and cost of living; Concept of Growth- role of savings, investment, and financial intermediation; Open Economy- Balance ofPayments, exchange rates, and capital flow; Concept of unemployment- Types and their characteristics; Growth accounting and Solow residual.	75	Amitabha Sarkar	01/04/2022 to 09/07/2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
II	Monetary system- definitions of money and determinants of money supply – money multiplier and central bank's role in controlling money supply; quantity theory of money; inflation and its costs.		Amitabha Sarkar		
III	Theory of aggregate demand- components and their interrelations - crowing out- Factors causing shift in the function; Theory of aggregate supply- determinants of supply and shift factors; Interaction of aggregate demand and supply.		Amitabha Sarkar		
UNITS	**PAPER: CC-4: Mathematical Methods in Economics-II**	75	Syed Saddam Ali		

I	Matrix: its elementary operations; different types of matrix; Rank of a matrix; Determinants and inverse of a square matrix; solution of system of linear equations; Eigen values and Eigen vectors. System of nonlinear equations- Jacobian determinant and existence of solution.		Syed Saddam Ali	
II	Continuous and differentiable functions: partial derivatives and Hessian matrix. Homogeneous and homothetic functions. Euler's theorem, implicit function theorem andits application to comparative statics problems. Economic applications- theories of consumer behaviour and theory of production.		Syed Saddam Ali	
III	Optimization of nonlinear functions: Convex, concave, and quasi-concave functions; Unconstrained optimization; Constrained optimization with equality constraints- Lagrangian multiplier method; role of Hessian determinant; Inequality constraints and Kuhn-Tucker Conditions; Value function and Envelope theorem; Economic applications – consumer behaviour and theory of production. Optimization of linear function: Linear programming; concept of slack and surplus		Syed Saddam Ali	

	variables (graphical solution only) concept of convex set.				
IV	Solution of Differential equations of first order and second order; Economic application- price dynamics in a single market- multimarket supply demand model with two independent markets. Qualitative graphic solution to 2x2 linear simultaneous differential equation system- phase diagram, fixed point and stability.		Syed Saddam Ali		
UNITS	**PAPER: GE-2: Introductory Macroeconomics**	75			
I	Basic issues studied in macroeconomics; measurement of gross domestic product; income, expenditure and the circular flow; real versus nominal GDP; price indices; national income accounting for an open economy; balance of payments: current and capital accounts		Amitabha Sarkar		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022

II	Functions of money; quantity theory of money; determination of money supply anddemand; credit creation; tools of monetary policy.		Syed Saddam Ali		
III	Inflation and its social costs; hyperinflation. Classical and Keynesian systems; simple Keynesian model of income determination; IS-LM model; fiscal and monetary multipliers.		Syed Saddam Ali		
Teaching Plan: Department of Economics: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC-5: : Intermediate Microeconomics – I**	75	Amitabha Sarkar	01/10/2021 to 05/02/2022	1st internal 4th week of November,2021 & 2nd Internal 1st week of January, 2022
I	Cardinal utility; Preference: ordering and properties of ordinal utility; existence of utility functions, different utility functions				

	and their properties, compensating and equivalent variation, Slutsky equation; consumption-leisure choice and labour supply; choice under uncertainty (expected utility and risk aversion), inter- temporal choice and savings decision; revealed preference approach.			
II	Technology- general concept of production function; returns to factor and returns to scale, isoquants and diminishing rate of factor substitution – elasticity of substitution –some examples of technology (fixed proportion, perfect substitute, Cobb– Douglas Production Function, CES Production Function), General concept of homogenous and homothetic production function and their properties; production with one and more variable inputs; isocost line and firms equilibrium and expansion paths; short run and long run costs; cost curves in the short run and long run; relation between short run and long run costs.		Amitabha Sarkar	

III	Short run and long run equilibrium; determination of the supply curve of the firm and the industry: with reference to external economies and diseconomies of scale.		Amitabha Sarkar	
IV	Derived demand for input, marginal product and marginal revenue product, input demand for competitive firm and competitive industry, returns to scale and product exhaustion.		Amitabha Sarkar	
UNITS	**PAPER: CC-6: Intermediate Macroeconomics – I**	75		
I	Simple Keynesian System: Multipliers; equilibrium in both closed and open economy and stability; autonomous expenditure, balanced budget, and net exports; paradox of thrift. IS-LM Model - equilibrium,		Amitabha Sarkar	

	stability and comparative statics; effects of fiscal and monetary policies, real balance effects; IS-LM in the open economy under fixed and flexible exchange rate with perfect and imperfect capital mobility (Mundell-Fleming model).			
II	Derivation of aggregate demand assuming price flexibility; Derivation of aggregate supply curves both in the presence and absence of wage rigidity; equilibrium, stability, and comparative statics-effects of monetary and fiscal policies; Unemployment and its causes-possible solutions, including real balance effect and wage cut policy.		Amitabha Sarkar	
III	Inflation and unemployment trade-off- Short run and long- run Phillips curve under adaptive expectations-outcome under rational expectations (non-rigorous).		Amitabha Sarkar	
UNITS	**PAPER: CC-7 Statistical Methods for Economics**	75		

I	Presentation of Data; Frequency Distribution; Measures of central tendency, Dispersion, Moments, Skewness and Kurtosis; Bivariate Frequency Distribution-correlation and regression.		Syed Saddam Ali	
II	Discrete distribution-Binomial, Poisson; Continuous Distributions-Uniform, Normal, Exponential (Properties of each distribution; mean and variance).		Syed Saddam Ali	
III	Density function of Bivariate normal distribution and obtaining means, variances, and correlation coefficients.		Syed Saddam Ali	
IV	Concept of sampling and random sampling. Principal steps in a sample survey; methods of sampling;-SRSWR, SRSWOR, Stratified sampling. Sampling vs non-sampling error.		Syed Saddam Ali	
V	Price and quantity index number; Different formula; Tests for an ideal index application-Cost of		Syed Saddam Ali	

	living index; Real GDP			
VI	Parameters and statistics; Point estimation-Properties of a good estimator; Maximum Likelihood Method and the method of moments; Estimation of population parameters using SRSWR and SRSWOR; Interval estimation.		Syed Saddam Ali	
UNITS	**PAPER: SEC-1: Data Analysis**	50		
I	Sources of data. Population census versus sample surveys. Random sampling. Frequency distribution and summary Statistics.		Amitabha Sarkar	
II	Analysis of Indian Data: Economic Survey, RBI Bulletin on currency and finance, ASIDATA, Foreign Trade Statistics, NSS Consumer surveys.		Amitabha Sarkar	
UNITS	**GE3: Environmental Economics**	75		
I	Key environmental issues and		Amitabha Sarkar	

	problems, economic way of thinking about these problems, basic concepts from economics; Pareto optimality and market failure in the presence of externalities; property rights and other approaches.				
II	Overview, Pigouvian taxes and effluent fees, tradable permits, implementation of environmental policies in India and international experience; transboundary environmental problems; economics of climate change.		Amitabha Sarkar		
III	Valuation of non-market goods and services--theory and practice; measurement methods; cost-benefit analysis of environmental policies and regulations.		Syed Saddam Ali		
IV	Concepts; measurement, perspectives from Indian experience		Syed Saddam Ali		

Teaching Plan: Department of Economics: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC-8: Intermediate Microeconomics – II**	75		15/03/2022 to 25/06/2022	Internal examination
I	Exchange Economy, Consumption Allocation and Pareto Optimality; Edgeworth box and contract curve; Equilibrium and efficiency under pure exchange. Pareto efficiency with production: concepts of PPF, SIC, and resource allocation; Perfect competition, Pareto efficiency and market failure (externalities and publicgood); property right and Coase Theorem.		Amitabha Sarkar		**4th week of April,2022 &3rd week of June,2022**
II	Monopoly; pricing with market power; degree of monopoly; price discrimination-different degrees; multiplant monopoly; peak-load pricing; two-part tariff; monopolistic competition. Oligopoly and game theory (Cooperative and Non-cooperative static games; simultaneous move and sequential move		Amitabha Sarkar		

	games; non- cooperative games of perfect information; the Prisoner's dilemma, Nash equilibrium in pure and mixed strategies; Backward induction solutions and SPNE); Applications of game theory in oligopolistic markets (Cournot Equilibrium, Bertrand Equilibrium, Stackleberg Equiibrium) ; concept of collusion and cartels; Solution by backward induction.			
III	Monopsony, bilateral monopoly in labour market; Externalities; public goods and marketswith asymmetric information.		Amitabha Sarkar	
UNITS	**PAPER: CC-9: Intermediate Macroeconomics – II**	75		
I	Classical System: Say's law and quantity theory; Friedman's restatement; classical dichotomy and neutrality of money; Keynesian vs classical system; basic tenets of New Classical and New Keynesian System.		Amitabha Sarkar	
II	Consumption: Keynesian consumption function; Fisher's theory of optimal intertemporal choice; life-cycle and permanent		Amitabha Sarkar	

	income hypotheses; Dusenberry's relative income hypothesis; rational expectations and random-walk of consumption expenditure. Investment: MEC and MEI- Jorgenson's neo-classical theory- Acceleration principle-fixed and variable. Demand for money: Regressive expectations and Tobin's portfolio choice models; Baumol's inventory theoretic money demand			
III	Government debt and Ricardian equivalence; high-powered money; money multiplier analysis; monetary policy – OMO, Bank rate, variable reserve ratio, repo and reverse repo.		Amitabha Sarkar	
IV	Harrod- Domar model and Solow one sector growth models; golden rule; dynamic efficiency, technological progress and elements of endogenous growth theory.		Amitabha Sarkar	
UNITS	**PAPER: CC-10: Introductory Econometrics**	75		
I	Definition and Scope of Econometrics; Importance of Error Term. Sampling Distributions- χ^2 , t- and F-distributions and their application in testing of hypothesis; Defining hypothesis; Distribution of test-statistics; testing hypotheses relatedto population parameters; Type I and Type II		Syed Saddam Ali	

	errors; power of a test.			
II	The model and the role of disturbance term ; Estimation of model by method of ordinary least squares (OLS);Gauss-Markov theorem, Reverse Regression, properties of estimators; goodness of fit; testing of hypotheses and confidence intervals; scaling and units of measurement; prediction and forecasting, Problems in OLS Method		Syed Saddam Ali	
III	Problems of Multi-collinearity, Heteroscedasticity**,** and Auto correlation; Consequences of applying OLS under Heteroscedasticity and Autocorrelation and their detection– Durbin- Watson Test, Glesjer Test, Goldfeld-Quandt Test.		Syed Saddam Ali	
IV	Omission of a relevant variable; inclusion of an irrelevant variable; tests of specification errors.		Syed Saddam Ali	
UNITS	**PAPER: SEC-2: Research Methodology**	50		
I	Understanding the nature of Research Formulating the research topic Review of literature Using Secondary data		Syed Saddam Ali	

	Using Primary data- collecting data through observations/ interviews/ questionnaire				
II	Using Secondary data Using Primary data- collecting data through observations/ interviews/ questionnaire		Syed Saddam Ali		
III	Writing Project Report – Referencing Styles Sample Selection Model		Syed Saddam Ali		
UNITS	**PAPER: GE-4: Public Finance**	75			
I	Overview of Fiscal Functions, Tools of Normative Analysis, Pareto Efficiency,Equity and the Social Welfare. Market Failure, Public Good and Externalities. Elementary Theories of Product and Factor Taxation (Excess Burden andIncidence).		Amitabha Sarkar		
II	Overview of Fiscal Functions, Tools of Normative Analysis, Pareto Efficiency,Equity and the Social Welfare. Market Failure, Public Good and Externalities. Elementary Theories of Product and Factor Taxation (Excess Burden andIncidence).		Amitabha Sarkar		

Teaching Plan: Department of Economics: SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC-11: International Economics**	75		14/09/2021 to 18/01/2022	Internal examination
I	Arbitrage as basis and direction of trade; fundamental sources of cross-country price differences and arbitrage; concept of comparative advantage; externalities, regulation and perverse comparative advantage; International equilibrium; offer curves, ToT and stability; Gains from Trade (GFT) Theorem; Concepts of Production possibility Frontier and Community Indifference curves; Illustration of GFT; Decomposition of GFT; Substitution possibilities and magnitude of GFT.		Amitabha Sarkar		**1st week of November, 2021 &4th week of December,2021**
II	Comparative versus Absolute Advantage, One-factor economy, production possibility frontier, relative demand and relative supply, terms of trade; Trade in Ricardian world, Determination of intermediate ToT, Complete specialization & GFT		Amitabha Sarkar		

III	H-O theorem and physical vs. price definitions of factor abundance; Properties of the HO model: Factor intensity ranking, one-to-one correspondence between commodity priceratio & factor price ratio (Stolper-Samuelson theorem), One to one correspondence between endowment ratio and production proportion (Rybczysky's theorem); Proof ofHO theorem; Taste bias and invalidation of HO theorem; Empirical studies- Leontief Paradox; Effects of trade on factor price and income distribution, factor price equalization,factor intensity reversal & factor price equalization. Partial Equilibrium Analysis: Tariff - cost–benefit, Quota, Quota- Tariff equivalence & non-equivalence, effects of tariff, quota, subsidy and voluntary export restraint; General Equilibrium Analysis- distinction between large and small economy, welfare effects of a tariff on small country and large country, Offer curve and ToT, Tariff ridden offer curve, Tariff war, Optimum tariff for large economy, Metzler's Paradox.		Amitabha Sarkar	
IV	Balance of Payment accounts in an open economy; Determination of National Income, Transfer problem, Introduction of foreign Country & repercussion effect - open economy multiplier with & without repercussion effect; Fixed		Amitabha Sarkar	

	&Flexible Exchange Rate:adjustment of demand and supply of Foreign Exchange, Effect of devaluation, Effects of exchange rate on domestic prices and ToT, Marshall-Lerner Condition, J-Curve effect.			
UNITS	**PAPER: CC-12: Public Economics**	75		
I	Definition and Scope of Public Economics; Externalities, Market Failure andGovernment Intervention; Coase Theorem; Public Expenditure to finance Development		Amitabha Sarkar	
II	Overview of Public Good; Characteristics of Pure Public Good; Distinction between Pure Public Good and Private Good; Market Failure in case of Pure Public Good; Optimal provision of Public Goods; Private Provision and Public Provision of Public Goods; Lindahl Equilibrium, Voting Equilibrium.		Amitabha Sarkar	
III	Classification of Taxes; Canons of Taxation; Benefit Principle; Equal Sacrifice Principle; Ability to Pay Principle; Incidence and Burden of Taxes; Effects of taxation on income distribution, work efforts, and on savings; the Laffer curve; Optimal Taxation		Amitabha Sarkar	

IV	Meaning and Classification of Public Expenditure; government budget and its types; government expenditure and tax multipliers, balanced budget multiplier; Fiscal Federalismin India; Meaning of Public Debt; Sources of Public Borrowings: internal and external borrowing; Effects of Public Debt.		Amitabha Sarkar	
UNITS	**PAPER: DSE -1 Economics of Health and Education**	75		
I	Importance in poverty alleviation; health and education outcomes and their relationship with macroeconomic performance Demand for health; uncertainty and health insurance market; alternative insurance mechanisms; market failure and rationale for public intervention; equity and inequality.		Syed Saddam Ali	
II	Costing, cost effectiveness and cost-benefit analysis; burden of disease. Health outcomes; health systems; health financing.		Syed Saddam Ali	
III	Rate of return to education: private and social; quality of education; signaling or human capital; theories of discrimination; gender and caste discrimination in India.		Syed Saddam Ali	

	Literacy rates, school participation, school quality measures.			
UNITS	**Paper DSE-2: Money and Financial Markets**	75	Syed Saddam Ali	
I	Concept, functions, measurement; theories of money supply determination. Role of financial markets and institutions; problem of asymmetric information –adverse selection and moral hazard; financial crises. Money and capital markets: organization, structure and reforms in India; role offinancial derivatives and other innovations.		Syed Saddam Ali	
II	Determination; sources of interest rate differentials; theories of term structure of interestrates; interest rates in India.		Syed Saddam Ali	

III	Balance sheet and portfolio management; Multiple Deposit Creation,Determinants of the Money Supply. Indian banking system: Changing role and structure; banking sector reforms.		Syed Saddam Ali		
IV	Functions, balance sheet;goals, targets, indicators and instruments of monetary control;monetary management in an open economy; current monetary policy of India.		Syed Saddam Ali		
Teaching Plan: Department of Economics: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC-13: Indian Economy**	75		21/02/2022 to 10/06/2022	
I	Major features of the economy at independence; Planning: Evolution of India's development goals and strategies -Structural constraints and Indian development strategy: Debates between Growth and distribution, Public sector vs. Private sector, Consumer goods vs. Capital goods, Import substitution vs. Export promotion ; growth and development under different policy regimes—goals, constraints, institutions and		Amitabha Sarkar		**1st week of April,2022 & 1st week of June,2022**

	policy framework; an assessment of performance—sustainability and regional contrasts; structural changes, savings and investment including the saving-investment paradox.				
II	Demographic trends and issues; education; health and malnutrition		Amitabha Sarkar		
III	Trends and policies in poverty including Sen's Entitlement Analysis; inequality and unemployment.		Amitabha Sarkar		
IV	Monetary, Fiscal, and Trade Policy Reforms**.**		Amitabha Sarkar		
UNITS	**PAPER: CC-14: Development Economics**	75			
I	Income Approach and Capability Approach, construction and interpretation of HDI; international variations in development measures; comparing development trajectories across nations and within them. Dependency school of development.		Amitabha Sarkar		
II	An overview and policy implications of one sector growth models- Harrod- Domar, and		Amitabha Sarkar		

	Solow; Sources of economic growth, international comparisons. Inequality axioms; a comparison of commonly used inequality measures; Gender Inequality, connections between inequality and development; poverty measurement, HPI;poverty traps and path dependence of growth processes			
II	Definition of institutions, Evolution of Political and Economic Institutions; The determinants of democracy; alternative institutional trajectories and their relationship with economic performance; within-country differences in the functioning of state institutions; state ownership and regulation; government failures and corruption.		Amitabha Sarkar	
UNITS	**PAPER: DSE -3: Environmental Economics**	75		
I	What is environmental economics; review of microeconomics and welfare economics. Pareto optimality and market failure in the presence of externalities; property rights andthe coase theorem		Syed Saddam Ali	
II	Overview; pigouvian taxes and effluent fees; tradable permits; choice between taxes and quotas under uncertainty; implementation of environmental policy.		Syed Saddam Ali	

	Trans-boundary environmental problems; economics of climate change; trade and environment			
III	Non-Market values and measurement methods; risk assessment and perception. Concepts; measurement		Syed Saddam Ali	
UNITS	**PAPER: DSE-4: Project Work**	75		
I	Sources of data. Population census versus sample surveys. Random sampling. Frequency distribution and summary Statistics.		Syed Saddam Ali	
II	Analysis of Indian Data: Economic Survey, RBI Bulletin on currency and finance, ASI DATA, Foreign Trade Statistics, NSS Consumer surveys.		Syed Saddam Ali	

Teaching Plan: Department of Economics: SEMESTER-I(GENERAL)

UNITS	PAPER: DSC-1A/2A/3A DSC-1A (CC-1): Microeconomics	75		01/10/2021 to 24/02/2022	
I	Elasticity of Demand – price and income elasticity, cross price elasticity ofdemand, Measurement of price elasticity		Mr. Syed Saddam Ali		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
II	Production Function: AP, MP and their derivation from TP Curve, Returns to Factor and Returns to Scale. Cost of Production: Real cost and Opportunity cost – Fixed and Variable cost. Shape of cost curves -- short run and long run. Relation between Average cost and Marginal cost. Total Revenue, Marginal Revenue and Average Revenue – Relation between TR, AR and MR curves. Relation between AR, MR and Price elasticity of Demand		Mr. Syed Saddam Ali		
III	Perfect competition, Monopoly, Monopolistic Competition, Oligopoly andDuopoly (concepts only). Short run and Long run equilibrium of firm and industry under Perfectcompetition, Price discrimination. Price and Output determination under Monopoly.		Mr. Amitabha Sarkar		

IV	Marginal Productivity Theory of Distribution, Factor price determination. Rent: Ricardian Theory and Modern Theory. Wage: Distinction between Money and Real wage – Factors determining Realwage – Role of Trade Unions in wage determination under competitive set up. Interest: Real and money Interest – Loanable fund and Liquidity PreferenceTheory of Interest. Profit: Alternative Theories of Profit Graphical presentation of Pareto optimality		Mr. Amitabha Sarkar		
Teaching Plan: Department of Economics: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B/3B** D**SC-1B (CC-2): Macroeconomics**	75		01/04/2022 to 09/07/2022	
I	Definition, concepts and measurement of GNP, NNP, GDP, NDP, NI, DI, GNPdeflator, GDP deflator and price indices. parabolic and hyperbolic through illustrations only.		Mr. Syed Saddam Ali		1st internal examination on 2nd week of May, 2022 and 2nd internal

	Different methods of measuring national income – product method, income methodand expenditure method. Problems of using national income as a measure of Economic welfare. Problems of measuring national income in any country Circular flow of income – equilibrium condition – concepts of injection, withdrawaletc.		Mr. Amitabha Sarkar		examination on 2nd week of July,2022
II	Motives of holding money – Transactions, Precautionary and Speculative motives. Keynesian liquidity preference theory – indeterminacy of rate of interest in theliquidity preference theory – the liquidity trap. Supply of money – Different sources of money supply – M1, M2, M3, and M4 –functions of money		Mr. Syed Saddam Ali		
III	Concept of effective demand – Keynesian consumption function, relation between average propensity to consume and marginal propensity to consume – Simple Keynesian static multiplier theory – investment		Mr. Amitabha Sarkar		
IV	IS – LM model- construction of IS and LM curves – shapes – determination of equilibrium values of rate		Mr. Syed Saddam Ali		

	of interest and level of income.				
V	The Classical view of macroeconomics in respect of the determination of employment,output and prices – Say's law of market.. The Classical quantity theory of money and its criticisms – Fischer's transactionversion - Cambridge cash balance version		Mr. Amitabha Sarkar		
VI	Concept of inflation - Demand pull inflation and cost push inflation – comparisonbetween them. Inflationary gap – Limitations of it. Consequences of inflation – measures to control inflation		Mr. Amitabha Sarkar		
VII	Functions of Commercial Banks Functions of Central Bank Credit creation by Commercial Banks – credit creation multiplier. Credit control by Central Bank – Different methods of credit control.		Mr. Syed Saddam Ali		
Teaching Plan: Department of Economics: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C** **DSC-1C (CC-3): Development Economics**	75		01/10/2021-05/02/2022	**4th week of November,2021**

I	Distinction between Economic Growth and Economic Development. Net National Income and Per Capita Income as Growth Indicators construction and interpretation of HDI; international variations in development measures; comparing development trajectories across nations and within them, Dependency school of development.		Mr. Amitabha Sarkar		**&1st Week of January,2022**
II	An overview and policy implications of one sector growth models- Harrod- Domar, and Solow; Sources of economic growth, international comparisons, Development Planning andits necessity–balanced vs. Unbalanced Growth		Mr. Amitabha Sarkar		
III	Inequality axioms; a comparison of commonly used inequality measures; Gender Inequality – Gender Development Index, connections between inequality and development; poverty measurement, HPI; poverty traps and path dependence of growth processes.		Mr. Syed Saddam Ali		
IV	Definition of institutions, Evolution of Political and Economic Institutions; The determinants of democracy; alternative institutional trajectories and their relationship with economic performance; within-country differences in the functioning of state institutions; stateownership and regulation; government failures and corruption.		Mr. Syed Saddam Ali		
V	Different forms, Their Roles in Economic Development		Mr. Syed Saddam Ali		

UNITS	**PAPER: SEC-1: Indian Financial System**	50		
I	Basic Concepts of Call money market, Commercial Bills market, Treasury Bills market, Short-Term loan market, Features and objectives of Money Market, Features of Developed Money Market		Mr. Amitabha Sarkar	
II	Nature and function of Central Bank and the money supply-different concept ofmoney supply and their uses-credit creation and credit multiplier-theories of asset management- Role of commercial banks in development Central Bank's functions- Central Bank and money market– Techniques of management-bank rate policy, open market operations and variable reserve ratio and selective instruments of credit control.		Mr. Syed Saddam Ali	
III	Distinction between commercial banks and NBFIs- validity of the distinction-Central bank's control over the NBFIs.		Mr. Syed Saddam Ali	

IV	Basic Concept of organized and unorganized Capital Market Distinction betweenPrimary Market and Secondary market. Differences between Share and Bond		Mr. Amitabha Sarkar		
V	Stock Exchanges in India–national and regional, Market Players, types of tradedinstruments, Trading–floor based and screen based, Stock Indices, Credit rating and Credit rating agencies.		Mr. Amitabha Sarkar		
VI	Role and Functions of Regulatory Authorities Securities and Exchange Board of India (SEBI)		Mr. Syed Saddam Ali		
Teaching Plan: Department of Economics: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D/3D** **DSC1DT(CC-4): Features of Indian Economy**	75		15/03/2022 to 25/06/2022	**4th week of April,2022 &3rd week of June,2022**
I	Sectoral distribution of National Income and its change since inception of Planning. Occupational pattern in India-A trend analysis since 1901. Inequalities in Income distribution.		Mr. Amitabha Sarkar		

	Economic reforms and reduction of poverty; Poverty eradication programmes andtheir effectiveness. Structure and quality if employment in India; Government undertaken differentschemes to reduce unemployment and underemployment.			
II	Size and growth rate of population in India. Changes in sex composition since inception of planning. Population policy and population projections for India.		Mr. Amitabha Sarkar	
II	Causes for low productivity. Targeted public distribution system. New agricultural policy; Green revolution and its prospects. Land reforms and its appraisal. Effects of GATT on Indian Agriculture.		Mr. Syed Saddam Ali	
IV	Review of Industrial growth under planning.		Mr. Amitabha Sarkar	

	Role of small-scale industries and policy perspective to help them. Role of trade union and social security measures in India.				
V	Role of Indian Commercial Banks and Reserve Bank of India. Monetary Policy of the Reserve Bank of India. Profitability of banks in India. Call money market, Repo, reverse repo rate, TBs, CDs.		Mr. Syed Saddam Ali		
VI	Sources of Revenue and Expenditure of Union and State Government. Union-State Financial Relation. Centre-State Conflict on Finances. Volume and direction of India's foreign trade in the post-Liberalization period		Mr. Syed Saddam Ali		
UNITS	**SEC2: Practical**	50			
I	File Creation and Management System Word Processing Excel/Spreadsheet for Economic Analysis of Data Graphical Representation of Data Sets Using Spreadsheet / Excel for Calculation of Descriptive Statistics Presentations		Mr. Syed Saddam Ali		

Teaching Plan: Department of Economics: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A/3A** **DSE1T: Money & Banking**	75		14/09/2021 to 18/01/2022	**1st week of November, 2021 &4th week of December,2021**
I	Definition of Money – Kinds of Money: Fiduciary/ Debt/ Credit Money – Coins, Paper Currency & Deposit Money - Legal Tender or Fiat Money and Non-legal Tender or Credit Money Proper - Limited & Unlimited Legal Tender – e-Money & Plastic Money – Functions of Money – Money Vs. Near Money – Examples of Near Money - Value of Money – High-powered Money or Monetary Base - Measures of Money Supply.		Mr. Amitabha Sarkar		
II	Meaning & the Role/Functions of the Financial System - Constituents of the Financial System: Financial Assets/ Instruments; Financial Intermediaries/ Institutions; and Financial Markets Definition & Role of Financial Markets – Classification of Financial Markets: Money Market & Capital Market – Basic Distinction between Money Market & Capital Market Definition & Role of Financial Intermediaries – Classification of Financial Intermediaries: Banks and Non- Bank Financial Institutions (NBFIs)		Mr. Amitabha Sarkar		

	Financial Assets/Instruments: Distinction between Primary & Secondary Securities – Debt & Equity Instruments of Various Types – Bonds, Shares, Debentures etc. – Distinction between Bonds & Shares			
III	Features, Importance & Functions of the Money Market - Characteristics ofDeveloped and Underdeveloped Money Markets Components of Money Market: Call Money Market - Commercial Bill Market -Treasury Bill Market – Repo & Reverse Repo Markets.		Mr. Amitabha Sarkar	
IV	Features, Importance & Functions of the Capital Market - Characteristics ofDeveloped and Underdeveloped Capital Markets Components of Capital Market: Gilt-edged Market and the Industrial SecuritiesMarket – Distinction between Primary Market and Secondary Market Features, Role & Functions of Stock Market or Stock Exchange		Mr. Syed Saddam Ali	

V	Definition & Functions of Commercial Banks – Concepts of Primary & Derivative Deposits and the Process of Credit Creation by Commercial Banks – Role of Commercial Banks in Economic Development. Definition & Functions of Central Bank – Distinction between Central Bank & Commercial Bank & Monetary Policy: Definition, Goals, Targets, Indicators & Instruments of Monetary Policy – Various Types of Quantitative & Qualitative Instruments of Credit Control.		Mr. Syed Saddam Ali	
VI	Distinction Between Commercial Banks & NBFIs – Validity of the Distinction - Examples of NBFIs – Development Banks, Mutual Funds, Insurance Companies - Central Bank's Control Over NBFIs.		Mr. Syed Saddam Ali	
VII	Real & Nominal Interest Rates – Sources of Interest Rate Differentials – Meaning of Term Structure of Interest Rates - Theories of Term Structure of Interest Rates: The Expectations Theory – The Liquidity or Risk Premium Theory – The Market Segmentation Theory		Mr. Syed Saddam Ali	
UNITS	**PAPER: SEC-3: Research Methodology**	50		
I	Understanding the Nature of Research Formulation of the Research Topic		Mr. Syed Saddam Ali	

	Review of Literature				
II	Approaches to Research and Research Strategy Research Ethics Using Secondary Data Using Primary Data – Collecting Data through Observations/ Interviews/Questionnaire		Mr. Syed Saddam Ali		
III	Sample Selection Methods Analysing Data Writing Project Report - Referencing Styles		Mr. Syed Saddam Ali		
Teaching Plan: Department of Economics: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B/3B** **DSE2T: Public Finance**	75		21/02/2022 to 10/06/2022	**1st week of April,2022 & 1st week of June,2022**
I	Overview of Fiscal Functions. Tool of Normative Analysis, Pareto Efficiency, Equityand Social Welfare		Mr. Amitabha Sarkar		
II	Characteristics; Exclusion Principle; Non-Applicability of exclusion Principle; MarketFailure and Externalities.		Mr. Syed Saddam Ali		

III	Benefit and Ability to Pay Approach-Direct and Indirect Taxation–Regressive, Progressive, Proportional Taxation. Public Debt- Internal and External-Burden ofDebt.		Mr. Amitabha Sarkar	
IV	Current Issues of India's Tax System Working of (Monetary and) Fiscal Policies Analysis of Budget and Deficits Fiscal Federalism in India State and Local Finance		Mr. Syed Saddam Ali	
UNITS	**PAPER: SEC-4: Data Analysis**	50		
I	Meaning of Statistical Data – Classification of Data - Variable & Attribute - Primary Data & Secondary Data - Methods of Collection of Data - Population & Sample - Complete Enumeration (Census) & Sample Survey- Random Sampling (Concept only). Tabulation & Diagrammatic Presentation of Data – Line, Bar & Pie Diagram. Frequency Distribution and its Diagrammatic Presentation: Construction of FrequencyDistribution		Mr. Syed Saddam Ali	

	(Simple & Grouped) –Histogram, Ogive & Frequency Polygon.				
II	Measures of Central Tendency – Mean, Median & Mode (Concepts & Formulae Only) Measures of Dispersion – Range, Mean Deviation, Standard Deviation, Co-efficient ofVariation (Concepts & Formulae Only) Concept of Simple Correlation & Regression		Mr. Syed Saddam Ali		
III	Economic Surveys – RBI Bulletins – Handbook of Statistics for the Indian Economy (RBI) – ASI Data – Census Data - Foreign Trade Statistics – NSS Data		Mr. Syed Saddam Ali		
Education					
UNITS	PAPER: CC1(Introduction to Education)	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
unit-1	Concept of Education: Narrow and border concept of Education Meaning, nature and scope of education. Aims of education- individual, social, vocational and	TOTAL-75	Sovan Arui	01-10-2021 to 24-02-2022	1st internal examination on 4th week of December, 2022 and 2nd

	democratic. Aims of modern education with special reference to Delor's Commission.				internal examination on 2nd week of March,2022
unit-2	Factors of Education child/learner: influence of heredity and environment on the learner Teacher: qualities and duties of a good teacher Curriculum: concept and types. Co-curricular activities: meaning, values and significance. Educational institutions: informal, formal and non-formal, their interrelation.		Pinki Mondal		
unit-3	Child Centricism and Play-way in Education · Concept of child centricism in education · Characteristics and significance of child centricism in education · Concept of play and work. · Characteristics of play way in Education, Kindergarten, Montessori, Project method.		Supriya Pramanik		
unit-4	Agencies of Education: ● Home ● School ● State ● Mass-media-television, radio, cinema and newspaper		Suman Kamila		
UNITS	PAPER: CC2(History of Indian Education)				

unit-1	Education in India during ancient and medieval period Vedic (aim, curriculum, teaching method, teacher-pupil relation) Brahmanic Buddhistic Islamic	TOTAL-75	Suman Kamila		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
unit-2	Education in India during British period (1800-1853) Serampore trio and their contribution in the field of Education. Charter Act, (Oriental-occidental controversy). Macaulay Minute and Bentinck's resolution. Adam's report		Sovan Arui		
unit-3	: Education in India during British period (1854-1946) Woods Despatch, Hunter Commission. Curzon policy regarding primary, secondary and higher education, National education movement (cause and effect). Basic education (concept and development). Sadler Commission		Supriya Pramanik		
unit-4	Education in India after independence Radhakrishnan Commission(aim,curriculum of higher education, rural university)Mudaliar Commission(aim,structure and curriculum of secondary education)Kothari Commission(aim,structure of primary and secondary education)National Policy of Education 1986,POA1992.		Pinki Mondal		
UNITS	PAPER: GE-1(Educational Psychology)				

unit-1	• Educational Psychology: Meaning, Nature and Scope • Relation between Education and Psychology • Methods of Educational Psychology	TOTAL-75	Sovan Arui		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
unit-2	Growth and Development: Meaning and Concepts Stages of Development of a Child: Infancy, Childhood and Adolescence. Aspects of Child Development: Physical, Intellectual, Emotional, Social		Suman Kamila		
unit-3	• Personality: Concept and Definition. • Development of Personality • Types and Traits Approaches to Personality • Individual Differences: Concept and Types • Causes of Individual Difference				
unit-4	Intelligence: Concept and Definition Theories of intelligence: two factor, Group-factor, Structure of intellect Intelligence test: Verbal, Non-Verbal test and their uses.		Pinki Mondal		
unit-5	• Learning: Meaning & Nature • Factors associated with learning.		Sovan Arui		

	• Theories of Learning: Trial & Error, Classical conditioning and Gestalt theory of learning. • Learning relation to; Attention, Interest, Maturation and Motivation.				

Teaching Plan: Department of Education: SEMESTER-II(HONOURS)

UNITS	**PAPER: CC3(Psychological Foundation Of Education)**				
unit-1	Relation between Psychology and Education Meaning and definition of Psychology. Meaning and definition of Education. Relation between Psychology and Education. Nature, Scope and significance of Educational Psychology.	TOTAL-75	Sovan Arui	01-04-2022 to 09-07-2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
unit-2	Stages and types of Human Development and their educational significance. Piaget cognitive development theory. Erikson's psycho-social development theory. Kohlberg's moral development theory. Vygotsky's Social development theory. Bandura's social learning theory.		Pinki Mondal		

unit-3	Learning: concept and theories Concept and characteristics of learning. Theories: Connectionism (Trial and error, classical, operant). Insightful learning. Memorization and Forgetting: Process of memorization, causes of forgetting and economical ways of improving memorization		Supriya Pramanik		
unit-4	**Intelligence** Concept of Intelligence. Theories of Spearman, Thorndike and Guilford. Types and uses of intelligence tests. Concept of Emotional Intelligence and E.Q.		Suman Kamila		
UNITS	**PAPER: CC4(Philosophical Foundation of Education)**				
unit-1	**Concept of educational philosophy** Meaning of philosophy. Etymological meaning of education. Relation between philosophy and education. Importance of philosophy in education	TOTAL-75	Supriya Pramanik		1st internal examination on 2nd week of May, 2022 and 2nd internal

unit-2	Indian school of Philosophy: Vedic school-Sankhya, Yoga, Non -vedic school -Buddhism, Jainism		Pinki Mondal		examination on 2nd week of July,2022
unit-3	Western Schools of philosophy: ● Idealism ● Naturalism ● Pragmatism ● Realism		Suman Kamila		
unit-4	Philosophy for the Development of Humanity. Education and development of values. Education for national integration. Education for international understanding. Education for promotion of peace and harmony.		Sovan Arui		
UNITS	**PAPER: GE-2(Psychology of Mental Health and Hygiene)**				
unit-1	➢ Mental Hygiene: Meaning and Concept. ➢ Mental Health: Meaning and Concept. ➢ Characteristics of Mental Health. ➢ Education and Mental Health & Hygiene.	TOTAL-75	Supriya Pamanik		1st internal examination on 2nd week of May, 2022

unit-2	● Adjustment: Concepts, Need, and Areas of Adjustment. ● Mechanism of Adjustment. ● Role of Family and School in effective Adjustment.		Suman Kamila		and 2nd internal examination on 2nd week of July,2022
unit-3	Maladjustment: Meaning and Definition. Causes of Maladjustment. Different forms of Maladjustment. Role of Family and school in remedial measures.		Sovan Arui		
Teaching Plan: Department of Education: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC5(Sociological Foundation of Education)**				
unit-1	**:** Introductory Concept of Sociology of Education Meaning and definition of Sociology of Education. Relation between Sociology and Education Nature of Sociology of Education. Scope of Sociology of Education	TOTAL-75	Supriya Pramanik	01-10-2021 to 05-02-2022	**4th week of November,2021 &**

unit-2	Social Groups Social Groups: meaning and definition. Types of Social groups - Primary, Secondary and Tertiary. Socialization Process: Concept. Role of the family and school in Socialization process		Sovan Arui		**1st Week of January,2022**
unit-3	Social Change and Education Concept of Social Change. Interrelation between Social Change and Education Social Stratification and Social Mobility.. Social Interaction Process		Suman Kamila		
unit-4	Social Communication in Education Social Communication: Concept. Informal agencies of social communication. Interrelation between Culture, religion, and Education. Inter relation between Technology, Economy and Education.		Pinki Mondal		
UNITS	**PAPER: CC6(Educational Organization, Management and Planning)**				

unit-1	Organization and Management Concept of Organization. Concept of Management. Concept of Educational Organization. Concept of school Management.	TOTAL-75	Pinki Mondal		
unit-2	Educational Organization: Meaning of School plant. Elements of school plant (concepts only). Features of library and time-table. Features of school medical services, workshop, and computer laboratory.		Suman Kamila		
unit-3	Educational Management Meaning of educational management. Objectives of educational management. Types of educational management. Significance of educational management		Supriya Pramanik		

unit-4	Educational Planning Meaning of Educational Planning. Aims and objectives of educational planning Steps of educational planning. Types and significance of Educational planning		Sovan Arui		
UNITS	**PAPER: CC7(Guidance and Counselling)**				
unit-1	**Guidance – Meaning, Functions, Need** 1. Guidance – Meaning, Definitions and Functions 2. Individual Guidance – Meaning, advantages and disadvantages 3. Group Guidance – Meaning and Advantages and disadvantages 4. Need for guidance in secondary schools and requisites of a good school guidance programme.	TOTAL-75	Supriya Pramanik		

unit-2	Guidance- Educational, Vocational, Perso 1. Educational Guidance- Meaning, Function and different stages of Education. 2. Vocational Guidance- Meaning, Function at different stages of Education 3. Personal Guidance- Meaning, Importance for the Adolescents.		Sovan Arui		
unit-3	Counselling- Meaning, Techniques, Types 1. Counselling-Meaning importance and Scope 2. Techniques of Counselling- Directive, Non-Directive, Eclectic Individual and Group Counselling- Meaning, Importance		Suman Kamila		
unit-4	Basic data necessary for Guidance Tools for collecting information on pupils: Intelligence Test, Personality Test, Aptitude Test. Cumulative Record Card Anecdotal Record Card		Pinki Mondal		
UNITS	**PAPER: SEC-1(Skill for Democratic citizenship)**				

unit-1	Rights and duties in Indian Constitution Democratic right Fundamental Rights Duties of Citizenship.	TOTAL-50			
unit-2	Protection of Children Child protection: concept, and need. Child Right -concept classification and need Legal actions- POSCO.		Sovan Arui		
unit-3	: Domestic Harmony Domestic violence – definition and types Protection of Women from Domestic Violence Act, 2005 – basic features Protection of males in DVA 2005		Supriya Pramanik		

unit-4	Role of Education: ● Awareness programmes- rallies, debates etc ● Mass media ● Seminars and workshops (any one may be taken up by the college and recorded by the students on any one of the above topics)		Suman Kamila		
UNITS	**PAPER: GE-3(Education of Children with Special Needs)**				
unit-1	Education of children with Visual Impairment :identification, intervention ,education, and prevention Hearing Impairment: identification, intervention, education and prevention.	TOTAL-75	Pinki Mondal		
unit-2	Education of Children with: Speech and Language Disorders: identification, intervention, education and prevention.		Supriya Pramanik		
unit-3	Education of Children with: Physically Handicraft: identification, intervention, education and prevention.		Sovan Arui		

unit-4	Education of Children with: Learning Disabilities: Identification, Intervention, education and prevention		Suman Kamila		
Teaching Plan: Department of Education: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC8(Technology in Education)**				**4th week of April,2022 &3rd week of June,2022**
unit-1	Introductory Concept ● Concept of Technology ● Need and scope of Educational Technology ● System approach- concept and need ● Classification and components of system approach.	TOTAL-75	Sovan Arui	15-03-2022 to 25-06-2022	
unit-2	Computer in education and communication Computer and its role in education Basic concept of hardware and software Computer network and internet- its role in education Communication and classroom interactions- concept, element and process		Supriya Pramanik		

unit-3	Instructional techniques ● Mass Instructional technique- characteristics and types ● Personalised instructional techniques- characteristics and types ● Difference in teaching and instruction ● Models of teaching- concept, components and significance		Suman Kamila		
unit-4	ICT & e-Learning Meaning and concept of ICT, e-learning Nature and characteristics of e-learning ICT integrated in teacher learning, massive open online course. Different approach- project based learning, cooperative learning collaborative learning.		Pinki Mondal		
UNITS	**PAPER: CC9(Curriculum Studies)**				

unit-1	**Introductory concept** ● Meaning, nature, scope and functions of curriculum ● Bases of curriculum: philosophical, psychological and sociological ● major approaches to curriculum- behavioural, managerial, system, humanistic ● Types of curriculum- knowledge, experience & activity based. ● Meaning, nature, scope and functions of curriculum ● Bases of curriculum: philosophical, psychological and sociological ● major approaches to curriculum- behavioural, managerial, system, humanistic ● Types of curriculum- knowledge, experience & activity based.	TOTAL-75	Sovan Arui		
unit-2	**Content Selection** ● Determinants of content selection- perspectives of knowledge, culture & need ● Curriculum and institution- instructional objectives ● Revised Bloom's taxonomy ● Bruner's theory of instruction		Suman Kamila		

unit-3	: Curriculum development Principles of curriculum construction Learner centred curriculum framework - concept, factors & characteristics Curriculum development - need, planning NCF, 2005		Supriya Pramanik		
unit-4	Evaluation & Reform of Curriculum Concept & significance of curriculum evaluation. Approach to curriculum evaluation -formative & summative Models of evaluation – shuffle beam & Taylor Curriculum reform-factors & obstacles		Pinki MONDAL		
UNITS	**PAPER: CC10 (Inclusive Education)**				

unit-1	Inclusive Overview: ➢ Meaning of Inclusion and Inclusive Society ➢ Exclusion and Inclusion: Conceptual overview ➢ Obstacles/ barriers in Inclusion ➢ Elements necessary for Creating an inclusive Society.	Full Marks- 75	Supriya Pramanik		
unit-2	Differently Abled: ➢ Concept of Impairment, Disablity and Handicap ➢ Types of disabilities- Orthopaedic, Visual, Auditory, Cerebral Palsy, Intellectual, Autism, Learning Disability (Only definition and their specific problems) ➢ General Causes of disabilities ➢ Role of school and society in creating a barrier free environment		Pinki Mondal		

unit-3	Socially Disabled: ➢ Concept of SC, ST and OBC groups ➢ Concept of Gender, and sexuality ➢ Causes of social exclusion ➢ Understanding social inclusion: role of education		Sovan Arui		
unit-4	Educational Reforms for Inclusive Society: ➢ Building an Inclusive school: desired changes in System, Structure, Practice and Culture, ➢ Education for a multicultural society. ➢ Education for peaceful co-existence ➢ Role of Informal agencies (like mass media etc) in building an inclusive society.		Suman Kamila		
UNITS	**PAPER: SEC-2(Special Education)**				
unit-1	Education of Children with Visual Impairment Hearing Impairment(identification ,intervention, education and prevention of each category)	Full Marks- 75	Pinki Mondal		

unit-2	● education of Children with ● Speech and Language Disorders and ● Learning Disabilities (With special reference to prevalence, etiology, identification, intervention, education and prevention of each category)		Sovan Arui		
unit-3	Educational Reforms for Inclusive Society: ● Building an Inclusive school: desired changes in System, Structure, Practice and Culture, ● Education for a multicultural society. ● Education for peaceful co-existence ● Role of Informal agencies (like mass media etc) in building an inclusive society.		Suman Kamila		
UNITS	**PAPER: GE-4(Mental Health Education)**				
unit-1	**Mental Health:** ➢ Concept and Importance of Mental Health ➢ Characteristics of Mental Health ➢ Factors Affecting Mental Health ➢ Educational Implications of Mental Health	Full Marks- 75	Supriya Pramanik		

unit-2	**Mental Hygiene:** ● Definition, Meaning and Aims of Mental Hygiene; ● Origin and Development of Mental Hygiene Movement		Sovan Arui		
unit-3	**Adjustment:** ● Definition and meaning of Adjustment ● Criteria of Good Adjustment ● Defence Mechanism- Definition, meaning and different methods of Defence Mechanism.		Suman Kamila		
unit-4	Maladjustment Meaning, causes of Maladjustment. Role of education.		Pinki Mondal		
Teaching Plan: Department of Education SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC11(Measurement and Evaluation in Education)**				**1st week of November,**

unit-1	Measurement and Evaluation in Education Concept, Scope and Need of Educational Measurement and Evaluation, Relation between Measurement, Assessment and Evaluation Scales of Measurement	Full Marks- 75	Pinki Mondal	14-09-2021 to 18-01-2022	**2021 &4th week of December,2021**
unit-2	Evaluation Process: ● Evaluation Process: (Formative and Summative) ● Types and steps of evaluation ● Norm-Referenced Test and Criterion Referenced Test ● Grading and Credit system.		Suman Kamila		

unit-3	Tools and Techniques of Evaluation 1. Concept of Tools and Techniques 2. Testing tools i. Educational : Essay type and Objective type, Written , Oral, and Practical ii. Psychological: Personality Test- Types, Rorschach Ink Blot Test , Interest Test- Types ,Kuder Richardson interest inventory, Intelligence Test - Types of intelligence tests , Standford – Binet Scale, 3. Non testing tools – Cumulative Record Card, Portfolio 4. Techniques: i) Self reporting : Interview , Questionnaire ii) Observation.		Supriya Pramanik		

unit-4	**Criteria of a Good Tool and its Construction** ● Characteristics of a good tool ○ Objectivity - Concept ○ Reliability- Concept, methods of determining reliability ○ Validity- Concept and types ○ Norms- Meaning & types ○ Usability- Concept ● Steps for construction & standardization of Achievement test		Sovan Arui		
UNITS	**PAPER: CC12(Statistics in Education)**				
unit-1	**Concept of Statistics and Descriptive Statistics** ● Concept of Statistics. Uses of Statistics in Education. ● Meaning & measures of Central Tendency- Arithmetic Mean, Median and Mode - their Properties, Calculation and Application. ● Meaning & measure ofVariability- Range, Standard Deviation and Quartile Deviation- their Properties, Calculation and Application. Percentile and Percentile Rank- Definition, Calculation, Application, Graphical Determination	Full Marks- 75	Sovan Arui		

Unit-2	Normal Distribution and Derived Score ➢ Concept of Normal Distribution- Properties ➢ Uses of NPC in Education ➢ Divergence from Normality- Skewness and Kurtosis.(Concept and Calculation) ➢ Derived Scores- Z-Score, T Score and Standard Score (Concept, Calculation and Uses).		Supriya Pramanik		
unit-3	Measure of Relationship: ➢ Bivariate Distribution- Concept and types of Correlation ➢ Scatter Diagram (only Concept) ➢ Computation of Co-efficient of Correlation by Rank Difference method and Product Moment method, Interpretation of Co-efficient of Correlation.		Suman Kamila		
unit-4	Statistics (Practical) ➢ Sources of Educational Data (Primary & Secondary data), Types of Data: Qualitative and Quantitative, Continuous and Discrete. ➢ Students are expected to collect relevant data (Bi-variate educational data) from their college or neighbourhood (minimum sample size must be 50) with the objective of - describing the nature and characteristics of the two distributions, - comparing two distributions and - finding association between two sets of data by applying the following:		Supriya Pramanik		
UNITS	**PAPER: DSE-1(Peace and Value Education)**				

Unit-1	Peace Education ➢ Concept and Scope of Peace Education ➢ Aims of peace Education ➢ Role of Teachers in Promoting Peace	Full Marks – 75	Sovan Arui		
Unit-2	Peace and Non Violence ➢ Factors of Violence ➢ Role of Peace for Non-Violence ➢ Gandhian principle of Non Violence ➢ Role of Educational Institutional in Promoting Peace education		Supriya Pramanik		
Unit-3	Value Education ➢ Meaning , Definition, Concept of Value Education ➢ Classification of Values and Sources of Values ➢ Need For Value education in the 21st Century ➢ Fostering Values – Role of Home, School and Society.		Pinki Mondal		
unit-4	**Peace, Value and Conflict Resolution** ● **Bases of conflict** ● **Role of Value Education in resolving conflict**		Suman Kamila		
UNITS	**PAPER: DSE-2(Teacher Education)**				
unit-1	Basic concept of teacher education. ➢ Concept and meaning of teacher education ➢ Scope of Teacher Education ➢ Aims and objectives of Education at Elementary, Secondary and College level. ➢ Teacher training Vs Teacher education	Full Marks- 75	Supriya Pramanik		

unit-2	Development of teacher education in India ➢ Historical perspective of development of teacher education in India ➢ Recommendations of Kothari Commission ➢ Recommendations of National Policy on Education regarding teacher education. ➢ Present System of teacher education in India.		Suman Kamila		
unit-3	**Role of the different agencies in Teacher Education** ● University ● NCTE ● NCERT ● NUEPA		Sovan Arui		
unit-4	Some courses for preparation of Teacher pre service teacher education In service teacher education Orientation and Refresher course.		Pinki Mondal		
Teaching Plan: Department of Education: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13(Psychology of Adjustment)**				

unit-1	Adjustment, Maladjustment and Problem Behaviour: ● Concept of adjustment, adjustment and adaptability ● Psychodynamic Concept of adjustment, criteria of good adjustment ● Concept of maladjustment. Causes of maladjustment, aggressiveness, delinquency, substance abuse	Full Marks-75	Suman Kamila	21-02-2022 to 10-06-2022	**1st week of April,2022 & 1st week of June,2022**
Unit-2	**Multi-axial Classification of Mental Disorders** ➢ DSM – 5 : Section 1, Section II and Section III ➢ Brief outline of Schizophrenia, anxiety disorder, depressive disorder and personality disorder ➢ Psychoanalysis, behavior therapy, cognitive therapy, and humanistic therapy.(Concept only)		Supriya Pramanik		
unit-3	**Coping Strategies for Stressful Situation** ➢ Stress and Stressors ➢ Personal and environmental stress ➢ Coping strategies for stress		Sovan Arui		
unit-4	**Administration, Scoring and Interpretation of the following Tests** ➢ KNPI ➢ KIPI ➢ Effect of Learning material on memorization		Pinki Mondal		
UNITS	**PAPER: CC14(Basic Concept of Educational Research)**				

Unit-1	**Concept of Educational Research:** ➢ Definition, meaning and concept of research ➢ Educational research and its characteristics ➢ Types of Educational Research Problems, difficulties and ethics		Suman Kamila		
Unit-2	**Basic elements of educational research** ➢ Literature review ➢ Problem selection ➢ Objectives, Research question and ➢ Tools of Data collection –types	Full Marks- 75	Sovan Arui		
Unit-3	Data collection procedure ➢ Sampling –concept and definition ➢ Types of sampling- Probability and non-probability ➢ Data reporting- Descriptive and Inferential (basic statistical procedure that come under each) ➢ Referencing and Bibliography		Pinki Mondal		
Unit-4	Practical ➢ Writing Research proposal (Plan of Work)– steps and review (atleast5) (Within 1000 words)		Supriya Pramanik		
UNITS	**PAPER: DSE-3(Educational Thought of Great Educators)**				
Unit-1	Western Educators-I ➢ Plato ➢ Rousseau ➢ Montessori	Full Marks- 75	Supriya Pramanik		

unit-2	**Western Educators- II** ● Pestalozzi ● Dewey ● Ivan Illich		Suman Kamila		
unit-3	**Indian Educators -I** ➢ Vivekananda ➢ Rabindranath ➢ Gandhiji		Pinki Mondal		
unit-4	**Indian Educators-II** ● Radhakrishnan ● Begum Rokeya ● Sister Nivedita		Sovan Arui		
UNITS	**PAPER: DSE-4(Women Education)**				
unit-1	**Historical Perspectives of Women Education** ● Synoptic view of women education through the ages: Vedic, Brahmanic, Medieval Period ● Contribution of Missionaries ● Role of British Govt.	Full Marks- 75	Suman Kamila		

unit-2	**Policy Perspective, Committee and Commission on Women Education** ● Constitutional provision, NPE-1968, 1986, 1992, POA-1992 ● Radhakrishnan, Mudaliar Committee, Hansraj Mehta Committee and Bhaktavatsalam Committee		Sovan Arui		
unit-3	Role of Indian Thinkers in promoting Women Education ➢ Rammohan Roy ➢ Vidyasagar		Supriya Pramanik		
unit-4	Major Constraints of Women Education and Women Empowerment ➢ Social – Psychological ➢ Political – Economical ➢ Role of women empowerment in modern society in brief.		Pinki Mondal		
Teaching Plan: Department of Education: SEMESTER-I(GENERAL)					
UNITS	**PAPER: DSC-1A/2A(Principles of Education)**				
unit-1	Education: Meaning, Nature and scope. Function of education Factors of education. Aims of Education: Individualistic and Socialistic.	Full Marks- 75	Sovan Arui	01-10-2021 to 24-02-2022	1st internal examination on 4th week of December, 2022 and 2nd

unit-2	• Meaning of Curriculum • Types of curriculum • Principles of curriculum construction. • Co-curricular activities.		Suman Kamila		internal examination on 2nd week of March,2022
Unit-3	➢ Child Centric Education: Meaning and Characteristics. ➢ Aims of modern child centric education. ➢ Child Centrism in Education: its significance. ➢ Play and play-way in education: Kindergarten, Montessori, Basic education and Project method.		Supriya Pramanik		
unit-4	Freedom and Discipline: Concept Needs of discipline. Concept of free discipline. Concept of self-discipline. Application of Discipline in Educational institutions.		Pinki Mondal		
Teaching Plan: Department of Education: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B(Educational Psychology)**				
unit-1	Education psychology: Meaning ,Nature and scope Relation between Education and Psychology. Method of Educational psychology.	Full Marks- 75	Sovan Arui	01-04-2022 to 09-07-2022	1st internal examination on 2nd week of May, 2022

unit-2	❖ Growth and Development: Meaning and Concepts ❖ Stages of Development of a Child: Infancy, Childhood and Adolescence. ❖ Aspects of Child Development: Physical, Intellectual, Emotional, Social.		Suman Kamila		and 2nd internal examination on 2nd week of July,2022
unit-3	Ø Personality: Concept and definition. Ø Development of Personality. Ø Types and Traits Approaches to Personality. Ø Individual Differences: Concepts and Types. Ø Causes of Individual Differences.		Supriya Pramanik		
unit-4	➢ Intelligence: Concept and Definition ➢ Theories of intelligence: Two factor, Group-factor and Structure of Intellect. ➢ Intelligence test: Verbal, Non-verbal, Test and their uses		Sovan Arui		
unit-5	Learning: Meaning & nature. Factors associated with learning. Theories of Learning: Trial & Error, Classical conditioning and Gestalt theory of learning. Learning relation to; Attention , Interest, and Maturation ,and Motivation**.**		Pinki Mondal		

Teaching Plan: Department of Education: SEMESTER-III(GENERAL)

UNITS	**PAPER: DSC-1C/2C(Educational Sociology)**				**4th week of November,2021 &1st Week of January,2022**
unit-1	Ø Education Sociology: Meaning, Nature and Scope. Ø Relation between Sociology and Education. Ø Education-as a social sub-system.	Full Marks- 75	Supriya Pramanik	01-10-2021 to 05-02-2022	
unit-2	Social change: Concept and nature. Factors and problems of social change in India. Social stratification: Meaning and types.		Sovan Arui		
unit-3	Socialization: Meaning,process and factors of socialization.		Pinki Mondal		
unit-4	Social Agencies of Education and their educational role. Family , School, State, Mass media.		Suman Kamila		
UNITS	**PAPER: SEC-1(Measurement and Evaluation in Education)**				
Unit-1	Ø Concept of Measurement and Evaluation. Ø Difference between Measurement and Evaluation. Ø Needs of Evaluation in Education.	Full Marks- 50	Supriya Pramanik		

Unit-2	Ø Different tools and techniques of Evaluation. Ø Teacher Made test and Standardized test. Ø Achievement tests and Psychological tests Ø Cumulative Record Card.		Supriya Pramanik		
unit-3	*Reliability: Meaning and Method of Determining Reliability by Test Retest Method. *Validity: Meaning and Method of Determining Content Validity.		Supriya Pramanik		
unit-4	Tabulation of Educational Data. Measurement of Central Tendency :Mean ,Median ,mode(Computation and their use) Measures of Dispersion: Range, Quartile Deviation; Standard Deviation. Computation and their uses)		Sovan Arui		

unit-5	Concept of correlation. Rank Difference method and Product moment method for Computation of correlation, Coefficient. Interpretation of results.		Sovan Arui		
Teaching Plan: Department of Education: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D(History of Education In India)**				**4th week of April,2022 &3rd week of June,2022**
unit-1	Missionary educational activities in India : Characteristics and significance . Serampore Mission: Contributions of the Trio to Education. Charter Act of 1813. Macaulay minute. Adams Report and its recommendations. Woods Despatch(1854)	Full Marks- 75	Sovan Arui	15-03-2022 to 25-06-2022	
unit-2	● Indian Education Commission- 1822 ● Indian University Commission- 1902 ● National Education Movement		suman Kamila		

unit-3	*Sadler Commission-1917 *Hartog Committee Report *Wardha Scheme. *The Sargent Plan(19		Supria Pramanik		
unit-4	Radhakrishnan Commission(1948, with special reference to rural university. Mudaliar Commission(1952-53):Reports and Recommendation. Kothari Commission (1964-66): Reports and Recommendations. National Education Policy 1986 and Revised Educational policy of 1992.		Pinki Mondal		
UNITS	**PAPER: SEC-2(Educational Guidance and Counselling)**				
unit-1	*Educational Guidance: Meaning, Definition, Scope. *Needs and Importance of Guidance. *Essentials of a good Guidance programme.	Full Marks- 50	Supriya Pramanik		

unit-2	Different forms of Guidance. Educational and Vocational of Guidance. Organization of Guidance service at different levels of education. Tools and technique of guidance.		Pinki Mondal		
unit-3	Counselling: Meaning, nature, scope. Types of counselling. Tools and techniques of counselling**.**		Sovan Arui		
unit-4	● Difference between Guidance and Counselling ● Counselling process-relationships & its characteristics ● Role of parent, teacher & counsellor in guidance programme.		Suman Kamila		
Teaching Plan: Department of Education: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A(Great Educator)**				**1st week of November, 2021 &4th week**
unit-1	Swami Vivekananda(1863-1902) Sri Aurobindo (1872-1950)	Full Marks- 75	Pinki Mondal	14-09-2021 to 18-01-2022	

unit-2	Rabindranath Tagore (1861-1941) Mahatma Gandhi (1869-1948)		Suman Kamila		**of** **December,2021**
unit-3	*Jean Jacques Rousseau(1712-1778) *F.W.August Froebel(1782-1852)		Supriya Pramanik		
unit-4	John Dewey (1859 -195) Madam Maria Montessori(1870 -1952)		Sovan Arui		
UNITS	**PAPER: SEC-3(Distance Education)**				
unit-1	Distance Education; Significance, Meaning and characteristics. Growth and DEVELOPMENT OF Distance Education.	Full Marks- 50	Sovan Arui		
unit-2	Designing and preparing self-learning materials in Distance Education. ICT and their applications in Distance Education.		Pinki Mondal		
unit-3	● Self support service in Distance Education ● Technical and Vocational Programmes through Distance Education.		Suman Kamila		

unit-4	*Quality assurance in distance Education. *Maintaining a Standard in Distance Education. *Role of Distance Education Council.		Supriya Pramanik		
UNITS	**PAPER: GE-1(Mental Health and Hygiene)**				
unit-1	*Mental Hygiene: Meaning and Concept. *Mental Health: Meaning and Concept. *Characteristics of Mental Health. *Education and Mental Health & Hygiene.	Full Marks- 75	Supriya Pramanik		
unit-2	*Adjustment: Concept, Need and Areas of Adjustment. *Mechanism of Adjustment. *Role of Family and School in Effective Adjustment.		Supriya Pramanik		

unit-3	Maladjustment: Meaning and Definition. Causes of Maladjustment. Different forms of Maladjustment. Role of Family and School in remedial measures.		Pinki Mondal Sovan Arui		
unit-4	● Adjustment: Concepts Need, and Areas of Adjustment. ● Mechanism of Adjustment. ● Role of Family and School in Effective Adjustment.		Suman Kamila		
Teaching Plan: Department of Education: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B(Guidance and Counselling)**				**1st week of April,2022 & 1st week of June,2022**
unit-1	**Guidance** Concept, Nature, principles and types-educational, vocational, and personal Individual and Group Guidance. Role of parents, teacher, and counselling and psychotherapy.	Full Marks- 75	Pinki Mondal	21-02-2022 to 10-06-2022	

unit-2	**Counselling** Concept, Nature, principles and types Counselling Process, Characteristics of a good counselling Difference between Guidance and Counselling, Psycho Therapy		Sovan Arui		
unit-3	Techniques Of Collecting information for Guidance and Counselling 1. Intelligence test, Aptitude test, and Personality test and Interview, CRC, ARC and Case Study.		Supriya Pramanik		
unit-4	**Adjustment** Concept and Definition of Adjustment, Characteristic of Good Adjustment Adjustment Mechanism		Suman Kamila		
UNITS	**PAPER: SEC-4(Education of Children with Special Needs)**				

unit-1	**Education of Children With:** 1. Visual Impairment: Identification, intervention, education and prevention. 2. Hearing Impairment: Identification, intervention, education and prevention.	Full Marks- 50	Supriya Pramanik		
unit-2	Education of Children with : speech and Language Disorder: identification, intervention and education, prevention.		Pinki Mondal		
unit-3	Education of Children with: Physically Handicraft: identification, intervention, education and prevention.		Suman Kamila		
unit-4	Education of children with: Learning Disability: identification, intervention, education and prevention.		Sovan arui		
UNITS	**PAPER: GE-2(Environmental Education)**				
unit-1	**Environmental Education** 1.Environment education : Concept, Characteristics, Components and Scope 2. Historical Background of Environmental Education.	Full Marks- 75	Sovan Arui		

unit-2	Education of Environmental Concept: 1. Concept of Environmental and Ecosystem. 2. Disasters: Natural and Man Made.		Supriya Pramanik		
unit-3	Environmental Education and Social Issues		Suman Kamila		
unit-4	**Approaches and Methods of Environmental Education**		Sovan Arui		

Teaching Plan: Department of English: SEMESTER-I(HONOURS)

UNITS	**PAPER: CC1 History of English literature and English language**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**REMARKS**
UNIT-1	Old English prose and poetry, Beowulf	75	PREETAM BERA,	1.10.2021-24.2.2022	1st internal examination on 4th week of December, 2022 and 2nd
UNIT-2	the Influences : Greek		SUCHETA ADAK		
	History of English language – Latin,		RAKHI ACHARYA[RATH]		

	Scandinavian,		TAPOBILASH BHUNIA		internal examination on 2nd week of March,2022
	French		TAPOBILASH BHUNIA		
UNIT-3	Chaucer- The Wife of Bath's Prologue		TAPOBILASH BHUNIA		
UNITS	**PAPER: CC2-** The British poetry [Renaissance to 18th century]	75		1.10.2021-24.2.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
UNIT-1	Edmund Spenser – Sonnet 75 – ' One day I wrote Her Name' ,		RAKHI ACHARYA[RATH]		
	3.Shakespeare- Sonnet– 130		RAKHI ACHARYA[RATH]		
	John Donne- ' good morrow'		ARIJIT BISHAI		
	pope- 'The Rape of The Lock: 3 Cantos '		ABHISHEK MISHRA		

	Milton- ‘ Paradise lost Book 1’		PRIYAM GHOSHAL		
UNIT-2	Play: • • William Shakespeare:Macbeth		PREETAM BERA		
	Christopher Marlowe:Edward II		ARIJIT BISHAI		
UNIT-3			RITIKA BATABYAL	21.12.2020- 9.4.2021	
UNIT-4	Ode, Soliloquy,Symbol, Tragedy, Hamartia, Three unities, Chorus, Comic-relief,Aside		PREETAM BERA		
	Allegory , Ballad, Comedy, Dramatic Monologue, Image , Anti-hero		ISHITA DEV		
	Literary terms		PRIYAM GHOSHAL		

	Blank verse,Heroic Couplet, Bathos, Elegy,Carpe-diem, Tragedy,Catharsis, Anagnorisis, Denouement, Catastrophe				
UNITS	**PAPER: GE-1 Academic writing Compositipon**	75		21.12.2020- 9.4.2021	
UNIT-1	Introduction to the writing Process and Conventions of academic Writing Study skills including note-taking etc		SUCHETA ADAK		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
UNIT-2	Structuring and argument : introduction , Interjection, and Conclusion Remedial Grammar Writing in one's own Words – Summarising and Paraphrasing		ARIJIT BISHAI		

	Citing resources, Editing, Book and media Review				
Teaching Plan: Department of English: SEMESTER-II(HONOURS)					
UNITS	**PAPER: CC3 British literature [fiction and non-fiction] : 18th century**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**REMARKS**
UNIT-1	**Play –** William Congreve - The Way of the World	75	ABHISHEK MISHRA	1.4.2022- 9.7.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
UNIT-2	**Prose:** Jonathan Swift:Gulliver's Travels (Books III and IV)		ARIJIT BISHAI		
	• Addison and Steele: 'Sir Roger at Church'		RAKHI ACHARYA[RATH]		

	• Laurence Sterne:The Life and Opinions of Tristram Shandy, Gentleman		SUCHETA ADAK		
UNIT-3	Suggested Topics and Background Prose Readings for Class Presentations Topics The Enlightenment and Neoclassicism Restoration Comedy The Country and the City,		ABHISHEK MISHRA	1.4.2022- 9.7.2022	
	The Novel and the Periodical Press		ARIJIT BISHAI		
UNITS	**PAPER: CC4 - British Romantic Literature (1798-1832)**	75		1.4.2022- 9.7.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal
UNIT-1	Poetry: • William Blake: 'The Lamb', 'The Tyger'		ISHITA DEV		

	• William Wordsworth: ‘Tintern Abbey		TAPOBILASH BHUNIA		examination on 2nd week of July,2022
	’ • Samuel Taylor Coleridge: ‘Christabel’ Part-1		ARIJIT BISHAI		
	Percy Bysshe Shelley: ‘Ozymandias’		PREETAM BERA		
	• John Keats: ‘Ode to a Nightingale’		RAKHI ACHARYA[RATH]		
UNIT-2	Novel: • Mary Shelley:Frankenstein		PREETAM BERA		
	• Jane Austen: Pride and Prejudice		PRIYAM GHOSHAL		

UNIT-3	Suggested Topics and Background Prose Readings for Class Presentations Topics Reason and Imagination¬ Conceptions of Nature , Literature and Revolution, The Gothic,The Romantic Lyric		PRIYAM GHOSHAL, PREETAM BERA		
UNITS	**PAPER: GE-2 Media and Communication**	75		1.4.2022-9.7.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
UNIT-1	**Introduction to Mass Communication** **1.** Mass communication and Globalization **2.** Forms of Mass Communication **Topics For student presentations-** 1. Case studies on current issues 2. Performing Street plays Writing pamphlets and posters ,etc.		ARIJIT BISHAI		

UNIT-2	**Advertisement-** 1. Types of advertisements 2. Advertising Ethics 3. How to create advertisements **Topics for student Presentations** **1.** Creating an advertisement **2.** Enacting an advertisement **3.** Creating jingles and taglines		SUCHETA ADAK		
UNIT-3	**Media writing** 1. Scripwriting for TV and radio 2. Writing news reports and editorials **3.** Editing for print and online Media **Topics for Student Presentations**		SUCHETA ADAK		

	1. Scripwriting for a TV ,panel discussion,radio programme,hosting radio programme **2.** Writing news reports,book reviews,film reviews **3.** Editing articles **4.** Writing an editorial on a topical subject				
UNIT-4	**Introduction to cyber Media and social media** 1. Types of social media 2. The impact of social media **3.** Introduction to cyber media		ARIJIT BISHAI		
Teaching Plan: Department of English: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC5- British Literature: 19th Century (1832-1900)**	75		1.10.2021- 5.2.2022	**4th week of November,2021 &1st Week of January,2022**

UNIT-1	Poetry: • Alfred Tennyson: 'Ulysses'		ISHITA DEV		
	• Robert Browning: 'My Last Duchess', 'The Last Ride Together'		ARIJIT BISHAI		
	Mathew Arnold: 'Dover Beach'		RAKHI ACHARYA[RATH]		
UNIT-2	Novel:• Charles Dickens: Hard Times		SUCHETA ADAK		
UNIT-3	Suggested Topics and Background Prose Readings for Class Presentations Topics- Utilitarianism,		PRIYAM GHOSHAL		

	Marriage and Sexuality, The Writer and Society, Faith and Doubt, The Dramatic Monologue, The 19th Century Novel,		ARIJIT BISHAI		
UNITS	**PAPER: CC6** : **British Literature: The Early 20th Century**	75		1.10.2021- 5.2.2022	
UNIT-1	Poetry: • W.B. Yeats: 'The Second Coming', '		TAPOBILASH BHUNIA		
	The Wild Swans at Coole'		RAKHI ACHARYA[RATH]		
	• T.S. Eliot 'The Love Song of J. Alfred Prufrock'		ISHITA DEV		
2	Fiction: • Joseph Conrad: The Secret Sharer		PREETAM BERA		

	• Katherine Mansfield: 'The Fly'		PRIYAM GHOSHAL		
UNIT-3	**Suggested Topics and Background Prose Readings for Class Presentations** Topics - Modernism and non-European Cultures, The Women's Movement in the Early 20th Century, Psychoanalysis and the Stream of Consciousness, The Uses of Myth, The Avant Garde		RITIKA BATABYAL		
UNITS	**PAPER: CC7 : American Literature**	75		1.10.2021- 5.2.2022	
UNIT-1	**Poetry**: • Robert Frost: 'The Road not Taken'		ABHISHEK MISHRA		
	• Langston Hughes: 'Harlem to be Answered'		ARIJIT BISHAI		
	Walt Whitman: 'O Captain, My Captain'		ARIJIT BISHAI		

UNIT-2	S**tories**: • Edgar Allan Poe: 'The Purloined Letter'		PREETAM BERA		
UNIT-3	**Novel:**• Mark Twain: The Adventures of Tom Sawyer		ABHISHEK MISHRA		
UNIT-4	**Play:** • Tennessee Williams: A Streetcar Named Desire		ISHITA DEV		
UNIT-5	**Suggested Topics and Background Prose Readings for Class Presentations** Topics - The American Dream, Social Realism and the American Novel, Folklore and the American Novel, Black Women's Writings, Questions of Form in American Poetry		PRIYAM GHOSHAL		
UNITS	**PAPER: SEC-1 SEC1T: Soft Skills**	50		1.10.2021- 5.2.2022	

UNIT-1	What is soft skill? Soft skills- Teamwork, Adaptability, Leadership, Problem solving Development of Sooft skills: Writing skills- Precis; Comprehension; Essays.		ARIJIT BISHAI		
UNITS	**PAPER: GE-3 contemporary India: Women and Empowerment**	75		1.10.2021- 5.2.2022	
UNIT-1	Social construction of gender- Patriarchy in Indian History Women and law- Personal laws		ABHISHEK MISHRA		
UNIT-2	Women and Environment – state interventions , domestic violence, female foeticide, sexual harassment, Female voices: Sultana's dream,		ISHITA DEV		

UNIT-3	Bama- Karukku		ARIJIT BISHAI		
Teaching Plan: Department of English: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC8** : **European Classical Literature**	75		15.3.2022- 25.6.2022	**4th week of April,2022 &3rd week of June,2022**
UNIT-1	Homer: The Iliad, tr. E.V. Rieu (Harmondsworth: Penguin,1985)(Book I)		ARIJIT BISHAI		
UNIT-2	Sophocles: Oedipus the King, tr. Robert Fagles in Sophocles: The Three Theban Plays (Harmondsworth: Penguin, 1984).		PREETAM BERA		
UNIT-3	Plautus: Pot of Gold, tr. E.F. Watling (Harmondsworth: Penguin, 1965)		TAPOBILASH BHUNIA		
UNIT-4	Ovid Selections from Metamorphoses 'Bacchus', (Book III),		PRIYAM GHOSHAL		

	'Pyramus and Thisbe' (Book IV), tr. Mary M. Innes (Harmondsworth: Penguin, 1975).				
UNIT-5	**Suggested Topics and Background Prose Readings for Class Presentations** Topics – Comedy and Tragedy in Classical Drama, The Athenian City Stat, Catharsis and Mimesis,		PREETAM BERA		
	Satire, Literary Cultures in Augustan Rome.		TAPOBILASH B HUNIA		
	The Epic		ARIJIT BISHAI		

UNITS	**PAPER: CC9 Modern European Drama**	75		15.3.2022- 25.6.2022	
UNIT-1 **UNIT-2**	• Henrik Ibsen: Ghosts Bertolt Brecht: The Good Woman of Szechuan		ARIJIT BISHAI ABHISHEK MISHRA		
UNIT-3	• Samuel Beckett: Waiting for Godot		ISHITA DEV		
UNIT-4	**Suggested Topics and Background Prose Readings for Class** **Presentations** Topics -Politics, Social Change and the Stage Text and Performance		ABHISHEK MISHRA		

	European Drama: Realism and Beyond Tragedy and Heroism in Modern European Drama		ARIJIT BISHAI		
	The Theatre of the Absurd		ISHITA DEV		
UNITS	**PAPER: CC10** : **Popular Literature**	75		15.3.2022- 25.6.2022	
UNIT-1	Lewis Carroll: Through the Looking Glass		PREETAM BERA		
UNIT-2	• Agatha Christie: The Murder of Roger Ackroyd		SUCHETA ADAK		
UNIT-3	• Shyam Selvadurai: Funny Boy		FUNNY BOY		

UNIT-4	Sukumar Ray: Abol Tabol (Translated by Sukanta Chowdhuri)/Autobiographical Notes on Ambedkar (For the Visually Challenged students)		RAKHI ACHARYA[RATH]		
UNIT-5	**Suggested Topics and Background Prose Readings for Class Presentations** Topics – Coming of Age The Canonical and the Popular Caste, Gender and Identity		ARIJIT BISHAI		
	Sense and Nonsense		RAKHI ACHARYA[RATH]		

UNIT-6	Ethics and Education in Children's Literature		PREETAM BERA		
	The Graphic Novel				
UNITS	**PAPER: SEC-2** : **Creative Writing**	50		15.3.2022- 25.6.2022	
UNIT-1	What is Creative Writing?		ARIJIT BISHAI		
UNIT-2	The Art and Craft of Writing		ARIJIT BISHAI		
3UNIT-	Modes of creative Writing		SUCHETA ADAK		
4UNIT-	Writing for the Media		SUCHETA ADAK		
UNITS	**PAPER: GE-4**				

	NO STUDENT AVAILABLE				
Teaching Plan: Department of English: SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC11- Postcolonial Literatures**			14.9.2021- 18.1.2022	**1st week of November, 2021 &4th week of December,2021**
UNIT-1	**Poetry:** • Pablo Neruda: 'Tonight I can Write' 'The Way Spain Was'		ARIJIT BISHAI		
	• Derek Walcott: 'A Far Cry from Africa' 'Names'		ISHITA DEV		
	• Mamang Dai: 'Small Towns and the River' 'The Voice of the Mountain'		TAPOBILASH BHUNIA		

UNIT-2	Novel: • Chinua Achebe: Things Fall Apart		RITIKA BATABYAL		
UNIT-3	Stories: • Bessie Head: 'The Collector of Treasures'		RITIKA BATABYAL		
	• Ama Ata Aidoo: 'The Girl who can'		SUCHETA ADAK		
UNIT-4	**Suggested Topics and Background Prose Readings for Class** **Presentations** Topics- De-colonization, Globalization and Literature Literature and Identity Politics Writing for the New World Audience		ABHISHEK MISHRA		

	Region, Race, and Gender Postcolonial Literatures and Questions of Form				
UNITS	**PAPER: CC12- Women's Writing**	75		14.9.2021- 18.1.2022	
UNIT-1	**Poetry:** • Emily Dickinson: 'I cannot live with you', 'I'm wife; I've finished that'		RAKHI ACHARYA		
	Sylvia Plath: 'Daddy'		ABHISHEK MISHRA		
	• Eunice DE SOUZA –Advice to **woman**		SUCHETA SADAK		
UNIT-2	• Mahashweta Devi 'Draupadi', tr. Gayatri Chakravorty Spivak (Calcutta: Seagull, 2002)		PREETAM BERA		

UNIT-3	Toni Morrison: Beloved		ISHITA DEV		
	Non-Fiction: • Baby Kamble: Our Wretched Life		ARIJIT BISHAI		
	• Rassundari Debi Excerpts from Amar Jiban in Susie Tharu and K. Lalita, eds., Women's Writing in India, vol. 1 (New Delhi: OUP, 1989) pp. 191–2.				
UNIT-4	**Suggested Topics and Background Prose Readings for Class Presentations** Topics – The Confessional Mode in Women's Writing		ABHISHEK MISHRA		

	Race, Caste and Gender ,sexual Politics Social Reform and Women's Rights,		ARIJIT BISHAI		
UNITS	**PAPER: DSE-1- Nineteenth Century European Realism**	75		14.9.2021- 18.1.2022	
UNIT-1	• Fyodor Dostoyvesky: Crime and Punishment, tr. Jessie Coulson London: Norton, 1989).		ARIJIT BISHAI		
UNIT-2	• Gustave Flaubert: Madame Bovary, tr. Geoffrey Wall (London: Penguin, 2002).		PREETAM BERA		

UNIT-3	**Suggested Topics and Background Prose Readings for Class** **Presentations** Topics – History, Realism and the Novel Form Ethics and the Novel The Novel and its Readership in the 19th Century Politics and the Russian Novel: Slavophiles and Westernizers		ARIJIT BISHAI		
UNITS	**PAPER: DSE-2 : World Literatures**	75		14.9.2021- 18.1.2022	
UNIT-	• V.S. Naipaul: Bend in the River (London: Picador, 1979).		PRIYAM GHOSHAL		
UNIT-2	• Julio Cortazar: 'Blow-Up', in Blow-Up and other Stories (New York: Pantheon, 1985)		ARIJIT BISHAI		

UNIT-3	• Judith Wright: 'Bora Ring', in Collected Poems (Sydney: Angus & Robertson, 2002) p. 8.		SUCHETA ADAK		
UNIT-4	**Suggested Topics and Background Prose Readings for Class Presentations** Topics- The Idea of World Literature Memory, Displacement and Diaspora and Hybridity, Race and Culture		PRIYAM GHOSHAL		
	Adult Reception of Children's Literature Literary Translation and the Circulation of Literary Texts Aesthetics and Politics in Poetry		ARIJIT BISHAI		

Teaching Plan: Department of English: SEMESTER-VI(HONOURS)

UNITS	**PAPER: CC13 : Indian Classical Literature**	75		21.2.2022- 10.6.2022	**1st week of April,2022 & 1st week of June,2022**
UNIT-1	Kalidasa. Abhijnana Shakuntalam, tr. Chandra Rajan, in Kalidasa: The Loom of Time (New Delhi: Penguin, 1989).		PREETAM BERA		
UNIT-2	• Vyasa. 'The Dicing' and 'The Sequel to Dicing, 'The Book of the Assembly Hall', 'The Temptation of Karna', Book V 'The Book of Effort', in The Mahabharata: tr. and ed. J.A.B. van Buitenen (Chicago: Brill, 1975) pp. 106–69		ISHITA DEV		
UNIT-3	• Sudraka. Mrcchakatika, tr. M.M. Ramachandra Kale (New Delhi: Motilal Banarasidass, 1962).		RITIKA BATABYAL		

UNIT-4	**Suggested Topics and Background Prose Readings for Class** **Presentations** Topics -The Indian Epic Tradition: Themes and Recensions Dharma and the Heroic		ISHITA DEV		
	Classical Indian Drama: Theory and Practice Alankara and Rasa		RITIKA BATABYAL		
UNITS	**PAPER: CC14** : **Indian Writing in English**	75		21.2.2022- 10.6.2022	
UNIT-1	Poetry • H.L.V. Derozio: 'The Harp of India'		SUCHETA ADAK		
	• Kamala Das: 'AN Introduction'		ARIJIT BISHAI		

	• Nissim Ezekiel: 'The Night of the Scorpion'		SUCHETA ADAK		
UNIT-2	Fiction: • R.K. Narayan: Swami and Friends		PRIYAM GHOSHAL		
	• Mulk Raj Anand: 'Two Lady Rams'		TAPOBILASH BHUNIA		
	• Salman Rushdie: 'The Free Radio		TAPOBILASH BHUNIA		
UNIT-3	Drama: • Girish Karnad: Tughlaq		ISHITA DEV		
UNIT-4	**Suggested Topics and Background Prose Readings for Class** **Presentations** Topics - Indian English Indian English Literature and its Readership Themes and Contexts of the Indian English Novel The Aesthetics of Indian English Poetry		ARIJIT BISHAI		

	Modernism in Indian English Literature				
UNITS	**PAPER: DSE-3 Science Fiction and Detective Literature [2021-2022]**	75		21.2.2022- 10.6.2022	
UNIT-1	Wilkie Collins: The Woman in White		ABHISHEK MISHRA		
UNIT-2	• Arthur Conan Doyle: The Hound of the Baskervilles		PREETAM BERA		
UNIT-3	Suggested Topics and Readings for Class Presentation		ABHISHEK MISHRA		
	Topics - Crime across the Media Constructions of Criminal Identity Cultural Stereotypes in Crime Fiction Crime Fiction and Cultural Nostalgia Crime Fiction and Ethics Crime and Censorship				

UNITS	**PAPER: DSE-4 - Partition Literature**	75		5.4.2021- 27.7.2021	
UNIT-1	Amitav Ghosh: The Shadow Lines.		ARIJIT BISHAI		
UNIT-2	Dibyendu Palit: 'Alam's Own House', tr. Sarika Chaudhuri, Bengal Partition Stories: An Unclosed Chapter, ed. Bashabi Fraser (London: Anthem Press, 2008) pp. 453– 72.		PRIYAM GHOSHAL		
UNIT-3	• Manik Bandhopadhya, 'The Final Solution', tr. Rani Ray, Mapmaking: Partition Stories from Two Bengals, ed. Debjani Sengupta (New Delhi: Srishti, 2003) pp. 23–39.		RAKHI ACHARYA[RATH]		
UNIT-4			RAKHI ACHARYA[RATH]		

	• Sa'adat Hasan Manto, 'Toba Tek Singh', in Black Margins: Manto, tr. M. Asaduddin (New Delhi: Katha, 2003) pp. 212–20.				
UNIT-5	• Jibananda Das, 'I Shall Return to This Bengal', tr. Sukanta Chaudhuri, in Modern Indian Literature (New Delhi: OUP, 2004) pp. 8–13.		SUCHETA ADAK		
UNIT-6	Suggested Topics and Readings for Class Presentation Topics - Colonialism, Nationalism, and the Partition Communalism and Violence Homelessness and Exile Women in the Partition		ARIJIT BISHAI		

Teaching Plan: Department of English: SEMESTER-I(GENERAL)

UNITS	**PAPER: DSC-1A/2A Poetry and Short Story**	75		1.10.2021- 24.2.2022	
UNIT-1	Shakespeare – sonnet 116		TAPOBILASH BHUNIA		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	Wordsworth – A slumber did my spirit seal		RAKHI ACHARYA[RATH]		
	Keats-La Belle dame sense merci		RAKHI ACHARYA[RATH]		
	1. Owen – strange meeting		RAKHI ACHARYA[RATH]		
UNIT-2	STORY- Bates – The ox		ABHISHEK MISHRA		
	Mansfield – The Fly		PRIYAM GHOSHAL		
UNITS	**PAPER: English-1(CCL) British Poetry 1**	75		1.10.2021- 24.2.2022	
	Shakespeare – shall I compare thee to a Summer's day		RAKHI ACHARYA[RATH]		

UNIT-1	Donne- Batter My Heart		ARIJIT BISHAI		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	Pope- Ode on Solitude		ARIJIT BISHAI		
	Blake- A poisoned Tree		PREETAN BERA		
	Milton – On His Blindness		PREETAM BERA		
	Keats- Ode to autumn		ARIJIT BISHAI		
	Shelley- To a Skylark		RAKHI ACHARYA[RATH]		
	Wordsworth- To The Skylark		RAKHI ACHARYA[RATH]		
UNITS	PAPER: AECC (Compulsory)- English Communication	50		1.10.2021- 24.2.2022	
UNIT-1	Communication Skills- 1. Types and modes of Communication 2. Verbal and non-verbal communication 3. Barriers and strategies of communication		RAKHI ACHARYA[RATH]		1st internal examination on 4th week of December, 2022 and 2nd

	4. Inter-personal communication				internal examination on 2nd week of March,2022
UNIT-2	Listening skills- Active and passive listening		ABHISHEK MISHRA		
UNIT-3	Speaking skills- 1. different forms of speaking – formal and informal 2. Group discussion 3. English in situations		ABHISHEK MISHRA		

UNIT-4 **UNIT-5**	Reading Skills – 1. Close Reading 2. Comprehension 3. Summary 4. Paraphrasing Writing Skills – 1. Report writing 2. Making notes Letter writing		RAKHI ACHARYA[RATH]		
Teaching Plan: Department of English: SEMESTER-II(GENERAL)					

UNITS	**PAPER: DSC-1B/2B Essay, Drama & Novel**	75		1.4.2022- 9.7.2022	
UNIT-1	Essay- Contents: 1. George Orwell – "Shooting an Elephant'		TAPOBILASH BHUNIA		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
	2. R. K. Narayan – "A Library without Books"		ISHITA DEV		
UNIT-2	Drama- 3. George Bernard Shaw – Arms and the Man		RAKHI ACHARYA[RATH]		
	4. J. B. Priestley – An Inspector Calls		ARIJIT BISHAI		
UNIT-3 Novel – 5-Ernest Hemingway – The Old Man and the Sea			ABHISHEK MISHRA		
UNITS	**PAPER: MIL-1**				

	NO STUDENT AVAILABLE				
Teaching Plan: Department of English: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C - Contemporary India: women and empowerment**	75		1.10.2021- 5.2.2022	**4th week of November,2021 &1st Week of January,2022**
UNIT-1	Texts: (any one) Nivedita Menon : Sexualities: Issues in Contemporary Indian Feminisms (selections) Nivedita Menon : Gender and Politics in India (Selections)		ISHITA DEV		

UNIT-2	Gholam Murshed “Chapter Four” from The Reluctant Debutante.		ARIJIT BISHAI		
UNIT-3	Urvashi Butalia ‘Beginnings’ from The Other Side of Silence		RAKHI ACHARYA[RATH]		
UNIT-5	**History of Women's Movements in India (Pre- and Post-Independence**): 1. Women and Nationalism 2. Women and Partition 3. Women and Political Participation Text: (any two) (any two) 1. “Letters to a Wife: Satyendranath Tagore’s Letters to Jynadanandini Tagore” from Epistolary Cultures in 19 th century Bengal, Stree Samya, Kolkata		PREETAM BERA		

UNIT-6	**Social Construction of Gender:** 1. Masculinity, Femininity 2. Patriarchy 3. Sex & Gender 4. Gender Socialization 5. Gender discrimination 6. Gender stereotyping		ABHISHEK MISHRA		
UNIT-7	4. Jashodhara Bagchi and Shubharanjan Dasgupta. The Trauma and The Triumph: Gender and Partition in Eastern India,Vol I ("Introduction")		ARIJIT BISHAI		
UNIT-8	**Women and Law**:		ABHISHEK MISHRA		

	1. Women and the Indian Constitution 2. Personal Laws 3. Customary practices on inheritance and Marriage Text: (Selections from any one text) 1. Flavia Agnes. Ed. Women and Law in India: An Omnibus Comprising 2. Flavia Agnes. Enslaved Daughters (selections). 3. Sudhir Chandra. Hindu Women and Marriage Law 4. Monomoyee Basu. Law and Gender Inequality				
UNIT-9	**Women and Violence**: Bama Faustina Soosairaj – Karukku		ARIJIT BISHAI		

UNITS	**PAPER: English-2(CCL) (English): Poetry - 2**	75		1.10.2021- 5.2.2022	
UNIT-1	1. Alfred L.Tennyson : Break Break Break,		PREETAM BERA		
	2. Robert Browning: Porphyria's Lover		RAKHI ACHARYA[RATH]		
	3. T.S.Eliot: Preludes		RAKHI ACHARYA[RATH]		
	4. W.B. Yeats: The Lake Isles of Innisfree		RAKHI ACHARYA[RATH]		
UNITS	**PAPER: SEC-1 Soft Skills**	75		1.10.2021- 5.2.2022	
UNIT-1	1-Teamwork 2. Emotional Intelligence 3. Adaptability 4. Leadership		ARIJIT BISHAI		

	5. Problem solving				
	Writing skills- Precis; Comprehension; Essays.		ARIJIT BISHAI		
Teaching Plan: Department of English: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D Academic Writing and Composition**	75		15.3.2022- 25.6.2022	**4th week of April,2022 &3rd week of June,2022**
UNIT-1	1.Introduction to the Writing Process: Conventions of Academic Writing, Writing in one's own words – Summarizing and Paraphrasing 2. Critical Thinking: Syntheses, Analyses, and Evaluation 3. Structuring an Argument: Introduction, Interjection, and Conclusion		ARIJIT BISHAI		

UNIT-2	4. Citing Resources, Editing, Book and Media Review		SUCHETA ADAK		
UNITS	**PAPER: SEC-2 Creative Writing**	50		15.3.2022- 25.6.2022	
UNIT-1	What is Creative Writing?		ARIJIT BISHAI		
UNIT-2	The Art and Craft of Writing		ARIJIT BISHAI		
UNIT-3	Modes of creative Writing		SUCHETA ADAK		
UNIT-4	Writing for the Media		SUCHETA ADAK		
UNITS	**PAPER: MIL-2**				
	NO STUDENT				

Teaching Plan: Department of English: SEMESTER-V(GENERAL)

UNITS	**PAPER: DSE-1A/2A** : **Indian Literature in Translation**	75	RAKHI ACHARYA[RATH],ISHITA DEV, PREETAM BERA	14.9.2021-18.1.2022	**1st week of November, 2021 &4th week of December,2021**
UNIT-1	1.Rabindranath Tagore – The Wife's Letter (Translation of Steer Patra)		RAKHI ACHARYA[RATH]		
UNIT-2	2. Vijay Tendulkar – Silence: The Court is in Session (Translation of Shantata: Court ChaluAhe)		ISHITA DEV		
UNIT-3	Mahasweta Devi- 'Draupadi'		PREETAM BERA		
UNITS	**PAPER: SEC-3- English Language Teaching**	50		14.9.2021-18.1.2022	
UNIT-1	1.Knowing the Learner Or 1. Structures of the English Language		ARIJIT BISHAI,		

	2. Methods of teaching English Language				
	3. Assessing Language Skills				
	4. Materials for Language Teaching Or 4.Using Technology in Language Teaching				
UNITS	**PAPER: GE-1 - Environment & Literature**	75	NO TEACHER ASSIGNED DUE TO THE ABSENCE OF STUDENTS	14.9.2021-18.1.2022	
1	Introduction (Nature in Oriental & Western Thought, Deep Ecology, Third World Environmentalism)				
2	1. Gordon J. L. Ramel. 'Daffodils No More' 2. Mahasweta Devi. 'Pterodactyl'				

	3. Ruskin Bond. 'Dust on the Mountains',				
3	Suggested Readings: Vasudha Narayanan 'Water, Wood, and Wisdom: Ecological Perspectives from the Hindu Traditions' Allen Carlson. Environmental Aesthetics Preeti Ranjan Ghosh. "Towards an Understanding of Environmental Aesthetics: Some Reflections", The Philosophical Quarterly, 1998 Beth Fowkes Tobin. Colonizing Nature Vasudha Narayanan. Water, Wood and Wisdom Vandana Shiva. Women in Nature				

Teaching Plan: Department of English: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B : Partition Literature**	75		21.2.2022- 10.6.2022	**1st week of April,2022 & 1st week of June,2022**
UNIT-1	**TOBA TEK SINGH**		RAKHI ACHARYA[RATH]		
UNIT-2	2. Jibananda Das, 'I Shall Return to This Bengal', tr. SukantaChaudhuri, in Modern Indian Literature (New Delhi: OUP, 2004) pp. 8–13.		SUCHETA ADAK		
UNITS	**PAPER: SEC-4 Business Communication**	50		21.2.2022- 10.6.2022	
UNIT-1	1.Introduction to the Essentials of Business Communication: Theory and Practice		ARIJIT BISHAI		
	2. Writing a project report				

	3. Citing References, using bibliographical and research tools 4. Writing minutes of meetings 5. E-Correspondence 6. Making oral presentations (Viva for internal assessment) 7. Spoken English for Business Communication (Viva for internal assessment)				
UNITS	**PAPER: GE-2 -Novel and Prose**	75		21.2.2022- 10.6.2022	
UNIT-1	Charles Dickens: Oliver Twist		SUCHETA ADAK		
UNIT-2	2. R.K.Narayan: A Library without Books		ISHITA DEV		
UNIT-3	3. Guy de Maupassant: My Uncle Jules O		PREETAM BERA		

History

Teaching Plan: Department of History: SEMESTER-I(M.A)	**Session: 2021-22**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal Examination**
UNITS	**PAPER: 101 History and Historiography**	**50**		**25.10.2021 To 20.01.2022**	**3rd week of December, 2021**
Unit-I Unit –II	What is History? Events and interpretations - Philosophy of History – Enlightenment Historiography – Empiricism – Positivism – Idealist view of history. History writing and different versions of the Idea of Progress – T. B. Macaulay and the Idea of Liberty – Karl Marx and the principle of equality – G. M. Trevelyan and the Literacy and Social history. Development of economic and social history in the early twentieth century – Maurice Dobb and the Rise of Capitalism – R. H. Tawney and the Gentry Thesis – G. Lefevbre and A. Soboul and the French Revolution		**Kabita Bhattacharaya**		

Unit-III	Social History as History of Movements- Seventeenth century crisis, English Revolution and Christopher Hill. Social History as history of classes- Eric J. Hobsbawn and the age of Capital. E.P. Thompson and the working class, Raphael Samuel and the history of the people. Emergence of new social history.		**Gobinda Prasad Kar**		
Unit-IV	Debates in Indian History – Historiography of feudalism in India, Eighteenth century crisis in India, Indian Awakening in Nineteenth century, Indian nationalism, Partition of India. Modern Indian History with socio-economic perspective – peasantry and working classes, caste, tribe, gender, environment, science and technology.		**Uttam Das**		
UNITS	**PAPER: 102** SOCIO RELIGIOUS REFORM MOVEMENTS IN COLONIAL INDIA	**50**			
	UNIT I: Orientalists, Utilitarians and the Bengal Renaissance – debates on 'Renaissance', reform and social Change – evolution of socio- religious reform movements – the difference between social and religious movements – debate over strategies - Vidyasagar and Rammohan Roy.		**Uttam Das**		
	UNIT II: Reform or Revival – definitions and debates – Hindu shastras and social reform – religion as the basis of social reform – Hindu- Brahmo relations – Prarthana Samaj and Arya Samaj -		**Uttam Das**		

	Vedanta and revitalization of Indian life: Ramkrishna, Vivekananda and the Ramkrishna Mission - response to the movement in press and literature: a review of the work of Bhudeb Mukhopadhyay, Bankim Chandra Chattopadhyay, Nabin Chandra Sen, and Akshay Chandra Sarkar.				
	UNIT III: Nationalism, modernity, and Muslim identity in India before 1947: Islamic reformers and their movements in India - educational movements, faith, and revival movements – Syed Ahmed Khan and the Aligarh Movement, Wahabi Movement, Deoband Movement.		**Sanatan Das**		
	UNIT IV: Muslim women, reform and patronage: a study of Nawab Sultan Jahan Begam of Bhopal – issues on caste and education: Begam Rokeya Sakhawat Hossein and Sarala Debi – issues on widow remarriage and Sati – orthodox Hinduism and the Age of Consent Bill.		**Uttam Das**		
UNITS	**PAPER: 103 ENVIRONMENTAL HISTORY OF INDIA IN THE ANTHROPOCENE AGE**	**50**	**Gobinda Prasad Kar**		
Unit- I	The concept of Anthropocene- in Indian Context - Historiography of environmental history				

	The relationship among environmental history, climate history and environmental humanities				
Unit-II	i. Arrival of the British and cataloguing of landscape and eco-system ii. History of Forest, Water and Wildlife iii. Colonial Deforestation, Timber Trade, Wildlife destruction iv. Making of Gardens: Tea, Jute and Rubber plantation				
Unit- III	i. Colonial Policies on Environment: Environmental Change, Famines, and Migration ii. Colonial Flood Control and Disaster management				
Unit- IV	i. Colonial Conservation of Ideas on Environment; Indigenous Perception of Environment. ii. Borderland Environment				
UNITS	**PAPER: 104 HISTORY OF EUROPE: FROM REVOLUTION TO WORLD WAR (1789-1914)**	**50**			
UNIT -I	French Revolution: crisis of the ancient regime, intellectual currents, participation of social classes – Emergence of Napoleon Bonaparte: domestic policy of Napoleon, foreign policy of Napoleon – Congress of Vienna, 1815 – Social and political developments, 1815-		**Gobinda Prasad Kar**		

	1848: Metternich – Forces of conservatism and restoration of old hierarchies – Social, political and intellectual currents, revolutionary movements of 1830 and 1848.				
UNIT II:	Growth of democracy in Britain: parliamentary reforms acts of 1832, liberalism in England, Irish problem: its socio-economic and political aspects – The extension of franchise and expansion of socialism – Labour movement in Britain and the rise of Labour Party, Nationalism- Italian Risorgimento – Socio-economic milieu and stages of Italian unification: role of Mazzini, Garibaldi, Cavour and Victor Emmanuel – Foundation of the German Empire: Prussian spirit, Role of Bismarck in the unification of Germany – Foreign policy of Bismarck, the age of Bismarck (1870-1890), Foreign policy of Kaiser William II and his world politics.		**Gobinda Prasad Kar**		
UNIT- III	Russia under the Czars; Czar Alexander I: domestic and foreign policy, Czar Nicholas I- foreign policy – Czar Alexander II: reform policy, foreign policy, his failures and achievements – The reign of Czar Alexander III – Czar Nicholas II: the Russo-Japanese war, the revolution of 1905.		**Kalipada Giri**		
UNIT- IV	The eastern crisis: nature of the crisis, the war of Greek independence, – the problem of Turkey – the treaty of London		**Kalipada Giri**		

	and the treaty of Sanstefano – the Crimean war, the Congress of Berlin – the first Balkan War (1912), the second Balkan War (1913), the formation of Triple Entente –the age of armed peace (1904-1914).				
UNITS	**PAPER: 105 HISTORY OF THE MODERN WORLD**	**50**			
UNIT- I	The First World War: historical background; factors that precipitated; nature and impact – Peace Settlement: Fourteen Points of Woodrow Wilson and Paris Peace Conference – some Issues arising out of the War: quest for security; problem of disarmament; problem of reparation – the Great Depression: causes and consequences.		**Gobinda Prasad Kar**		
UNIT -II	Italy and Germany between the Wars; domestic and foreign affairs – politics and ideologies of Fascism & Nazism – France and Great Britain between the Wars – emergence of America & Soviet Russia as world powers – Civil War in Spain – The Munich Crisis – origin and nature of World War II.		**Gobinda Prasad Kar**		
	UNIT III: Impact of the Peace Pact of 1919 on West Asia; Mandate system in Middle East – rise of Mustafa Kamal Pasha & the modernization of Turkey – Arab nationalism after World		**Gangadhar Maikap**		

	War I; role of Saudi Arab – rise of nationalism in Egypt: Anglo-Egyptian relations.				
UNIT- IV	Far East: Japan's Supremacy in East Asia; China after the World War I – Southeast Asia: Colonial rule, growth of Nationalism and Modernization.		**Gangadhar Maikap**		
Teaching Plan: Department of History: SEMESTER-II(M.A)					
UNITS	**PAPER: 201** STATE FORMATION IN ANCIENT INDIA	**50**		**07.02.2022 To 11.07.2022**	**2nd week of June,2022**
UNIT-I	Introduction to political organization till the Vedic period – Kingship in the ancient period – Gopati to Bhupati – meaning of the term Rajan-Vispati as chief – post-Vedic terms for the King.		**Gobinda Prasad Kar**		
UNIT-II	Local autonomy and imperial unity – janapadas and mahajanapadas – conditions for the rise of large territorial states – treasury and coercion in the state – regular collection of land-revenue – advent of taxation and emergence of the state.		**Gobinda Prasad Kar**		
UNIT-III	Structure of polity in early medieval India – chieftaincies and feudatories – political and economic changes and the bases of the early medieval state system.		**Gangadhar Maikap**		

UNIT-IV	State and imperial ideology in South India – the Cholas and their successors		**Gangadhar Maikap**		
UNITS	**PAPER: 202 RELIGION AND ECOLOGY IN EARLY INDIA**	**50**	**Gobinda Prasad Kar**		
UNIT-I	Ecology, Religion , Sources and methodology Ecology and Hindu Religious tradition Hindu worldview on Nature Aspects of Nature in Hindu Tradition Mother Earth in Hindu Culture Forests in Classical Texts				
UNIT-II	Ecology and Budhist Traditions The Concept of Budhist Ecology Budhist Environmentalism				
UNIT-III	Ecology and Jainism Ecology and Jain Worldview Jain Environmental Ethics Teachings of Tirthankara Mahavir on Ecology and Environment				
UNIT-IV	Ecology and Tribal/ Adivasi Religious Practices Adivasi Worldview about nature Adi Dharam: a way of life based on entangled life of nature, ancestor and human, and a symbiosis between human, plants and animal kingdom. Environmental Ethics of the Adivasis				
UNITS	**PAPER: 203 SOCIAL HISTORY OF COLONIAL INDIA**	**50**			
UNIT-I	A changing discipline: what is social history: 'From Social History to History of Society' and beyond; the post-modern		**Gobinda Prasad Kar**		

	challenge; from social history to cultural history – Orientalist, Utilitarian, and Nationalist perceptions of Indian society – a brief overview of aspects of post-colonial Indian society.				
UNIT-II	Communities in society: Tribe: validity of the concept and traditional features; changes during colonial rule, and confrontation and assertion; tribes and national movement – Caste: traditional features; colonial sociology and new mobility movements; lower caste aspirations and national movement – Labour: consciousness, conditions of work, and the making of a working class; capital and labour; organisation and protest; labour and the national movement.		**Sanatan Das**		
UNIT-III	Family and childhood: brief discussion on patriarchy and gender; traditional society, kinship, and family structure and household functions; changes in structure and norms during colonial rule – traditional ideas of childhood and attitude towards children; a 'new' idea of childhood and experience of childhood in the colonial period; traditional and modern children's literature.		**Sanatan Das**		
UNIT-IV	The city and its inhabitants: traditional cities; urbanisation and urbanism in colonial India; the metropolises and the mofussils – emergence of a new middle class; other classes in the city; their		**Gobinda Prasad Kar**		

	attributes and sensibilities, and relations – different aspects of elite and popular culture in the city.				
UNITS	**PAPER: 204 CONTEMPORARY WORLD**		**CBCS**		
UNIT-I	Black American History: Abolition of slavery – the Harlem Resistance – the Lexicon and History of Prohibition – the Civil Rights Movement; Martin Luther King to Malcolm X.		NA		
UNIT-II	Third World: Historical context of the emergence of the Third World – Developmental issues of the Third World – Changing face of the Third World; politics, society, economy, culture.		**NA**		
UNIT-III	India Engaging with the World – Look East Policy – India and South Asian – India and Super Powers		**NA**		
UNIT-IV	Major conflicts since the dissolution of USSR: Chechen crisis, Yugoslav crisis, Georgian crisis, Ukraine crisis – South, East and South-East Asia: Kargil War 1999 – Rise and fall of Taliban in Afghanistan, Post 9/11 Global war on terror in Afghanistan – Srilankan Tamil crisis, Senkaku islands dispute, South-China Sea dispute – West Asia: US invasion in Iraq 2003, ISIS in Syria and Iraq – Yemen crisis, Israel-Gaza conflict – Africa: Congo		**NA**		

	Crisis, Nigerian civil war, Somalian crisis, Libyan crisis, Egyptian crisis, Sudan crisis				
UNITS	**PAPER: 205** THE GLOBAL INDIAN MIGRATION AND DIASPORA	**50**	**Gobinda Prasad Kar**		
UNIT-I	a) Definition and Types of Migration b) Patterns of Migration c) Domestic and Global Migration d)) Definition and Types of Diaspora ; Patterns of Diaspora e) Geo-politics of Diaspora; State, Nation, Border, Environment, Frontier, Citizenship, Rights and Refugees—asylum, ghetto Harlem.		**Gobinda Prasad Kar**		
UNIT-II	The Origins of the modern Indian Diaspora: Migrations in pre colonial time, Migration during the indenture Period - Indentured Labour; Trade Diaspora; Displacement, Migration in contemporary period – Trans-nationalism ---Indian Diaspora across continents: USA, UK, Africa, Canada, West Asia, Pacific countries and others.		**Gobinda Prasad Kar**		
UNIT-III	Culture and Community in Diaspora : a)Cultural Identity, Race, Gender, Religion, Spread of Indian Philosophy, Language and Literature-- Ramayana & Mahabharata; Diaspora Writers b) Struggle against Racism, Sexism and Lesbophobia ; Ethno-nationalism , Cultural Pluralism and Ethnic Politics c) Indian		**Gobinda Prasad Kar**		

	Cinema-- Transnational media networking-- Music, Folk Arts and Cultural Migration.				
UNIT-IV	Diaspora --the Politics of the Nation-State, and Long-Distance Nationalism; Civil Society, Social Movements and Development Process--foreign policy; Indian state and the South Asians across continents—modern global Indian history.				
Teaching Plan: Department of History: SEMESTER-III (M.A)					
UNITS	**PAPER: 301** STATE AND ECONOMY IN EARLY MODERN INDIA	**50**		**15.09.2021 To 20.01.2022**	**3rd week of December, 2021**
UNIT-I	State and economy in early modern India: the establishment of a centralized state under the Mughals; emphasis on military and revenue administration – extension of the core Mughal model into other areas viz. Gujarat, Ahmadnagar, Bengal.		**Kalipada Giri**		
UNIT-II	Impact on agrarian society, especially in terms of the high revenue demand – relationship between the state and the landed elites viz. social and administrative – expansion and integration of the agrarian base during the Mughal period; drive for revenue and the new agrarian frontiers		**Kalipada Giri**		
UNIT-III	Indian economy and the Indian Ocean: trade network and commerce; transformations since the 15th century – maritime merchants in the Indian Ocean region – Indian merchants and their participation in the Indian Ocean and hinterland or internal trade		**Kabita Bhattacharya**		

UNIT-IV	Trade and the Indian Economy: flow of precious metals and currency – the state and the need for monetization – mint administration and towns – internal and overseas markets – inland trade networks.		**Kabita Bhattacharya**		
UNITS	**PAPER: 302** STATE AND ECONOMY IN COLONIAL INDIA	**50**	**Uttam Das**		
UNIT-I	The colonial state: brief overview of British expansion in India – British Parliament and the East India Company – structure of administration: police, judiciary, bureaucracy, army.		**Uttam Das**		
UNIT-II	The colonial ideology: Orientalist and Utilitarian phases; paternalist attitude – white racism – divide and rule policy – social- cultural policies and their impact (education, tribe, caste etc.).		**Uttam Das**		
UNIT-III **UNIT-IV**	The colonial economy and its impact (1): changing pattern of English trade – land revenue settlements – commercialisation of agriculture. The colonial economy and its impact (2): decline of traditional handicrafts – emergence of modern industries and colonial industrial policy – impact of railways.		**Uttam Das**		
UNITS	**PAPER: 303 ADIVASI HISTORY IN COLONIAL BENGAL**	**50**			
UNIT-I	Concept of Tribe, Tribe in Indian Civilization and history, The problem of monemclature: Adivasis, Tribes and Indigeneous people, Representation of the Adivasis/ 'Tribes' : Sanskritik and Colonial		**Sanatan Das**		

UNIT-II	Colonial Archives: A Critical Survey, Sources for Adivasi History Writing, Historiography of Tribe in India, is there a tribal history? Adivasi Collective Memory and Myth as their own History				
UNIT-III	Broad Trends and Tendencies in Adivasi Studies The Conflict between Political and Moral Economy Land, Forest and Water Cosmologies, their Perception of Water and their Methods Water Management Adivasi Economy, Polity and Contours of Culture. Adivasi Medicinal System and Practices Adivasi Migration Impact of Colonial Policies on Land, Forests and Water		**Gobinda Prasad Kar**		
UNIT-IV	Search for a Village as locus of Adivasi socio-cultural life Pre-Colonial, colonial, post colonial governance, Adivasi Village Republic and Polity Customary Law The Concept of Adivasi Governace Identity Assertion of Adivasis and movements for jal*, jungle and jameen* (water, forest and land) in colonial and contemporary times		**Gangadhar Maikap**		
UNIT-V	Adivasis in India: Northern India, Southern India, Eastern India, Southern India. North Eastern India, The Demography of Adivasis in India, Their social and economic Status, Adivasis in Indian politics. 'Tribes' and the V and VI Shedule of the Indian constitution		**Gobinda Prasad Kar**		
UNITS	**PAPER: 304**: CONTEMPORARY INDIA: HISTORICAL UNDERPINNINGS	**50**	**CBCS**		

Unit -1	History of Indian Classical Music – Hindustani – Natyashastra and the background to Indian music – Medieval adaptations – Developments in the Mughal period – Forms of Music in the Eighteenth Century				
UNIT II:	History of Indian Sport: Social significance of sport in traditional India – Colonial India: 'sport ethic' in colonial policy, football, cricket, and nationalism and communalism – Sport in post-colonial India: promotion of sport by the Indian state, proliferation and popularization of sport, and increasing of, and professionalism in, sport in recent times – Sport and gender in post-colonial Indian society.				
UNIT III:	Gender and Public Sphere –Impact of First, Second & Third Wave Feminism - Women autobiographers - Women in Politics – Women in Medicine - Women in Film – Women in Theatre – Women's movement - Gender, Sexuality and Media				
UNIT IV:	History and Literature : Indian Writing in English; Women writing in India—Post colonial Writing in English and other languages—Literature from North east India--Dalit Literature—Literature and Films—Literature and Society				
UNITS	**PAPER: 305D GANDHIAN THOUGHT**	**50**	**Gobinda Prasad Kar**		
UNIT I:	Introducing Gandhi**:** formative years – Community, family and neighbourhood – Early education, study in England – Indian influences – Epics, narratives, Gita, folklore – Evolution of Gandhian thought based on Indian tradition – Buddhism, Jainism, Islam, Christianity – Western influences: Ruskin, Thoreau, Tolstoy – Gandhi in South Africa – Struggle		**Gobinda Prasad Kar**		

	against racial discrimination – From passive resistance to Satyagraha – Moral progress vs. material progress – Gandhi's views on human nature – Gandhi's critique of modern civilisation –Gandhi's views on environment--- Towards a new civilisation: *Ahimsa, Satyagraha, Swedeshi and Swaraj* – The Gandhian method of non-violent resistance – *Sarvodaya*: Gandhi's constructive programme of social uplift.				
UNIT II:	Socio-political thought of Mahatma Gandhi: Gandhi's views on man and society – Status of women, issues of national language – Untouchability, caste system, racial issues, class conflict – Rural mental retardation, leprosy, drink – Gandhi's views on equality, liberty, rights and duties – Nationalism and internationalism, State and Citizenship (Ramrajya) – Gandhi's views on democracy – Gandhi's political philosophy: passive resistance, means and ends – Gandhiian way of comprehensive human development: education, religious harmony and peace.		**Gobinda Prasad Kar**		
UNIT III:	Gandhian economic thought**:** encounter with colonialism and poverty – Fundamental Principles of Gandhian economic thought: bread, labour, simplicity, human values – Utilities and wants, self-reliance and self-sufficiency – Trusteeship, Gandhi's views regarding Industrial civilization of the West: large scale industries, mechanisation, machinery and industrialisation – Khadi and village industries – Agrarian economy and cooperatives – Sustainable economy and social justice – Gandhian alternatives for development – Principles underlying Gandhian compartive study of Sarvodaya with capitalism, communism and socialism – Village self- sufficiency, Gandhian concept of rural reconstruction, cow in village economy		**Gobinda Prasad Kar**		
UNIT IV:	The relevance of Gandhian thought: Gandhi and his contemporaries – Gandhi and Ambedkar on society, Gandhi and Ambedkar on socialism, Gandhi and Ambedkar on untouchability – Gandhi and Tagore on education, Gandhi and Tagore on religion, Gandhi and Tagore on politics, Gandhi and Tagore on charkha – Philosophical political and educational thought of Gandhi and Vinoba – Religious thought of Gandhi and Nehru, leadership of Gandhi and Nehru, political thought of Gandhi and Nehru, economic thought of Gandhi and Nehru, contribution of Gandhi and Nehru towards national development – Gandhian approach to conflict resolution: shanti sena and non- violent action/resistance of Dr. Martin		**Gobinda Prasad Kar**		

	Luther King Jr. and the movement for civil rights – Non-violent action against Apartheid – Truth and reconciliation commission Lanza-Del-Vasto; Danilo Dolci's non-violent movement – Arya Ratna's experiments in Sri Lanka, Satyagraha of Ceasar Chavez				
Teaching Plan: Department of History: SEMESTER-IV(M.A)					
UNITS	**PAPER:401 INDUSTRIAL REVOLUTION: THE NATURE OF THE INDUSTRIAL REVOLUTION AND THE ENGLISH EXPERIENCE**	**50**		**07.02.2022 To 11.07.2022**	**2nd week of June,2022**
UNIT-I	Defining the Industrial Revolution – validity of the concept of 'Industrial Revolution' – why did the Industrial Revolution first occur in England? – Chronology of the British Industrial Revolution.		**GANGADHAR MAIKAP**		
UNIT-II	Demographic Revolution – Agricultural Revolution; Enclosures in Britain – Commercial Revolution - Transport Revolution.		**GANGADHAR MAIKAP**		
UNIT-III	England:The 18th century background – the adoption of Free Trade – role played by labour, capital, banks, government – role of technology and science in the Industrial Revolution – the concept of a leading sector – Cotton Industry & Iron Industry.		**KALIPADA GIRI**		
UNIT-IV	Legislations and human dimensions – changes in the occupational structure – conditions of work – social attitude – women and child labour – Factory Acts – labour organizations – standards of living.		**KALIPADA GIRI**		
UNITS	**PAPER: 402 SOCIAL HISTORY OF SCIENCE, TECHNOLOGY AND MEDICINE IN INDIA: COLONIAL PERIOD**	**50**			

UNIT-I	Colonial Science – considerations of the colonial power underpinning scientific and technological initiatives of British India – British surveys in India as colonial forms of knowledge – technology and the colonial project of India's development – Departments of Irrigation, Agriculture, Public Works, Railways – role of Asiatic Society of Bengal.		**SANATAN DAS**		
UNIT-II	Western medicine in an Indian environment – colonial government, public health and state medicine – emergence of the study of tropical diseases – underpinnings of colonial power in epidemiology in colonial India – role of scientific education and technical institutions – government and private colleges – engineering and medical colleges – involvement of women in science education.		**KABITA BHATTACHARYA**		
UNIT-III	Nationalist science as a counter-discourse of colonial science; claim of an ancient 'national' scientific tradition for India; the search for 'scientific' texts from 'antiquity' – Nationalist medicine: Ayurveda, Unani, nationalist adoption of Homeopathy		**KABITA BHATTACHARYA**		
UINT-IV	Nationalism and the founding of institutions and associations for scientific research – Swadeshi technology: in theory and practice – response to western science: failures and successes – modern scientific outlook and the 'women question'		**UTTAM DAS**		
UNITS	**PAPER: 403 ANTI-COLONIAL RESISTANCE, DECOLONIZATION AND AFTER**	**50**			
UNIT-I	Historiography of Indian Nationalism--Economic context of anti-colonial resistance –Tribal and Agrarian protests – The 1857 Revolt and foundation of the Congress.		**GOBINDA PRASAD KAR**		
UNIT-II	Organized politics and anti-colonial resistance – Congress and the educated social groups – Mass movements since 1905 and up to 1940s.		**GOBINDA PRASAD KAR**		
UNIT-III	The aftermath of Partition – evolution of the constitution – integration of the princely states– linguistic reorganization of the states multiculturism		**UTTAM DAS**		

	and plurilingual traditions as reflected in literature theatre, art and cinema – sports : the making of a nation.				
UNIT-IV	Post–independence nation building – Multicultural nature of Indian polity – Planning and development policy.		**UTTAM DAS**		
UNITS	**PAPER: 404** :HISTORY OF CONSTITUTIONAL DEVELOPMENT IN MODERN INDIA	**50**	**GOBINDA PRASAD KAR**		
UNIT-I	Brief outline of the East India Company – East India Company and the Dual System in Bengal – Constitutional development during company's rule: era of centralization of power – The Regulation Act of 1773, Pitts Acts of 1784 and the Charter Acts of 1793, 1813, and 1833.		**GOBINDA PRASAD KAR**		
UNIT-II	Evolution of representative governance: Queen's Proclamation – Government of India Act of 1858 – Indian Council Act of 1861 – Local Self Government: proposal of Mayo and Ripon and introduction of Local Self-Government (1864-1882) – Indian Council Act of 1892 – Administrative policy under Lord Curzon – The Indian Council Act of 1909.		**GOBINDA PRASAD KAR**		
UNIT-III	Making responsive governance: Montague Declaration (1917) and Montford Reforms (1919): main provisions, working of diarchy in provinces – Simon Commission – Nehru Report: its salient features – Jinnah's fourteen Points – The round table conference – Communal Award, Poona Pact – The Government of India Act of 1935: its main provisions – Elections in 1937.		**GOBINDA PRASAD KAR**		
UNIT-IV	Towards freedom: August Offer of 1940, Cripps Mission of 1942, C. R. Formula, Wavell's Plan of 1945, Cabinet Mission Plan of		**GOBINDA PRASAD KAR**		

	1946 – Formation of the Constituent Assembly: its debates and deliberations – Attlee's declaration of 1947 – Mountbatten's Plan, mechanisms on the Partition and debates on federation States – The Indian Independence Act of 1947 – Promulgation of the Constitution – Public services in India (1858-1947) – Growth of central legislature in India – Growth of provincial legislature in India – Framing of the new Constitution of the Republic of India – Nature of the Indian Constitution – Salient features of Indian Constitution				
UNITS	**PAPER: 405E**:WOMEN AND SOCIETY IN INDIAN HISTORY	**50**	**UTTAM DAS**		
UNIT-I	Understanding Women's History, Feminism and Gender History: Concepts, Theories and Issues; Gender: Social construction of Sexuality, Understanding Gender through Class, Caste, Race, and Community; Masculinity, Femininity, Patriarchy: Ideologies and Practices.		**UTTAM DAS**		
UNIT-II	Women in pre-colonial India: Archaeology and pre-historic society; Women in the Indus Valley Civilisation; Women's Position in Vedic Society; Buddhism and Jainism; Status of Women in Medieval India: Purdah and Seclusion; Concubinage and Slavery; Gender Division of Labour in Mughal India; Engels and the Origin of Women Oppression.		**UTTAM DAS**		
UNIT-III	Women in Colonial India: Social Reform Movements and Women's Issues; Women's Education; Women in Indian National Movement; Gandhian Nationalism and Women; Women's Organisations.		**UTTAM DAS**		
UNIT-IV	Women in post-colonial India: Tribal and Dalit Issues; Contemporary Issues and Problems: Divorce, Dowry, Violence, Rape; Women's		**UTTAM DAS**		

	Movement in India; Women and Rural Development; Policy on Gender Equality and Women's Empowerment; Issues on Women's Health.				
Teaching Plan: Department of History: SEMESTER-I(HONOURS)					
UNITS	**PAPER: CC1 Greek and Roman Historians**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING** **01.10.2021 To 24.02.2022**	**REMARKS**
UNIT-I	**Greek Historiography** **Module I:New form of inquiry (historia) in Greece in the sixth century BCE** 1.1 Logographers in ancient Greece. 1.2 Hecataeus of Miletus, the most important predecessor of Heredotus 1.3 Charon of Lampsacus 1.4 Xanthus of Lydia	60	Gangadhar Maikap		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	Module II **Herodotus and his Histories** 2.1 A traveller's romance? 2.2 Herodotus' method of history writing – his catholic inclusiveness		Kalipada Giri		

	2.3 Herodotus' originality as a historian – focus on the struggle between the East and the West				
	Module III **Thucydides: the founder of scientific history writing** 3.1 A historiography on Thucydides 3.2 History of the Peloponnesian War - a product of rigorous inquiry and examination 3.3 Thucydides' interpretive ability – his ideas of morality, Athenian imperialism, culture and democratic institutions 3.4 Description of plague in a symbolic way – assessment of the demagogues 3.5 A comparative study of the two greatest Greek historians		Kabita Bhattacharya		
UNIT-II	**Roman Historiography** **Module I** Development of Roman historiographical tradition 1.1 Quintus Fabius Pictor of late third century BCE and the "Graeci annals" – Rome's early history in Greek.		Kalipada Giri		

	1.2 Marcus Porcius Cato (234 – 149 BCE) and the first Roman history in Latin – influence of Greek historiography 1.3 Marcus Tullius Cicero and the speculation on the theory of history – distinguishing history from poetry – the genre of moral historiography at Rome				
	Module II **Imperial historians** 2.1 Livy and the History of Rome – a work on enormous scale - Livy's style of writing: honest but uncritical - Livy's comprehensive treatment: details of Roman religion and Roman law 2.2 Tacitus' history of the Roman empire - the greatest achievement of Roman historiography ? His moral and political judgements on the past -- a "philosophical historian"?		Kabita Bhattacharya		
	Module III **Historical methods in ancient Rome**		Sanatan Das		

	3.1 Research and accuracy 3.2 Literary artistry 3.3 The use of dramatic elements				
UNITS	**CC-2**: **Early Historic India (proto history to 6th century B.C)**	60			
UNIT-I	**Module- I** **Understanding early India** 1.1 : Historical theories and interpretations about the Indian past 1.2 The idea of Bharatavarsha: Indian subcontinent with all its diversity and cultural traditions 1.3 An overview of literary and archaeological sources **Module-II** **Neolithic to Chalcolithic settlements** 2.1 The earliest village farming community in India—transition from pastoral life to the practice of agriculture: Mehrgarh and its various cultural phases 2.2 The first urbanization in the Indian subcontinent—Indus civilization: contemporary perspectives through a historiography		Gobinda Prasad Kar		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022

	2.3 The early Harappan, Harappan and late Harappan phases: technology, architecture, religion and maritime trade. 2.4 End/transformation of the Indus civilization: different theories.				
	Module-III **The Aryans in India: Vedic Age** 3.1 The historiography of the concept Aryan 3.2 The spread of Aryan settlements in India 3.3 The period of the Vedas, Brahmanas and Upanishads: pastoralism, agriculture and other occupations 3.4 Political development, culture and rituals **Module-IV** **North India in sixth century BCE** 4.1 Establishment of kingdoms, oligarchies and chiefdoms: sixteen Mahajanapadas 4.2 The autonomous clans 4.3 Rise of Magadhan imperialism		Uttam Das		

UNIT-II	**Module I** **Ideas and institutions in early India** 1.1 Varna and Jati: the issue of upward mobility among the Shudras 1.2 Slavery: ancient forms and modern debates 1.3 Untouchables 1.4 Women 1.5 Forms of marriage				
	Module II **Cults, doctrines and metaphysics** 2.1 The religion of the Vedas 2.2 The unorthodox sects – Buddhism, Jainism and the doctrine of the Ajivikas 2.3 Scepticism and materialism		Kalipada Giri		
	Module III **Aspects of economy in the age of Buddha** 3.1 Economic changes: use iron, rural economy, trade and crafts, guilds 3.2 Taxation 3.3 The second urbanization		Gangadhar Maikap		

	Module IV **The cultural milieu** 4.1 Education 4.2 Language and literature 4.3 Science and technology		Sanatan Das		
UNITS	**PAPER: GE-1: Theories of the Modern State**	60			
	1. The State Definitions and Elementary Concepts – Sovereignty and autonomy – state and the community – the nation state 2. The Absolutist State: Bodin, Hobbes and Hegel: the state, class and civil society 3. The Liberal State – the state, individualism and citizenship – the constitutional and the contractual state: John Locke – liberalism and the democratic order: Rousseau and the General Will		Kalipada Gir Kabita Bhattacharya Gangadhar Maikap		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022

	4. The Liberal State – the utilitarian version: Bentham and John Stuart Mill – John Mill and democracy: the tyranny of the majority 5. The state and class Marxist perspective – the problem of Bonapartism – Max Weber and the bureaucratic order 6. The ideological basis of the Welfare State and its comparison with Communism – John Rawls and the theory of justice		Sanatan Das Uttam Das Gobinda Prasad Kar		
Teaching Plan: Department of History: SEMESTER-II(HONOURS)					
		FULL MARKS	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**REMARKS**
UNITS	**CC-3:Mauryan and Gupta Empire**	60		01.04.2022 To 09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination
	I.Empire Building in India- Mahajanapadas to Kingdom II. Formation of Mauryan Empire – Polity, Economy, Socio-Cultural Aspects, Downfall		Gobinda Prasad Kar Gangadhar Maikap		

	III. Post Mauryan Empire – Sungas & Kanvas, the Indo Greeks, Kushanas &Satavahanas IV. Imperial Guptas – Classical Age, Polity, Economy, Socio-Cultural Aspects, Downfall		Sanatan Das Kalipada Giri		on 2nd week of July,2022
UNITS	**PAPER: CC4 Political History of Early Medieval India (600 AD to 1200 AD)**	60			1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
UNIT-1	**Module I** **Understanding the 'early medieval' phase in the Indian history** 1.1 Different perceptions on the early medieval situations 1.2 Literary and archaeological sources 1.3 Development of regional cultures: an overview		Kabita Bhattacharya		
	Module II **Shift of political power from Pataliputra to Kanauj** 2.1 Gauda under Sasanka: the most formidable power in eastern India 2.2 The Gauda-Kanyakubja struggle and the emergence of Harshavardhana		Gangadhar Maikap		

	2.3 Military and political supremacy of Kanauj **Module III** **An overview of politics in the Deccan and south India** 3.1 The Chalukyas of Badami 3.2 Chalukya-Pallava struggle 3.3 Rashtrakuta- Pratihara rivalry 3.4 Rise of the Cholas as the premier power of the south				
	Module IV **Eastern India** 4.1 The Palas and the tripartite struggle 4.2 Expansion of Pala power towards paramountcy 4.3 The Senas of Bengal		Kalipada Giri		
UNIT-II	**Module I** **Political processes and structure of polity** 1.1 Absence of vast territorial empires -- a 'dark period'? 1.2 Emergence of feudal polity -- nature and structure of Indian feudalism 1.3 Zenith of political feudalism: 1000 - 1200 CE 1.4 The concept of segmentary state and the Indian experience		Uttam Das		

	Module II **The urban scenario** 2.1 Debates on the decay of urban centres 2.2 A third phase of urbanization?				
	Module III **Administrative structures** 3.1 The Chola experiment -- a centralised state? 3.2 Land revenue system 3.3 Military organisation and administration of justice **Module IV** **Towards transition** 4.1 Conditions in India during the pre-Sultanate period 4.2 An overview of the cultural scenario		Sanatan Das		
UNITS	**PAPER: GE-2 Science and Empire**	60			
	1. History and Development of Science under the Colonial Empire- Perspectives and Recent Historical Debates/ Discourse/ Trajectories.		Kalipada Giri Gangadhar Maikap		1st internal examination on 2nd week of May, 2022

	2. Science and Colonial Empire: Concepts and Contours-Different Colonial Experiments in India-Fundamental Research in Science in India. 3. Colonial Science: Indian and Western Interaction-Role of Institutions in Promoting Scientific Knowledge (Botanical Garden, Medical Colleges, Calcutta School of Tropical Medicine, Bose Institute, Indian Institute of Science etc.) 4. Science and Empire-Indian Responses and Resistance-Ideas of Mahatma Gandhi and Jawaharlal Nehru. 5. Scientific Activities under the Empire-Social, Political and Cultural Implication and Historical Debates.		Sanatan Das Uttam Das Kabita Bhattacharya		and 2nd internal examination on 2nd week of July,2022
Teaching Plan: Department of History: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC5 Delhi Sultanate**	60		01.10.2021 To 05.02. 2022	**4th week of November,**

	I. Interpreting the Delhi Sultanate – A Survey of Sources: literary and archaeological. II. Foundation, Consolidation and Challenges to the Delhi Sultanate (a) The State in the Thirteenth & Fourteenth Century – The Mameluks, Khaljis and Tughlaqs – Theories of Kingship – Ruling Elites, Ulama& the Political Authority (b) Mongol Threat –Timur's Invasion (c) Revival and Disintegration – Foundation of the Mughal Rule III. Emergence of Regional States: Vijayanagara, Bahmani Kingdom, Bengal		Kabita Bhattacharya		**2021 &1st Week of January,2022**
	IV.Society and Economy – Iqta System, Agricultural Production, Technology, Monetization, market, growth of urban centres; trade and commerce; Indian Ocean trade		Sanatan Das		
	V. Religion, Society and Culture a) Sufism – silsilas, doctrines and practice – Socio-cultural impact b) Bhakti movements in south and north India – Kabir, Nanak and Sant tradition		Gobinda Prasad Kar		

	c) Art, architecture and literature – Consolidation of regional identities.				
UNITS	**PAPER: CC6 The Feudal Society**	60			
	1. **Muhammad and Charlemagne**: Islam and the Holy Roman Empire—coronation of Charlemagne—Frankish institutions—the Carolingian Renaissance—treaty of Verdun—dissolution of the Carolingian Empire—the Saxon Empire. (7 lectures) 2. **Europe besieged**: invasions of Norsemen, Magyars, Arabs and Saracens. (3 lectures)		Gangadhar Maikap		
	3. **Feudal Society and Economy (c.800—c.1100)**: Feudalism—origin and features; manorialism—chivalry and romanticism—emergence of towns—trade and commerce—guilds. (8 lectures) 4. **Emergence of National Kingship**: Germany and Hohenstaufens—France under		Sanatan Das		

	Valois. (4 lectures)				
	5. **Religion and Culture**: Cluniac Reforms—Investiture Contest—Monasticism— popular religion and heresy—Crusades—the order of 'Warrior Monks': the Knights Templar, the Knights Hospitallers and the Teutonic Knights— Schoolmen—Universities—Twelfth-century Renaissance. (8 lectures)		Gangadhar Maikap		
UNITS	**PAPER: CC7 Akbar and the Making of Mughal India**	60			
	I. Sources and Historiography- Persian chronicles and tradition of history writing		Sanatan Das		
	II. Establishment of Mughal Rule in India		Uttam Das		
	III. Formation of Imperial authority & Consolidation under Akbar-Campaigns and Conquests: tactics and technology-Evolution of administrative institutions: zabt, mansab, jagir, madad-i-maash-Revolts and resistance IV. Expansion and integration- Incorporation of Rajputs and other indigenous groups in		Kalipada Giri		

	Mughal nobility- North-West frontier, Gujarat, Deccan and Bengal				
	V. Rural Society and Economy- Land rights and land revenue, zamindars and peasants- Agricultural production; crop patterns- Trade routes, overseas trade; Rise of Surat VI. Religion and Culture- Religious tolerance and Sulh-i-kul, Din-i-ilahi, Sufi mystical and intellectual interventions-Development of Mughal painting and architecture		Uttam Das Gobinda Prasad Kar		
UNITS	**PAPER: SEC-1 Literature and History: Bengal**	40			
	1. History and Literature : An Overview 2. Dichotomy between *Itihasa* and History- sense of *itihasa*in pre-colonial period as part of literature. Concept of 'mythic time' and 'historical time'. Beginning of historywriting in Bengal. Elements of literature in it.		Uttam Das		
	3. Novel as a new literary genre – looking at past through literature. Ramesh Chandra Majumdar, Akshay Kumar Maitreya, Raman Pillai, ChanduMenon, PhakirmohanSenapati.		Sanatan Das		

	4. Power and Patriotism: Bankim's Nationalism:BandeMataram, Anandamath Tagore's Nationalism and Universalism: His Novels: GhareBaire and Char Adhyay		Kabita Bhattacharya		
	5. Narratives of Suffering - Economic and Caste discrimination: Tarashankar and the Social milieu in the pre Independent Bengal with special reference to Ganadevata and Hansuli Banker Uakatha 6. SatinathBhaduri& the Gandhian Movement:DhoraiCharitManas.		Uttam Das Gobinda Prasad Kar		
UNITS	**PAPER: GE-3 Some Perspectives on Women's Rights in India**	60			
	I. Definition of Human Rights Human Rights and Women, a survey of the Charter Interrogating Human Rights vis-à-vis personal laws in India UN Convention and Indian Context **II. Indian Constitution and Women's Rights** Fundamental Rights and Women Directive Principles and Women Major legal cases defending women's rights vis-à-vis the Constitution		GOBINDA PRASAD KAR		

	III. Preventive Acts Minimum Wage Act 1948, Family Courts Act 1986, PNDT Act 1994, Latest Measures		KABITA BHATTACHARYA		
	IV. Issues of Violence against Women and Remedial Measures Domestic Violence Act, Prevention of Sexual Harassment at Workplace Practical application and Problems, Remedial Measures		KALIPADA GIRI		
	V. Role of Non-Government Institutions Non-Government Organizations and Human Rights Women and Non-Government Organizations – Participations **VI. Present Status** Issues of enabling and empowering modalities – Debate on uniform civil code		GANGADHAR MAIKAP SANATAN DAS		

Teaching Plan: Department of History: SEMESTER-IV(HONOURS)

UNITS	**PAPER: CC:8 Renaissance and Reformation**	60		15.03.2022 To 25.06.2022	**4th week of April,2022**

	1. Political and social background – political system in early modern Europe – collapse of feudalism – and the changing economic life in the 15th and 16th century – commerce and navigation – monarchies and city states – features of the early modern state – the printing revolution.		UTTAM DAS		**&3rd week of June,2022**
	2. Italian city states, the merchants, the church and the social context of the renaissance – origins of humanism – rediscovery of the classes – the impact of humanism on art, education and political thought – Machiavelli and the idea of a modern state		GANGADHAR MAIKAP		
	3. The background to the reformation – intellectual and popular anti-clericalism – Martin Luther and the reformation – reformation in the national context: France, Switzerland and England – the distinctiveness of the English reformation – Radical reformation – the Anabaptists, etc. - counter reformation. 4. Renaissance science and the emergence of a secular culture		KABITA BHATTACHARYA		

UNITS	**PAPER: CC9: The French Revolution & Napoleon Bonaparte**	60			
	I. Historiography of the French Revolution		KALIPADA GIRI		
	II. Crisis of the Ancien Regime		GOBINDA PRASAD KAR		
	III. Intellectual impetus IV. Socio-economic background V. Phases of the French Revolution – 1788-99		GANGADHAR MAIKAP		
	VI. Rise of Napoleon – Empire building & consolidation VII. Impact of the French Revolution and Napoleon Bonaparte outside France VIII. Fall of Napoleon & Restoration of old order – Vienna Congress (1815)& Metternich		KALIPADA GIRI		
UNITS	**PAPER: CC10: 19th Century Revolutions in Europe**	60			
	I. The Greek War of Independence, the Revolutions of 1830, the Revolutions of 1848 – A possible turning point?		SANATAN DAS		
	II. The Age of Nationalism: The Second Empire in France and Louis Napoleon;		KALIPADA GIRI		

	Unification of Italy and Germany; The Third Republic and the Paris Commune				
	III. Russia—Tsarist autocracy and reforms, the emergence of the revolutionary movement; the Eastern Question—the Crimean War, the Treaty of Paris, Balkan nationalism. IV. Society and Economy in Nineteenth Century Europe: industrial transformation in Britain; difference in industrialisation process between England and the Continental powers – France, Germany and Russia – the emergence of the working class and its movements – The impact of ideology: Louis Blanc,		SANATAN DAS		
	V. Nationalism in Eastern and South Western Europe: Czech, Hungarian and Serbian		KABITA BHATTACHARYA		
UNITS	**PAPER: SEC-2 The Making of Indian Foreign Policy**	40			
	1. Historical Factors in India's foreign policy priorities – pan Asianism		GOBINDA PRASAD KAR		
	2. The State India and the Third World – Non-alignment – Regional Cooperation		KALIPADA GIRI		
	3. India and South Asia: Relationship with the Neighbours		KABITA BHATTACHARYA		

	4. India and the Great Powers – (a) United States (b) Soviet Union (c) China 5. India and Globalisation – Economic Diplomacy – The Look East Policy and the European Union 6. India's Nuclear Policy		UTTAM DAS SANATAN DAS GANGADHAR MAIKAP		
UNITS	**PAPER: GE-4 History of Indian Journalism**	60			
	I. History of Indian Journalism: Colonial & Post Colonial Period		KALIPADA GIRI		
	II. Pre-colonial History of written records & modalities of Dissemination		GANGADHAR MAIKAP		
	III. Advent of Print media: Imperialist Ideologies		SANATAN DAS		
	IV. Nationalism & Print Culture: Selective study of prominent newspapers: Tribune, Amrita Bazar Patrika, and Hindustan Times V. Writing & Reporting Experiences		UTTAM DAS KABITA BHATTACHARYA		

Teaching Plan: Department of History: SEMESTER-V(HONOURS)

UNITS	**PAPER: CC11: Select Themes in the Colonial Impact on Indian Economy and** **Society**	60		14.09. 2021 To 18.01. 2022	**1st week of November, 2021 &4th week of December, 2021**
	1. Colonial State institutions and ideologies: Colonial Economic interests, Company's Commerce, Mercantilism to Free trade, Deindustrialisation and Drain of Wealth.		UTTAM DAS		
	2. Land Settlements and agricultural change— Commercialisation of Agriculture. 3. Modern Industrialisation —- Long term Constraints		KALIPADA GIRI		
	4. Census and Caste — Colonial ethnology — Sanskritisation, Westernisation and Social reform— Brahma Samaj & Parthana Samaj		UTTAM DAS		
	5. Reformism and Revivalism:The Aryadharma and Ramkrishna Vivekananda Movement. 6. Islamic reform in India: The Reformers and the Orthodox		GANGADHAR MAIKAP KALIPADA GIRI		
UNITS	**PAPER: CC12: Peasant and Tribal Uprisings in Colonial India in the 19** **Century**	60			

	1. The early colonial rule and revenue operations, revenue demands and settlements – "restorative rebellions" – peasant –landlord combination against colonial rule in north and south India; 2. Peasant movements in Bengal and Malabar – religious appeal for the liberation of a region or an ethnic group under a new form of government. .		SANATAN DAS		
	3. Tribal movements in pre-1857 western and eastern India – Ho, Tamar, (1820-1832), Kol and Bhumij (1825-1835) revolts , Kherwar movement of the Santals (1833), Santhal Revolt (1855), Bhil revolt (1819-1840), Kolis (1824-1848), Khasis (1829-30), Koyas (1840-1858), Konds (1846-1855)		GOBINDA PRASAD KAR		
	4. Tribal movements – Nalkdas of Panch Mahal (1858-59), (Bokta risings of 1858-95, millenarian movement of the Mundas (1895-1900), Kuch Nagas of Kachhar (1882),		KALIPADA GIRI		
	5. Peasant movements in late 19th century – conflict between landlords and tenants –		UTTAM DAS		

	resistance to taxation – emergence of substantial peasantry – the role of moneylenders and struggle against them. 6. The revolutionary potential of Indian peasantry – Barrington Moore Jr. and Eric Stokes - Classification of types of revolt and movements – Kathleen Gough, AR Desai, DN Dhanagare and Ranajit Guha.				
UNITS	**PAPER: DSE-1 Modern Transformation of China (1839-1949)**	60			
	1. **Pre-colonial China**: Structure of the traditional Chinese society; Taoism, Confucius, the peasantry and the gentry; State and bureaucracy, economic structure. 2. **Foreign Contact and Anglo-Chinese Relations:** The Tribute System; the Canton Trade and its collapse; Background and Impact of First and Second Anglo-Chinese Wars (Opium Wars), 'Open Door' policy . 3. **Rebellion and Restoration**: Taiping rebellion—background and causes, nature, failure;		GANGADHAR MAIKAP		

	Tung-chih Restoration and the Self-strengthening Movement – causes, feature and Impact 4. **Movements**, **Reform and Restoration in China**: The Reform Movement of 1898; Boxer Rebellion—causes, nature and failure; Chinese Revolution of 1911—role of Dr. Sun Yat-sen; Yuan Shih-Kai and Warlordism; May 4th Movement; the rise of the Kuo- Min Tang Party; the First United Front; Chiang Kai-shek; financial imperialism in China. 5. **Formation of Communist Republics in China**: Foundation of the Communist Party; Mao Tse-Tung and the making of the Red Army; the Second United Front; Long March and the Yenan experiment; the Chinese Revolution (1949)—ideology, causes and significance; the establishment of the People's Republic of China.				
UNITS	**PAPER: DSE-2 Modern Transformation of Japan**	60			

	1**. Pre-Meiji Japan**: Tokugawa Shogunate—the feudal society and the government, economic condition; encounter with the West; the Perry Mission; the opening up of Japan to the West; the crisis and fall of the Shogunate . 1. **Meiji Restoration**: Causes, Nature; Process of modernization—social, economic, political and military reforms; Meiji Constitution; rise of political parties. 3. **Popular and Democratic Movements**: Satsuma Rebellion and Popular Rights Movement. (3 lectures) 4. **Emergence of Japan as an Imperial Power**: Sino-Japanese War (1894-'95); Anglo- Japanese Alliance; the Russo-Japanese War . 5. **Japan through the two World Wars**: Japan and World War I; Twenty-One Demands; Washington Conference; Manchurian Crisis—the role of the League of		KABITA BHATTACHARYA		

	Nations; the failure of the democratic system; the rise of militarism in the 1930s and 1940s; Japan and World War II – from Pearl Harbour to Hiroshima-Nagasaki.				
Teaching Plan: Department of History: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13: International Relations after the Second World War**			21.02.2022 To 10.06.2022	**1st week of April,2022**
	Unit I: **Nurnberg Trials, Germany 1945 – 46** Ruins of Europe and Japan; Charter of the United Nations at San Francisco Conference, 1945; Peace Settlement after the Second World War; Beginning of the Cold War: 1947		UTTAM DAS		**& 1st week of June,2022**
	Unit II **Conflict between Superpowers** USA and Soviet Union; Soviet Communism and the Russian leader Joseph Stalin; Soviet Union and Europe in Cold War 1945 – 1953; Military and Defense Alliances and Peace Pacts –Berlin after 1945- Fall of the Berlin Wall & German Re-Unification----European Coal and		SANATAN DAS		

	Steel Community (ECSC); European Economic Community & European Atomic Energy Committee (Euratom)				
	UNIT –III **Decolonization and the emergence of the Third world** National Movements in Asia & Africa---Third World Organizations-OPEC, ASEAN, SAARC; West Asian Crisis--- Palestine Problem; Suez Crisis, Iran- Iraq conflicts, Gulf War ; Arab- Israel wars- activities of the PLO, Afghan Problem		GANGADHAR MAIKAP		
	Unit IV **Disintegration and Decline of the Soviet Union** Glasnost and Perestroika – Crisis of Socialist regimes in other East European Countries: Poland, Germany, Czechoslovakia, Hungary – Response of the USA; Rise of a Unipolar World system, Globalization ---: Progress and development in science and technology--- Civil Rights Movement; Apartheid in South Africa-- Terrorism Downloaded		KALIPADA GIRI		
UNITS	**PAPER: CC14: Modern Nationalism in India**	60			

	1. Emergence of Nationalism in India and its historiography		UTTAM DAS		
	2. Anti-partition movement in 1905.		KALIPADA GIRI		
	3. Gandhian Mass Movements— Non cooperation, Civil Disobedience , Quit India, Movement.		GOBINDA PRASAD KAR		
	4. Roots of Communalism and Communal Award 5. Demand for Pakistan : Pakistan Movement from Cripps Mission to Cabinet Mission Plan. 6. Partition and its Aftermath		KABITA BHATTACHARYA SANATAN DAS KABITA BHATTACHARYA		
UNITS	**DSE -3 War and Diplomacy, 1914-1945**	60			
	Unit I **Module I** **Through war to peace 1914 - 1920** 1.1 The condition of Europe in 1914 1.2 The First World War: issues and stakes - appraisals and reappraisals		GOBINDA PRASAD KAR		

	1.3 The dynamics of the war: Wilson's Fourteen Points 1.4 The Versailles Settlement of 1919: context, provisions and evaluation 1.5 Other treaties 1.6 Aftermath of the war				
	Module II **Revolution and transformation in Russia** 2.1 War- time politics in Russia 2.2 The provisional government under Kerensky 2.3 The Bolshevik Revolution: Lenin and Trotsky 2.4 The new Soviet Order 2.5 From Lenin to Stalin 2.6 Soviet foreign policy 1917-1939		KALIPADA GIRI		
	Module III **The inter-war period** 3.1 The new balance of power 3.2 League of Nations 3.3 Draft Treaty of Mutual Assistance, 1923 3.4 Geneva Protocol, 1924		GANGADHAR MAIKAP		

	3.5 Locarno Treaties, 1925 3.6 Pact of Paris, 1928				
	Unit II **Module I** **Road to another global war** 1.1 Economic depression, 1929-32: prelude to the Second World War 1.2 Rise of dictatorship in Germany and Italy - a study in tyranny 1.3 Spain on fire: the Civil War, 1936-39 1.4 Diplomatic moves: the Nazi-Soviet Nonaggression Pact and the Rome-Berlin-Tokyo Axis **Module II** **The gathering storm** 2.1 A historiography of the Second World War 2.2 Hitler's foreign policy and origins of the war 2.3 With the Old Breed: from the Pacific Theatre to the Eastern and Western fronts 2.3 Reappraisal of the concept of appeasement		SANATAN DAS KABITA BHATTACHRYA		

	Module III **Wartime politics in Europe** 3.1 Coming of the Grand Alliance and conferences at Tehran, Yalta and Potsdam 3.2 The Lend-Lease policy of the United States 3.3 The allied victory and the collapse of wartime alliance		UTTAM DAS		
UNITS	**PAPER: DSE-4 Environmental History of India (Early India and Medieval Period)**	60			
	Unit-I a) Environmental history—Definition, Varieties and Sources b) India's Ecological Profile-Varied and Vast Landscape		GOBINDA PRASAD KAR		
	Unit-II a) Social Uses of Natural Resources b) Resources- Renewable and Non-renewable Resources c) Mode of Resource Use in Gathering, Nomadic, Pastoralism, Agriculture and Industrial Mode		GOBINDA PRASAD KAR		

	Unit-III a) Eclectic Belief Systems – Sacred Groves – Conservation from Above – Conservation from Below b) Indus Valley Civilization – Climatic factors for its rise and decline c) Agricultural Expansion and Deforestation in the Gangetic Valley d) Changing Perception of Forests in Early India				
	Unit-IV a) Expansions of Agrarian Frontiers, establishment of new settlements and trade networks in hilly, jungle and marshland regions during medieval period b) Changing Human Relations with animals-royal hunts c) Forest Dwellers and the pastoral communities in the medieval period		GOBINDA PRASAD KAR		

Teaching Plan: Department of History: SEMESTER-I(GENERAL)

UNITS	**PAPER: DSC-1A/2A: (CC-1): Ancient India**	60		01.10.2021 To 24.02.2022	
	1. Harappan Civilisation: Features & Town Planning, Decline		KABITA BHATTACHRYA		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	2. Vedic Age: Corpus of Vedic Literature, Society, Economy and Polity in Early & Later Vedic Period		UTTAM DAS		
	3. State Formation in Early India: Mahajanapadas		GOBINDA PRASAD KAR		
	4. Mauryan Empire: Chandragupta Maurya to Asoka: Polity, Administration, Society, Culture and Mauryan decline 5. Gupta Empire: Chandragupta I to Skandagupta: Polity, Administration, Society, Culture and Downfall 6. India after the Guptas		GANGADHAR MAIKAP KALIPADA GIRI SANATAN DAS		

Teaching Plan: Department of History: SEMESTER-II(GENERAL)

UNITS	**PAPER: DSC-1B/2B: Medieval India**	60		01.04. 2022 To 09.07. 2022	1st internal examination on 2nd week of May, 2022 and 2nd
	1. Arab Conquest of Sindh: Nature and Impact		SANATAN DAS		
	2. Causes and Consequences of Early Turkish invasion		KABITA BHATTACHRYA		

	3. MahmudofGhazni and Shihab-ud-din of Ghur 4. Establishment and consolidation of the Sultanate: Qutb-ud-din AibaktoFiruz Shah Tughluqs, polity, economy, culture				internal examination on 2nd week of July,2022
	5. Emergence of regional powers: Vijaynagar and Bahamani Kingdoms, HussainShahi and IlliyasShahi Dynasties		GANGADHAR MAIKAP		
	6. Mughal Imperialism: Establishment and consolidation - Greater Mughals; Polity, economy, culture 7. Socio-cultural syncretism, Bhakti & Sufi movements		KALIPADA GIRI		
Teaching Plan: Department of History: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C Select themes in the Colonial impact on Indian Economy and Society**	60		01.10.2021 To 05.02.2022	**4th week of November, 2021 &1st Week of January,2022**
	1. Colonial State institutions and ideologies: Colonial Economic interests, Company's Commerce, Mercantilism to Free trade, Deindustrialisation and Drain of Wealth.		UTTAM DAS		
	2. Land Settlements and agricultural change— Commercialization of Agriculture.		KALIPADA GIRI		

	3. Modern Industrialisation— Long term Constraints		GANGADHAR MAIKAP		
	4. Census and Caste— Colonial ethnology— Sanskritisation, Westernisation and Social Reform - Young Bengal, Brahma Samaj&PrarthanaSamaj 5. Reformism and Revivalism: The Aryadharma and RamkrishnaVivekananda Movement . 6. Islamic reform in India : The Reformers and the Orthodox.		KABITA BHATTACHARYA SANATAN DAS KABITA BHATTACHARYA		
UNITS	**PAPER: SEC-1: The Making of Indian Foreign Policy**	40			
	1. Historical Factors in India's foreign policy priorities –pan Asianism 2. The State India and the Third World –Non-alignment –Regional Cooperation 3. India and South Asia: Relationship with the Neighbours		GOBINDA PRASAD KAR		
	4. India and the Great Powers –(a) United States (b) Soviet Union (c) China		UTTAM DAS		
	5. India and Globalisation–Economic Diplomacy –The Look East Policy and the European Union		GANAGADHAR MAIKAP		

	6. India's Nuclear Policy		UTTAM DAS		
Teaching Plan: Department of History: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D Modern Nationalism in India**	60		15.03.2022 To 25.06.2022	**4th week of April,2022 &3rd week of June,2022**
	1. Emergence of Nationalism in India and its historiography.		UTTAM DAS		
	2. Economic Nationalism and Cultural Nationalism		UTTAM DAS		
	3. Rise of the Indian National Congress 4. Anti-partition movement in 1905- Concept of Swadeshi and atmashakti		GANGADHAR MAIKAP KALIPADA GIRI		
	5. Gandh's Rise to power; Gandhian Mass Movements—Non-cooperation,Civil Disobedience , Quit India Movement. 6. Roots of Communalism and Communal Award		GOBINDA PRASAD KAR		

	7. Demand for Pakistan : Pakistan Movement from Cripps Mission to Cabinet Mission Plan. 8. Partition and its Aftermath		KABITA BHATTACHARYA SANATAN DAS KALIPADA GIRI		
UNITS	**PAPER: SEC-2: Literature and History: Bengal**	40			
	1. History and Literature: An Overview **2.** Dichotomy between Itihasa and History- sense of itihasain pre-colonial period as part of literature. Concept of 'mythic time'and 'historical time'.Beginning of history-writing in Bengal.Elements of literature in it.		UTTAM DAS		
	3. Novel as a new literary genre –looking at past through literature. Ramesh Chandra Majumdar, Akshay Kumar Maitreya, Raman Pillai, ChanduMenon, Phakirmohan Senapati . **4.** Power and Patriotism: Bankim'sNationalism:BandeMataram, Anandamath Tagore's Nationalism and Universalism: His Novels: GhareBaire and Char Adhyay		SANATAN DAS KABITA BHATTACHARYA		
	5. Sarat Chandra Chattopadhyay and the Indian Women of Early 20th Century: Some reflections in the novels- Charitrahin and Pother Dabi; Difference of Perspective between Bankim and Tagore .		KALIPADA GIRI		

	6. Narratives of Suffering - Economic and Caste discrimination: Tarashankar and the Social milieu in the pre Independent Bengal with special reference to Ganadevata and Hansuli Banker Uakatha		UTTAM DAS		
	7. Satinath Bhaduri & the Gandhian Movement: Dhorai Charit Manas.		GANGADHAR MAIKAP		
Teaching Plan: Department of History: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A: Renaissance and Reformation**	60		14.09.2021 To 18.01.2022	**1st week of November, 2021 &4th week of December, 2021**
	1) Political and social background – political system in early modern Europe – collapse of feudalism – and the changing economic life in the 15th and 16th century – commerce and navigation – monarchies and city states –features of the early modern state –the printing revolution.		UTTAM DAS		
	2) Italian city states, the merchants, the church and the social context of the renaissance –origins of humanism – rediscovery of the classes –the impact of humanism on art, education and political thought –Machiavelli and the idea of a modern state		GANGADHAR MAIKAP		
	3) The background to the reformation –intellectual and popular anti-clericalism – Martin Luther and the reformation –reformation in the national context: France, Switzerland and England – the distinctiveness of the English reformation –Radical reformation – the Anabaptists, etc. - counter reformation		KABITA BHATTACHARYA		

	4) Renaissance science and the emergence of a secular culture		SANATAN DAS		
UNITS	**PAPER: SEC-3: Colonial Science in India: Institutions and Practices**	40			
	1: Science in Colonial India: Problems and Perspectives 2: Science and Colonial Explorations: Science and Orientalism-Early European Scientists: Surveyors, Botanists, Doctors under the East India Company Service		KALIPAD GIRI GANGADHAR MAIKAP		
	3: Science in Practice: Botanical Garden, Geological Survey of India, Medical College, and Indian Association for the Cultivation of Science.		SANATAN DAS		
	4: Science and Indigenous Personality: Prafulla Chandra Ray, Jagadish Bose, MahendraLal Sarkar, Maghnad Saha, C.V. Raman- Emergence of National Science		KABITA BHATTACHARYA		
	5: Colonial Science in India: Science and Indian Nationalism-Response and Resistance- Ideas of Mahatma Gandhi and other Indian Nationalists.		UTTAM DAS		
UNITS	**PAPER: GE-1: Theories of the Modern State**	60			
	1. The State Definitions and Elementary Concepts – Sovereignty and autonomy – state and the community – the nation state. 2. The Absolutist State: Bodin, Hobbes and Hegel: the state, class and civil society.		KALIPADA GIRI		

			KABITA BHATTACHARYA		
	3. The Liberal State – the state, individualism and citizenship – the constitutional and the contractual state: John Locke – liberalism and the democratic order: Rousseau and the General Will		GANGADHAR MAIKAP		
	4. The Liberal State – the utilitarian version: Bentham and John Stuart Mill – John Mill and democracy: the tyranny of the majority. 5. The state and class Marxist perspective – the problem of Bonapartism – Max Weber and the bureaucratic order.		SANATAN DAS UTTAM DAS		
Teaching Plan: Department of History: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B: Modern Europe**	60		21.02..2022 To 10.06.2022	**1st week of April,2022**
	1. French Revolution and Napoleon: Crisis of Ancient Regime: Socio-Political and Economic Condition, Intellectual Impetus: The Revolution in the making, Phases of the French Revolution: the Aristocratic Revolution, The rise of Napoleon Bonaparte: Napoleonic Empire and Europe, Fall of Napoleon: Continental System, Impact of Napoleon in Europe		SANATAN DAS ,KALIPADA GIRI		**& 1st week of June,2022**

	2. Restoration and reaction in Europe: Vienna Congress, Metternich Era.		GANGADHAR MAIKAP		
	3. Movements of National Aspirations: Unification of Italy, Unification of Germany, The Third Republic and the Paris Commune, The Eastern Question.		UTTAM DAS		
	4. Causes of the two World Wars		KABITA BHATTACHARYA		
UNITS	**PAPER: SEC-4: Art appreciation an introduction to Indian art**	40			
	I. Prehistoric and proto historic art: Rock art; Harappan arts and crafts **II. Indian art (c. 600 BCE – 600 CE):** World Heritage Site Managers, UNESCO World Heritage Manuals [can be downloaded/ accessed at www.unesco.org]. Notions of art and craft - Canons of Indian paintings - Major developments in stupa, cave, and temple art and architecture Early Indian sculpture: style and iconography - Numismatic art		KALIPADA GIRI GANGADHAR MAIKAP		
	III. Indian Art (c. 600 CE – 1200 CE) : Temple forms and their architectural features - Early illustrated manuscripts and mural painting traditions Early medieval sculpture: style and iconography - Indian bronzes or metal icons		KABITA BHATTACHARYA		
	IV. Indian art and architecture (c. 1200 CE – 1800 CE): Sultanate and Mughal architecture - Miniature painting traditions: Mughal, Rajasthani, Pahari Introduction to fort, palace and Haveli architecture		SANATAN DAS		
	V. Modern and Contemporary Indian art and Architecture:		KABITA BHATTACHARYA		

	The Colonial Period - Art movements: Bengal School of Art, Progressive Artists Group, etc. Major artists and their art works - Popular art forms (folk art traditions				
UNITS	**PAPER: GE-2: Gender & Education in India**	60			
	I. Historiographical Trends a. Pre-colonial historiographical trends in women's education b. colonial historiographical trends in women's education c. Post-colonial historiographical trends in women's education		KABITA BHATTACHARYA		
	II. Education in Early and Medieval Times a. Women's Education in Medieval times b. Regional trends of Women's education in pre-colonial India c. Instances of women's education, obstacles **III. Colonial Period** a. Socio-religious reforms b. Role of Christian missionaries in spreading female education, recent debates c. Indigenous initiatives at women's education		GANGADHAR MAIKAP UTTAM DAS		
	IV. Role of Schools and Colleges in colonial and post-colonial period a. Girls School and Colleges, development towards co-education b. Expansion of infrastructural facilities in education c. Technical and vocational education for women		UTTAM DAS		
	V. Contours of female literacy since 1950 a. Interrogating literacy for women b. Government policies and Schemes c. Disparities in Literacy: Region, Community, Social and Eco-factors **VI. Present Scenario** a. Education as a tool of Empowerment		SANATANDAS		

UNITS	PAPER: DSC-1A/2A :Introduction to Human Rights:jurisprudence,Norms,Standards and Mechanisams	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	
	A.Human Rights and duties :Jurisprudence **i)philosophical and historical foundation of human rights and duties** **ii)Theories of rights** **iii)concept and classifications of human rights and duties** **iv)Human Rights and duties** **a)co-relationship of rights and duties/responsibilities** **b)tensions between rights inter se,duties inter se and rights and duties** **v)Importance of internalizing human rights and duties:** **vi)Urgent need for not only sensitizing others of human rights and duties, but of practicing oneself those values: self-inculcation, endeavour to live up to those ideals – Duty to respect others ' rights, respect each other's human dignity.**	**CA- 15** **ESE- 60** **Total 75**	Padmabati Chowdhury	01.10.2021 TO 24.02.2022	

	B. International Human Right: norms, standards and mechanisms **i)Evolution of human rights and duties on the international plane** **ii) The United Nations Charter and the development of human rights Provisions of the Charter,** Universal Declaration of Human Rights 1948, International Covenant on Civil and Political Rights 1966 and International Covenant on Economic, Social and Cultural Rights 1966, and other major UN instrumentson human rights (Conventions on Racial Discrimination, Women's Rights,Rights of the Child, Torture)		Sonam maiti		

Teaching Plan: Department of Human Rights Education: SEMESTER-II(GENERAL)

UNITS	**PAPER: DSC-1B/2B:): Promotion of Human Rights and Humanitarian Law**	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
	A. United Nations for promotion of Human Rights and Regional Human Rights standards and mechanisms i) UN bodies involved in promotion of human rights - Economic and Social Council, UN Commission on	**CA-15**			1st internal examination on 2nd week of May,

	Human Rights and its sub-commissions on women, minorities, etc., General Assembly, Human Rights Committee and other committees under the various conventions, ILO, UNESCO, WHO, FAO. i) European Convention on the Protection of Human Rights 1950 and institutions ii) Latin American standards and mechanisms for protection of human rights iii) African standards and mechanisms for protection of human rights	**ESE-60** **Total 75**	Padmabati Chowdhury	01.04.2022TO 09.07.2022	2022 and 2nd internal examination on 2nd week of July,2022
	B. International Humanitarian Law i) Evolution of IHL since the mid-nineteenth century: IHL conventions 1864, 1899 1907, 1929, and 1949, 1977 Geneva Protocols II & I. ii) Basic principles: humanity, protection of civilians and civilian objects, humane treatment of prisoners and civilians under custody, prohibition of use of weapons and methods of warfare, causing superfluous injury and unnecessary suffering, prohibition of widespread, long-term and severe damage to natural environment. iii) Indian Geneva Conventions Act 1949: Indian Red Cross Society iv) The role of International Committee of Red Cross				
			Sonam maiti		

Teaching Plan: Department of Human Rights Education: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C:**): **Refugee Law and Specially Disadvantaged Sections of Society in India**	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	**4th week of November,2021 &1st Week of January,2022**
	A. International Refugee Law i) Problem of refugees and displaced persons through the ages ii) The United Nations and the refugee problem iii) Refugee Convention 1951, Protocol 1967, Convention on the Stateless Persons 1951 - The core issues of the 'right' to seek and receive asylum, right of nonrefoulement (non-return) iv) Role of UN High Commissioner for Refugees		Sonam maiti	01.10.2021 TO 05.02.2022	
	B.Human Rights of specially disadvantaged sections of society in India i)Scheduled Castes/Scheduled Tribes and Other Backward Classes ii)Minorities	**CA-15** **ESE-60** **Total 75**	Padmabati Chowdhury		

	iii)Women and Children iv)Disabled Individuals v)The Elderly, 'Aged', Aging and Human Rights				
UNITS	**PAPER:SEC-1::Development, International Trade and Human Rights** **Credit 02**	CA-10 ESE-40 Total-50	Sonam Maiti	01.10.2021 TO 05.02.2022	
	i) Right to development: Issues of international equity and justice, equitable sharing of sharable resources and common amenities, equitable access to benefits of science and technology				
	ii) Freedom of international trade, most-favoured nation treatment (equality of treatment) versus special treatment of the developing countries, access to international markets, equitable pricing of raw materials		Padmabati Chowdhury		

Teaching Plan: Department of Human Rights Education: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D: Emerging Dimensions of Human Rights and Evolution of theConcept of Human Rights and Duties in India**	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	**4th week of April,2022 &3rd week of June,2022**
	A. Emerging Dimensions of Human Rights i) National Sovereignty versus international enforcement' of human rights, International ii) Politics of human rights and selective application of international sanctions, unilateral use of coercion and implementation of human rights iii) Human rights, and science and technology iv) Human rights violations by non-state entities such as corporations, other business entities, terrorists and other armed groups, militant religious groups, professional groups (doctors, lawyers, etc.) v) New rights: right to a future and rights of future generations, rights to peace (and disarmament), rights to clean environment	**CA- 15** **ESE- 60** **Total 75**	Sonam Maiti	15.03.2022 to 25.06.2022	

	B. Evolution of the concept of Human Rights and duties in India i) Evolution of the composite culture of India, contribution of diverse religions ii) Concepts of human welfare, rights and duties, totality of the cosmology ofuniverse with human beings as its intrinsic part iii) Human rights and duties in contemporary India: Law, politics and society iv) Social movements of the 19th and 20th centuries, independence movement,Gandhi, Nehru, Ambedkar etc. v) Making of the Constitution		Padmabati Chowdhury		
UNITS	**PAPER: SEC-2: Societal Problems of Human Rights in India**			15.03.2022 to 25.06.2022	
	i) Core problems: poverty, illiteracy, unemployment, socio-cultural-religious practices resulting in grave human rights deprivations ii) Domestic Violence and Intimate Partner's violence iii) Corruption iv) Terrorism v) Labour welfare legislation in India	**CA-10** **ESE-40** **Total-50**	Padmabati Chowdhury		

	vi) Problems of bonded labour, exploitation of child labour, female labour and				
	vii) Unorganized labour viii) Communal and caste conflicts and tensions ix) Violence against women and children, both inside and outside homes x) Custodial violence		Sonam Maiti		
Teaching Plan: Department of Human Rights Education: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A:** : Human Rights and Duties in India: Normative Framework, Constitution andStatutory Mechanisms	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	**1st week of November, 2021 &4th week of December,2021**
	A. Normative framework of Human Rights and duties in India i) Constitutional perspective: Fundamental Rights, Directive Principles, Fundamental Duties, and their interrelationships ii) Statutory protection of human rights	**CA-15** **ESE- 60** **Total- 75**	Padmabati Chowdhury	14.09.2021 TO 18.01.2022	

	B. Enforcement of Human Rights: constitution and statutory mechanisms in India i) Legislature, executive, and judiciary ii) National Human Rights Commission, other commissions and committees iii) Social, economic, political and administrative problems of enforcement		Sonam Maiti		
UNITS	**PAPER: SEC-3:** : **Human Rights Education, Teaching and Training**				
	Human Rights Education, Tehran Conference 1968, Vienna Conference 1993, Role of the Central and State Governments in Promoting Human Rights Education;UNESCO and its role in Human Rights Education for Social Change; Human Rights Education in India and UN Decade for Human Rights Education (1995 -2004);	**CA-10** **ESE- 40** **Total- 50**	Padmabati Chowdhury	14.09.2021 TO 18.01.2022	
	Human Rights and Value Education, Role of Government and Non-Governmental Organisations; Human Rights Teaching at School, College and University Levels; Human Rights Education: The Legal Perspective; Research Priorities in Human Rights;Peace Keeping and Training of International Civil Servants. Mandela Law (The World as it could be)		Sonam Maiti		

UNITS	**PAPER: GE-1**: **Introduction to Human Rights: Jurisprudence, Norms, Standards and Mechanisms** **Credit 06** **Credit 06** **A. Human Rights and duties: Jurisprudence** i) Philosophical and historical foundation of human rights and duties ii) Theories of rights iii) Concept and classifications of human rights and duties iv) Human rights and duties (a) Correlationship of rights and duties/responsibilities (b) Tensions between rights inter se, duties inter se, and rights and duties v) Importance of internalizing human rights and duties: Urgent need for not only sensitizing others of human rights and duties, but of practicing oneself those values: self-inculcation, endeavour to live up to those ideals - Duty to respect others' rights, respect each other's human dignity		Padmabati Chowdhury	14.09.2021 TO 18.01.2022	

	A. International Human Rights: norms, standards and mechanisms vi) Evolution of human rights and duties on the international plane vii) The United Nations Charter and the development of human rights Provisions of the Charter, Universal Declaration of Human Rights 1948, International Covenant on Civil and Political Rights 1966 and International Covenant on Economic, Social and Cultural Rights 1966, and other major UN instrumentson human rights (Conventions on Racial Discrimination, Women's Rights, Rights of the Child, Torture)	**CA-15** **ESE-60** **Total -75**	Sonam Maiti		

Teaching Plan: Department of Human Rights Education: SEMESTER-VI(GENERAL)

UNITS	**PAPER: DSE:2 Human Rights Movements and Criminal Justice System in India**	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	**1st week of April,2022 & 1st week of June,2022**
	A. Human Rights movements in India i) National freedom movement ii) Social and political movements iii) Dalit movements iv) Women's movements v) Environmental movements		Padmabati Chowdhury	21.02.2022 TO 10.06.2022	

	B. Human Rights and criminal justice system in India Criminal justice system and protection of Human Rights : treatment of individualsin **i)** Situations of crime **ii)** Human rights of the accused **iii)** Legal aid **iv)** Police, criminal investigation, custodial crimes **v)** Crimes (including custodial crimes) against women and children **vi)** Reform in jails/juvenile homes	**CA-15** **ESE-60** **Total-75**	Sonam Maiti		
UNITS	**PAPER: SEC-4: Environment and Human Rights**				
	i) Environment, Resources and Human Rights ii) Environmental rights ; social movements for protection of environment and ecology; role of various institutions like pollution Control Board; Indian environmental laws – an assessment; Green Tribunal and role of supremecourt; Forest Policies and Acts		Padmabati Chowdhury	21.02.2022 TO 10.06.2022	
	iii) Right to Development and its various dimensions ; debate around inclusive growth; movement against big dams- case study of Narmada Bachao movement; Sardar Sarobar Project	**CA-10** **ESE-40** **Total-50**	Sonam Maiti		

UNITS	**PAPER: GE-2: : Refugee Law and Specially Disadvantaged Sections of Society in India**				
	A. International Refugee Law i) Problem of refugees and displaced persons through the ages ii) The United Nations and the refugee problem i) Refugee Convention 1951, Protocol 1967, Convention on the Stateless Persons 1951 - The core issues of the 'right' to seek and receive asylum, right of nonrefoulement (non-return) ii) Role of UN High Commissioner for Refugees	**CA-15** **ESE-60** **Total-75**	Sonam MaitI	21.02.2022 TO 10.06.2022	
	B. Human Rights of specially disadvantaged sections of society in India i) Scheduled Castes/Scheduled Tribes and Other Backward Classes ii) Minorities iii) Women and Children iv) Disabled Individuals The Elderly, 'Aged', Aging and Human Rights		Padmabati Chowdhury		
Mathematics					

Teaching Plan: Department of Mathematics: SEMESTER-I(HONOURS)

UNITS	PAPER: CC -1: Calculus, Geometry &Differential Equation	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal examination
Unit 1	Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of type $e^{ax+b}\sin x, e^{ax+b}\cos x,\ (ax+b)^n\sin x,\ (ax+b)^n\cos x$, concavity and inflection points, envelopes, asymptotes, curve tracing in cartesian coordinates, tracing in polar coordinates of standard curves, L'Hospital's rule, applications in business, economics and life sciences	75	Dr.Samir Kumar Bhandari	01/10/2021 to 24/02/2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Unit 2	Reduction formulae, derivations and illustrations of reduction formulae of the type$\int \sin nx dx, \int \cos nx dx,$ $\int \tan nx dx, \int \sec nx dx, \int (\log x)^n dx, \int \sin^n x \sin^m x dx,$, parametric equations, parameterizing a curve, arc length of a curve, arc length of parametric curves, area under a curve, area and volume of surface of revolution, techniques of sketching conics.		Suvendu Maity		
Unit 3	Reflection properties of conics, rotation of axes and second degree equations, classification of conics using the discriminant, polar equations of conics. Spheres. Cylindrical surfaces. Central conicoids, paraboloids, plane sections ofconicoids, generating lines, classification of quadrics, illustrations of graphingstandard quadric surfaces like cone, ellipsoid.		Mr. Sujoy Pradhan		

Unit 4	Differential equations and mathematical models. General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.		Dr. Samir Kumar Bhandari		
UNITS	**PAPER: CC-2: Algebra**	75			
Unit 1	Polar representation of complex numbers, nth roots of unity, De Moivre's theorem for rational indices and its applications. Theory of equations: Relation between roots and coefficients, transformation ofequation, Descartes rule of signs, cubic and biquadratic equation. Inequality: The inequality involving AM≥ GM≥ HM, Cauchy-Schwartz inequality		Rudrani Jana		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Unit 2	Equivalence relations. Functions, composition of functions, Invertible functions, one to one correspondence and cardinality of a set. Well-ordering property of positive integers, division algorithm, divisibility and Euclidean algorithm. Congruence relation between integers. Principles of Mathematical induction, statement of Fundamental Theorem of Arithmetic.		Dr. Asgar Ali		
Unit 3	Systems of linear equations, row reduction and echelon forms, vector equations, the matrix equation Ax=b, solution sets of linear systems, applications of linear systems, linear independence		Sujoy Pradhan		
Unit 4	Introduction to linear transformations, matrix of a linear transformation, inverse of a matrix, characterizations of invertible		Sima Mondal		

	matrices. Subspaces ofR^n, dimension of subspaces of R^n, rank of a matrix, Eigen values, eigen vectors and characteristic equation of a matrix.Cayley-Hamilton theorem and its use in finding the inverseof a matrix.				
UNITS	**PAPER: GE-1: Calculus, Geometry & Differential Equation**	75			1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Unit 1	Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of type $e^{ax+b}\sin x, e^{ax+b}\cos x,\ (ax+b)^n\sin x,\ (ax+b)^n\cos x$, concavity and inflection points, envelopes, asymptotes, curve tracing in cartesian coordinates, tracing in polar coordinates of standard curves, L'Hospital's rule, applications in business, economics and life sciences		Mr. SuvenduMaity		
Unit 2	Reduction formulae, derivations and illustrations of reduction formulae of the type $\int \sin nx dx, \int \cos nx dx,$ $\int \tan nx dx, \int \sec nx dx, \int (\log x)^n dx, \int \sin^n x \sin^m x dx,$, parametric equations, parameterizing a curve, arc length of a curve, arc length of parametric curves, area under a curve, area and volume of surface of revolution, techniques of sketching conics.		Sujoy Pradhan		
Unit 3	Reflection properties of conics, rotation of axes and second degree equations, classification of conics using the discriminant, polar equations of conics. Spheres. Cylindrical surfaces. Central conicoids, paraboloids, plane sections ofconicoids, generating lines, classification of quadrics, illustrations of graphingstandard quadric surfaces like cone, ellipsoid.		Dr. Samir Kumar Bhandari		

Unit 4	Differential equations and mathematical models. General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.		Dr. Samir Kumar Bhandari		

Teaching Plan: Department of Mathematics: SEMESTER-II(HONOURS)

UNITS	**PAPER: CC-3 : Real Analysis**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
Unit 1	Review of algebraic and order properties of R, ε-neighborhood of a point in R. Idea of countable sets, uncountable sets and uncountability of R. Bounded above sets, bounded below sets, bounded sets, unbounded sets. Suprema and infima. Completeness property of R and its equivalent properties. The Archimedean property, density of rational (and Irrational) numbers in R, intervals. Limit points of a set, isolated points, open set, closed set, derived set,illustrations of Bolzano-Weierstrass theorem for sets, compact sets in R, Heine-Borel Theorem.	75	Dr.Samir Kumar Bhandari	01/04/2022 to 09/07/2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
Unit 2	Sequences, bounded sequence, convergent sequence, limit of a sequence, liminf, lim sup. Limit theorems. Monotone sequences, monotone convergence theorem. Subsequences, divergence criteria. Monotone subsequence theorem (statement only), Bolzano Weierstrass theorem for sequences. Cauchy sequence, Cauchy's convergence criterion.		Mr. Sujoy Pradhan		
Unit 3	Infinite series, convergence and divergence of infinite series, Cauchy criterion, tests for convergence: comparison test, limit comparison test,		Rudrani Jana		

	ratio test, Cauchy's nth root test, integral test. Alternating series, Leibniz test. Absolute and conditional convergence.				
UNITS	**PAPER: CC-4: Differential Equations & Vector Calculus**	75			
Unit 1	Lipschitz condition and Picard's Theorem (Statement only). General solution of homogeneous equation of second order, principle of super position for homogeneous equation, Wronskian: its properties and applications, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation, method of undetermined coefficients, method of variation of parameters.		Dr. Asgar Ali		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
Unit 2	Systems of linear differential equations, types of linear systems, differential operators, an operator method for linear systems with constant coefficients, Basic Theory of linear systems in normal form, homogeneous linear systems with constant coefficients: Two Equations in two unknown functions.		Dr. Asgar Ali		
Unit 3	Equilibrium points, Interpretation of the phase plane Power series solution of a differential equation about an ordinary point, solution about a regular singular point.		Dr. Asgar Ali		
Unit 4	Triple product, introduction to vector functions, operations with vector-valuedfunctions, limits and continuity of vector functions, differentiation and integration of vector functions.		Sima Mondal		
UNITS	**PAPER: GE-2: Algebra**	75			
Unit 1	Polar representation of complex numbers, nth roots of unity, De Moivre's theorem for rational indices and its applications. Theory of equations: Relation between roots and coefficients, transformation		Suvendu Maity		1st internal examination on

	ofequation, Descartes rule of signs, cubic and biquadratic equation. Inequality: The inequality involving AM≥ GM≥ HM, Cauchy-Schwartz inequality				2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
Unit 2	Equivalence relations. Functions, composition of functions, Invertible functions, one to one correspondence and cardinality of a set. Well-ordering property of positive integers, division algorithm, divisibility and Euclidean algorithm. Congruence relation between integers. Principles of Mathematical induction, statement of Fundamental Theorem of Arithmetic.		Rudranijana		
Unit 3	Systems of linear equations, row reduction and echelon forms, vector equations, the matrix equation Ax=b, solution sets of linear systems, applications of linear systems, linear independence		Sima Mondal		
Unit 4	Introduction to linear transformations, matrix of a linear transformation, inverse of a matrix, characterizations of invertible matrices. Subspaces of R^n, dimension of subspaces of R^n, rank of a matrix, Eigen values, eigen vectors and characteristic equation of a matrix.Cayley-Hamilton theorem and its use in finding the inverseof a matrix.		Sima Mondal		
Teaching Plan: Department of Mathematics: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC-5: Theory of Real Functions& Introduction to Metric Space**	75		01/10/2021 to 05/02/2022	**4th week of November,2021 &1st Week of January,2022**
Unit 1	Limits of functions (ε - δ approach), sequential criterion for limits, divergence criteria. Limit theorems, one sided limits. Infinite limits and limits at infinity. Continuous functions, sequential criterion for		Dr. Samir Kumar Bhandari		

	continuity and discontinuity. Algebra of continuous functions. Continuous functions on an interval, intermediate value theorem, location of roots theorem, preservation of intervals theorem. Uniform continuity, non-uniform continuity criteria, uniform continuity theorem.			
Unit 2	Differentiability of a function at a point and in an interval, Caratheodory's theorem, algebra of differentiable functions. Relative extrema, interior extremum theorem. Rolle's theorem. Mean value theorem, intermediate value property of derivatives, Darboux's theorem. Applications of mean value theorem to inequalities and approximation of polynomials.		Dr. Samir Kumar Bhandari	
Unit 3	Cauchy's mean value theorem. Taylor's theorem with Lagrange's form of remainder, Taylor's theorem with Cauchy's form of remainder, application of Taylor's theorem to convex functions, relative extrema. Taylor's series and Maclaurin's series expansions ofexponential and trigonometric functions, ln (1 + x), 1/(ax + b) and$(x+1)^n$. Application of Taylor's theorem to inequalities.		Dr. Samir Kumar Bhandari	
Unit 4	Metric spaces: Definition and examples. open and closed balls, neighbourhood,open set, interior of a set. Limit point of a set, closed set, diameter of a set, subspaces, dense sets, separable spaces.		Mr. Sujoy Pradhan	
UNITS	**PAPER: CC-6: Group Theory 1**	75		
Unit 1	Symmetries of a square, dihedral groups, definition andexamples of groups including permutation groups and quaternion groups (through matrices), elementary properties of groups.		Rudranijana	

Unit 2	Subgroups and examples of subgroups, centralizer, normalizer, center of a group, product of two subgroups.		Rudranijana	
Unit 3	Properties of cyclic groups, classification of subgroups of cyclic groups. Cycle notation for permutations, properties of permutations, even and odd permutations, alternating group, properties of cosets, Lagrange's theorem and consequences including Fermat's Little theorem.		Rudranijana	
Unit 4	External direct product of a finite number of groups, normal subgroups, factor groups, Cauchy's theorem for finite abelian groups.		Mr. Sujoy Pradhan	
Unit 5	Group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms. First, Second and Third isomorphism theorems.		Mr. Sujoy Pradhan	
UNITS	**PAPER: CC-7: Numerical Methods**	55		
Unit 1	Algorithms. Convergence. Errors: relative, absolute. Round off. Truncation.		Mr. SuvenduMaity	
Unit 2	Transcendental and polynomial equations: Bisection method, Newton's method, secant method, Regula-falsimethod, fixed point iteration, Newton-Raphson method. Rate of convergence of these methods.		Mr. SuvenduMaity	
Unit 3	System of linear algebraic equations: Gaussian elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis. LU decomposition.		Mr. SuvenduMaity	
Unit 4	Interpolation: Lagrange and Newton's methods. Error bounds. Finite difference operators. Gregory forward and backward difference		Dr. Asgar Ali	

	interpolation. Numerical differentiation: Methods based on interpolations, methods based on finite differences.			
Unit 5	Numerical Integration: Newton Cotes formula, Trapezoidal rule, Simpson's 1/3rd rule, Simpsons 3/8th rule, Weddle's rule, Boole's Rule. midpoint rule, Composite trapezoidal rule, composite Simpson's 1/3rd rule, Gauss quadrature formula. The algebraic eigen value problem: Power method. Approximation: Least square polynomial approximation.		Dr. Asgar Ali	
Unit 6	Ordinary differential equations: The method of successive approximations, Euler's method, the modified Euler method, Runge-Kutta methods of orders two and four.		Dr. Asgar Ali	
	C7P: Numerical Methods Lab	20		
	List of practical (using any software): 1. Calculate the sum 1/1 + 1/2 + 1/3 + 1/4 + ----------+ 1/ N. 2. Enter 100 integers into an array and sort them in an ascending order. 3. Solution of transcendental and algebraic equations by i) Bisection method ii) Newton Raphson method. iii) Secant method. iv) Regula Falsi method.		Dr. Asgar Ali	

	4. Solution of system of linear equations i) LU decomposition method ii) Gaussian elimination method iii) Gauss-Jacobi method iv) Gauss-Seidel method 5. Interpolation i) Lagrange Interpolation ii) Newton Interpolation 6. Numerical Integration i) Trapezoidal Rule ii) Simpson's one third rule iii) Weddle's Rule iv) Gauss Quadrature 7. Method of finding Eigenvalue by Power method 8. Fitting a Polynomial Function 9. Solution of ordinary differential equations i) Euler method			

	ii) Modified Euler method iii) Runge Kutta method			
UNITS	**PAPER: SEC-1: Logic and Sets**	50		
Unit 1	Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, contra positive and inverse propositions and precedence of logical operators. Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, quantifiers, binding variables and negations.		Sima Mondal	
Unit 2	Sets, subsets, set operations and the laws of set theory and Venn diagrams. Examples of finite and infinite sets. Finite sets and counting principle. Empty set, properties of empty set. Standard set operations. classes of sets. Power set of a set.		Sima Mondal	
Unit 3	Difference and Symmetric difference of two sets. Set identities, generalized union and intersections. Relation: Product set. Composition of relations, types of relations, partitions, equivalence Relations with example of congruence modulo relation. Partial ordering relations, n-ary relations.		Sima Mondal	
UNITS	**PAPER: GE-3: Differential Equations &Vector Calculus**	75		
Unit 1	Lipschitz condition and Picard's Theorem (Statement only). General solution of homogeneous equation of second order, principle of super position for homogeneous equation, Wronskian: its properties and applications, Linear homogeneous and non-homogeneous equations of		Dr. Asgar Ali	

	higher order with constant coefficients, Euler's equation, method of undetermined coefficients, method of variation of parameters.				
Unit 2	Systems of linear differential equations, types of linear systems, differential operators, an operator method for linear systems with constant coefficients, Basic Theory of linear systems in normal form, homogeneous linear systems with constant coefficients: Two Equations in two unknown functions.		Dr. Asgar Ali		
Unit 3	Equilibrium points, Interpretation of the phase plane Power series solution of a differential equation about an ordinary point, solution about a regular singular point.		Mr. SuvenduMaity		
Unit 4	Triple product, introduction to vector functions, operations with vector-valued functions, limits and continuity of vector functions, differentiation and integration of vector functions.		Sima Mondal		
Teaching Plan: Department of Mathematics: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC-8: Riemann Integration and Series of Functions**	75		15/03/2022 to 25/06/2022	**4th week of April,2022 &3rd week of June,2022**
Unit 1	Riemann integration: inequalities of upper and lower sums, Darbaux integration, Darbaux theorem, Riemann conditions of integrability, Riemann sum and definition of Riemann integral through Riemann sums, equivalence of two definitions. Riemann integrability of monotone and continuous functions, properties of the Riemann integral; definition and integrability of piecewise continuous and monotone functions.		Dr. Samir Kumar Bhandari		

	Intermediate Value theorem for Integrals; Fundamental theorem of Integral Calculus.			
Unit 2	Improper integrals. Convergence of Beta and Gamma functions.		Dr. Samir Kumar Bhandari	
Unit 3	Pointwise and uniform convergence of sequence of functions. Theorems on continuity, derivability and integrability of the limit function of a sequence of functions. Series of functions; Theorems on the continuity and derivability of the sum function of a series of functions; Cauchy criterion for uniform convergence and Weierstrass M-Test.		Dr. Samir Kumar Bhandari	
Unit 4	Fourier series: Definition of Fourier coefficients and series, Reimann Lebesgue lemma, Bessel's inequality, Parseval's identity, Dirichlet's condition. Examples of Fourier expansions and summation results for series.		Mr. Sujoy Pradhan	
Unit 5	Power series, radius of convergence, Cauchy Hadamard theorem. Differentiation and integration of power series; Abel's theorem; Weierstrass approximation theorem.		Mr. Sujoy Pradhan	
UNITS	**PAPER: CC-9: Multivariate Calculus**	75		
Unit 1	Functions of several variables, limit and continuity of functions of two or more variables Partial differentiation, total differentiability and differentiability, sufficient condition for differentiability. Chain rule for one and two independent parameters, directional derivatives, the gradient, maximal and normal property of the gradient, tangent planes, Extrema of		Sima Mondal	

	functions of two variables, method of Lagrange multipliers, constrained optimization problems			
Unit 2	Double integration over rectangular region, double integration over non-rectangular region, Double integrals in polar co-ordinates, Triple integrals, triple integral over a parallelepiped and solid regions. Volume by triple integrals, cylindrical and spherical co-ordinates.Change of variables in double integrals and triple integrals.		Sima Mondal	
Unit 3	Definition of vector field, divergence and curl. Line integrals, applications of line integrals: mass and work. Fundamental theorem for line integrals, conservative vector fields, independence of path.		Mr. SuvenduMaity	
Unit 4	Green's theorem, surface integrals, integrals over parametrically defined surfaces. Stoke's theorem, The Divergence theorem.		Mr. SuvenduMaity	
UNITS	**PAPER: CC-10: Ring Theory and Linear Algebra I**	75		
Unit 1	Definition and examples of rings, properties of rings, subrings, integral domains and fields, characteristic of a ring. Ideal, ideal generated by a subset of a ring, factor rings, operations on ideals, prime and maximal ideals.		Rudrani Jana	
Unit 2	Ring homomorphisms, properties of ring homomorphisms. Isomorphism theorems I, II and III, field of quotients.		Rudrani Jana	

Unit 3	Vector spaces, subspaces, algebra of subspaces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces.		Rudrani Jana	
Unit 4	Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, algebra of linear transformations. Isomorphisms. Isomorphism theorems, invertibility and isomorphisms, change of coordinate matrix.		Rudrani Jana	
UNITS	**PAPER: SEC-2: Graph Theory**	50		
Unit 1	Definition, examples and basic properties of graphs, pseudo graphs, complete graphs, bipartite graphs isomorphism of graphs.		Dr. Asgar Ali	
Unit 2	Eulerian circuits, Eulerian graph, semi-Eulerian graph, theorems, Hamiltonian cycles,theorems Representation of a graph by matrix, the adjacency matrix, incidence matrix, weighted graph.		Dr. Asgar Ali	
Unit 3	Travelling salesman's problem, shortest path, Tree and their properties, spanning tree, Dijkstra's algorithm, Warshall algorithm.		Dr. Asgar Ali	
UNITS	**PAPER: GE-4: Numerical Methods**	55	Dr. Asgar Ali	
Unit 1	Algorithms. Convergence. Errors: relative, absolute. Round off. Truncation.		Dr. Asgar Ali	
Unit 2	Transcendental and polynomial equations: Bisection method, Newton's method, secant method, Regula-falsi method, fixed point iteration, Newton-Raphson method. Rate of convergence of these methods.		Dr. Asgar Ali	

Unit 3	System of linear algebraic equations: Gaussian elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis. LU decomposition.		Dr. Asgar Ali		
Unit 4	Interpolation: Lagrange and Newton's methods. Error bounds. Finite difference operators. Gregory forward and backward difference interpolation. Numerical differentiation: Methods based on interpolations, methods based on finite differences.		Dr. Asgar Ali		
Unit 5	Numerical Integration: Newton Cotes formula, Trapezoidal rule, Simpson's 1/3rd rule, Simpsons 3/8th rule, Weddle's rule, Boole's Rule. midpoint rule, Composite trapezoidal rule, composite Simpson's 1/3rd rule, Gauss quadrature formula. The algebraic eigen value problem: Power method. Approximation: Least square polynomial approximation.		Dr. Asgar Ali		
Unit 6	Ordinary differential equations: The method of successive approximations, Euler's method, the modified Euler method, Runge-Kutta methods of orders two and four.		Dr. Asgar Ali		
	C7P: Numerical Methods Lab	20			
	List of practical (using any software): 1. Calculate the sum 1/1 + 1/2 + 1/3 + 1/4 + ----------+ 1/ N. 2. Enter 100 integers into an array and sort them in an ascending order. 3. Solution of transcendental and algebraic equations by i) Bisection method		Dr. Asgar Ali		

	ii) Newton Raphson method. iii) Secant method. iv) Regula Falsi method. 4. Solution of system of linear equations i) LU decomposition method ii) Gaussian elimination method iii) Gauss-Jacobi method iv) Gauss-Seidel method 5. Interpolation i) Lagrange Interpolation ii) Newton Interpolation 6. Numerical Integration i) Trapezoidal Rule ii) Simpson's one third rule iii) Weddle's Rule iv) Gauss Quadrature 7. Method of finding Eigenvalue by Power method				

	8. Fitting a Polynomial Function 9. Solution of ordinary differential equations i) Euler method ii) Modified Euler method iii) Runge Kutta method				
Teaching Plan: Department of Mathematics: SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC-11: Partial Differential Equations & Applications**	75		14/09/2021 to 18/01/2022	**1st week of November, 2021 &4th week of December,2021**
Unit 1	Partial differential equations – Basic concepts and definitions. Mathematical problems. First- order equations: classification, construction and geometrical interpretation. Method of characteristics for obtaining general solution of quasi linear equations. Canonical forms of first-order linear equations. Method of separation of variables for solving first order partial differential equations.		Dr. Samir Kumar Bhandari		
Unit 2	Derivation of heat equation, wave equation and Laplace equation. Classification of second order linear equations as hyperbolic, parabolic or elliptic. Reduction of second order linear equations to canonical forms.		Dr. Samir Kumar Bhandari		
Unit 3	The Cauchy problem, Cauchy-Kowalewskaya theorem, Cauchy problem of an infinite string. Initial boundary value problems. Semi-		Dr. Samir Kumar Bhandari		

	infinite string with a fixed end, semi-infinite string with a free end. Equations with non-homogeneous boundary conditions. Non-homogeneous wave equation. Method of separation of variables, solving the vibrating string problem. Solving the heat conduction problem			
Unit 4	Central force. Constrained motion, varying mass, tangent and normal components of acceleration, modelling ballistics and planetary motion, Kepler's second law.		Dr. Asgar Ali	
UNITS	**PAPER: CC-12: Group Theory II**	75		
Unit 1	Automorphism, inner automorphism, automorphism groups, automorphism groups of finite and infinite cyclic groups, applications of factor groups to automorphism groups, Characteristic subgroups, Commutator subgroup and its properties.		Mr. Sujoy Pradhan	
Unit 2	Properties of external direct products, the group of units modulo n as an external direct product, internal direct products, Fundamental theorem of finite abelian groups.		Mr. Sujoy Pradhan	
Unit 3	Group actions, stabilizers and kernels, permutation representation associated with a given group action. Applications of group actions. Generalized Cayley's theorem. Index theorem.		Rudrani Jana	
Unit 4	Groups acting on themselves by conjugation, class equation and consequences, conjugacy in Sn, p-groups, Sylow's theorems and consequences, Cauchy's theorem, Simplicity of An for $n \geq 5$, non-simplicity tests.		Rudrani Jana	

UNITS	**PAPER: DSE -1: Linear Programming**	75	Mr. SuvenduMaity	
Unit 1	Introduction to linear programming problem. Theory of simplex method, graphical solution, convex sets, optimality and unboundedness, the simplex algorithm, simplex method in tableau format, introduction to artificial variables, two-phase method. Big-M method and their comparison.		Mr. SuvenduMaity	
Unit 2	Duality, formulation of the dual problem, primal-dual relationships, economic interpretation of the dual. Transportation problem and its mathematical formulation, northwest-corner method, least cost method and Vogel approximation method for determination of starting basic solution, algorithm for solving transportation problem, assignment problem and its mathematical formulation, Hungarian method for solving assignment problem.		Mr. SuvenduMaity	
Unit 3	Game theory: formulation of two-person zero sum games, solving two-person zero sum games, games with mixed strategies, graphical solution procedure,linearprogramming solutionof games.		Mr. SuvenduMaity	
UNITS	**PAPER: DSE-2: Probability and Statistics**	75	Sima Mondal	
Unit 1	Sample space, probability axioms, real random variables (discrete and continuous), cumulative distribution function, probability mass/density functions, mathematical expectation, moments, moment generating function, characteristic function, discrete distributions: uniform, binomial, Poisson, geometric, negative binomial, continuous distributions: uniform, normal, exponential.		Sima Mondal	

Unit 2	Joint cumulative distribution function and its properties, joint probability density functions, marginal and conditional distributions, expectation of function of two random variables, conditional expectations, independent random variables, bivariate normal distribution, correlation coefficient, joint moment generating function (jmgf) and calculation of covariance (from jmgf), linear regression for two variables.		Sima Mondal		
Unit 3	Chebyshev's inequality, statement and interpretation of (weak) law of large numbers and strong law of large numbers. Central limit theorem for independent and identically distributed random variables with finite variance, Markov chains, Chapman-Kolmogorov equations, classification of states.		Sima Mondal		
Unit 4	Random Samples, Sampling Diatributions, Estimation of parameters, Testing of hypothesis.		Mr. Sujoy Pradhan		
Teaching Plan: Department of Mathematics: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC-13: Metric Spaces and Complex Analysis**	75		21/02/2022 to10/06/2022	**1st week of April,2022 & 1st week of June,2022**
Unit 1	Metric spaces: sequences in metric spaces, Cauchy sequences. Complete metric spaces, Cantor's theorem.		Dr. Samir Kumar Bhandari		
Unit 2	Continuous mappings, sequential criterion and other characterizations of continuity. Uniform continuity. Connectedness, connected subsets of R.		Dr. Samir Kumar Bhandari		

	Compactness: Sequential compactness, Heine-Borel property, totally bounded spaces, finite intersection property, and continuous functions on compact sets. Homeomorphism. Contraction mappings. Banach fixed point theorem and its application to ordinary differential equation.			
Unit 3	Limits, limits involving the point at infinity, continuity. Properties of complex numbers, regions in the complex plane, functions of complex variable, mappings. Derivatives, differentiation formulas, Cauchy-Riemann equations, sufficient conditions for differentiability.		Dr. Samir Kumar Bhandari	
Unit 4	Analytic functions, examples of analytic functions, exponential function, logarithmic function, trigonometric function, derivatives of functions, and definite integrals of functions. Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals. Cauchy- Goursat theorem, Cauchy integral formula.		Dr. Samir Kumar Bhandari	
Unit 5	Liouville's theorem and the fundamental theorem of algebra. Convergence of sequences and series, Taylor series and its examples.		Mr. SuvenduMaity	
Unit 6	Laurent series and its examples, absolute and uniform convergence of power series.		Mr. SuvenduMaity	
UNITS	**PAPER: CC-14: Ring Theory and Linear Algebra II**	75		
Unit 1	Polynomial rings over commutative rings, division algorithm and consequences, principal ideal domains, factorization of polynomials, reducibility tests, irreducibility tests, Eisenstein criterion, and unique		Rudrani Jana	

	factorization in Z [x]. Divisibility in integral domains, irreducible, primes, unique factorization domains, Euclidean domains.			
Unit 2	Dual spaces, dual basis, double dual, transpose of a linear transformation and its matrix in the dual basis, annihilators. Eigen spaces of a linear operator, diagonalizability, invariant subspaces and Cayley-Hamilton theorem, the minimal polynomial for a linear operator, canonical forms.		Rudrani Jana	
Unit 3	Inner product spaces and norms, Gram-Schmidt orthogonalisation process, orthogonal complements, Bessel's inequality, the adjoint of a linear operator. Least squares approximation, minimal solutions to systems of linear equations. Normal and self-adjoint operators. Orthogonal projections and Spectral theorem.		Mr. Sujoy Pradhan	
UNITS	**PAPER: DSE -3: Mechanics**	75		
Unit 1	Co-planar forces. Astatic equilibrium. Friction. Equilibrium of a particle on a rough curve. Virtual work.. Forces in three dimensions. General conditions of equilibrium. Centre of gravity for different bodies. Stable and unstable equilibrium.		Dr. Asgar Ali	
Unit 2	Equations of motion referred to a set of rotating axes. Motion of a projectile in a resisting medium. Stability of nearly circular orbits. Motion under the inverse square law.Slightly disturbed orbits. Motion of artificial satellites. Motion of a particle in three dimensions. Motion on a smooth sphere, cone, and on any surface of revolution.		Dr. Asgar Ali	

Unit 3	Degrees of freedom. Moments and products of inertia. Momental Ellipsoid. Principal axes. D'Alembert's Principle. Motion about a fixed axis. Compound pendulum. Motion of a rigid body in two dimensions under finite and impulsive forces. Conservation of momentum and energy.		Sima Mondal		
UNITS	**PAPER: DSE-4: Bio Mathematics**	75			
Unit 1	Mathematical biology and the modeling process: an overview. Continuous models: Malthus model, logistic growth, Allee effect, Gompertz growth, Michaelis-Menten Kinetics, Holling type growth, bacterial growth in a chemostat, harvesting a single natural population, Prey predator systems and LotkaVolterra equations, populations in competitions, epidemic models (SI, SIR, SIRS, SIC).		Mr. Sujoy Pradhan		
Unit 2	Activator-inhibitor system, insect outbreak model: Spruce Budworm. Numerical solution of the models and its graphical representation. Qualitative analysis of continuous models: Steady state solutions, stability and linearization, multiple species communities and Routh-Hurwitz Criteria. Phase plane methods and qualitative solutions, bifurcations and limit cycles with examples in the context of biological scenario. Spatial models: One species model with diffusion. Two species model with diffusion, conditions for diffusive instability, spreading colonies of microorganisms, Blood flow in circulatory system, travelling wave solutions, spread of genes in a population.		Mr. Sujoy Pradhan		
Unit 3	Discrete models: Overview of difference equations, steady state solution and linear stability analysis. Introduction to discrete models,		Mr. Sujoy Pradhan		

	linear models, growth models, decay models, drug delivery problem, discrete prey-predator models, density dependent growth models with harvesting, host-parasitoid systems (Nicholson-Bailey model), numerical solution of the models and its graphical representation. case studies. Optimal exploitation models, models in genetics, stage structure models, age structure models.				
Teaching Plan: Department of Mathematics: SEMESTER-I(GENERAL)					
UNITS	**PAPER: DSC-1A/2A/3A** **DSC-1A(CC-1): Differential Calculus**	75		01/10/2021 to 24/02/2022	
	Limit and Continuity (ε and δ definition), Types of discontinuities, Differentiability of functions, Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem on homogeneous functions. Tangents and normals, Curvature, Asymptotes, Singular points, Tracing of curves. Parametric representation of curves and tracing of parametric curves, Polar coordinates and tracing of curves in polar coordinates. Rolle's theorem, Mean Value theorems, Lagrange and cauchy theorems. Taylor's theorem with Lagrange's and Cauchy's forms of remainder, Power series and its convergences. Taylor's series, Maclaurin's series of sin x, cos x, ex, log(l+x), (l+x)m, Maxima and Minima, Indeterminate forms.		Mr. SuvenduMaity Dr. Samir Kumar Bhandari Dr. Asgar Ali		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Teaching Plan: Department of Mathematics: SEMESTER-II(GENERAL)					

UNITS	**PAPER: DSC-1B/2B/3B** **DSC-1B(CC-2): Differential Equations**	75		01/04/2022 to 09/07/2022	
	First order exact differential equations. Integrating factors, rules to find an integrating factor. First order higher degree equations solvable for x, y, p. Methods for solving higher-order differential equations. Basic theory of linear differential equations, Wronskian, and its properties. Solving a differential equation by reducing its order. Linear homogenous equations with constant coefficients, Linear non-homogenous equations, The method of variation of parameters, The Cauchy-Euler equation, Simultaneous differential equations, Total differential equations. Order and degree of partial differential equations, Concept of linear and non-linear partial differential equations, Formation of first order partial differential equations, Linear partial differential equation of first order, Lagrange's method, Charpit's method. Classification of second order partial differential equations into elliptic, parabolic and hyperbolic through illustrations only.		Mr. SuvenduMaity Dr. Asgar Ali Sima Mondal		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
Teaching Plan: Department of Mathematics: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C** **DSC-1C(CC-3): Real Analysis**	75		01/10/2021 - 05/02/2022	**4th week of November,2021 &1st Week of January,2022**
	Finite and infinite sets, examples of countable and uncountable sets. Real line, bounded sets, suprema and infima, completeness property of R, Archimedean property of R, intervals. Concept of cluster points		Mr. Sujoy Pradhan Mr. Rudrani Jana		

	and statement of Bolzano-Weierstrasstheorem.Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences. Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences and their convergence (monotone convergence theorem without proof). Infinite series. Cauchy convergence criterion for series, positive term series, geometric series, comparison test, convergence of p-series, Root test, Ratio test, alternating series, Leibnitz's test (Tests of Convergence without proof). Definition and examples of absolute and conditional Convergence Series. Sequences and series of functions, Pointwise and uniform convergence. μ-test, M-test, Statements of the results about uniform convergence and integrability and differentiability of functions, Power series and radius of convergence.		Dr. Samir Kumar Bhandari Dr. Asgar Ali		
UNITS	**PAPER: SEC-1: Logic and Sets**	50			
	Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, single words and inverse propositions and precedence of logical operators. Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, Quantifiers, Binding variables and Negations. Sets, subsets, Set operations, the laws of set theory and Venn diagrams. Examples of finite and infinite sets. Finite sets and counting principle. Empty set, properties of empty set. Cartesian product. Partition of sets. Power set of a set. Difference and Symmetric difference of two sets. Set identities, Generalized union and intersections. Relation: Product set, Composition of relations,		Sima Mondal		

	Types of relations, Partitions, Equivalence Relations with example of congruence modulo relation.				
Teaching Plan: Department of Mathematics: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D/3D** **DSC-1D (CC-4): Algebra**	75		15/03/2022 to 25/06/2022	**4th week of April,2022 &3rd week of June,2022**
	Definition and examples of groups, examples of abelian and non-abelian groups, the group Zn of integers under addition modulo n and the group U(n) of units under multiplication modulo n. Cyclic groups from number systems, complex roots of unity, circle group, the general linear group GLn (R), groups of symmetries of (i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle, and (iv) a square, the permutation group Sym (n), Group of quaternions. Subgroups, cyclic subgroups, the concept of a subgroup generated by a subset and the commutator subgroup of group, examples of subgroups including the center of a group. Cosets, Index of subgroup, Lagrange's theorem, order of an element, Normal subgroups: their definition, examples, and characterizations, Quotient groups.Definition and examples of rings, examples of commutative and non-commutative rings: rings from number systems, Zn the ring of integers modulo n, ring of real quaternions, rings of matrices, polynomial rings, and rings of continuous functions. Subrings and ideals, Integral domains and fields, examples of fields: Zp, Q, R, and C. Field of rational functions.		Dr. Asgar Ali Dr. Samir Kumar Bhandari Rudrani Jana Mr. SuvenduMaity		
UNITS	**PAPER: SEC-2: Graph Theory**	50			

	Definition, examples and basic properties of graphs, pseudo graphs, complete graphs, bi-partite graphs, isomorphism of graphs, paths and circuits, connected graphs, Eulerian circuits, Hamiltonian cycles, the adjacency matrix, weighted graph, travelling salesman's problem, shortest path, Dijkstra's algorithm, Floyd-Warshall algorithm.		Mr. Sujoy Pradhan Sima Mondal		
Teaching Plan: Department of Mathematics: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A/3A** **DSE-1: Linear Algebra**	75		14/09/2021 to 18/01/2022	**1st week of November, 2021 &4th week of December,2021**
	Vector spaces, subspaces, algebra of subspaces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces. Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, algebra of linear transformations. Isomorphisms, Isomorphism theorems, invertibility and isomorphisms, change of coordinate matrix.		Dr. Asgar Ali Rudrani Jana Mr. SuvenduMaity Sima Mondal		
UNITS	**PAPER: SEC-3: Number Theory**	50			
	Division algorithm, Lame's theorem, linear Diophantine equation, fundamental theorem of arithmetic, prime counting function, statement of prime number theorem. Goldbach conjecture, binary and decimal representation of integers, linear congruences, complete set of residues. Number theoretic functions, sum and number of divisors, totally multiplicativefunctions, definition and properties of the Dirichlet		Mr. Sujoy Pradhan Dr. Samir Kumar Bhandari		

	product, the Möbius inversion formula, the greatest integer function, Euler's phi-function.				
Teaching Plan: Department of Mathematics: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B/3B** **DSE-2 : Numerical Methods**	75		21/02/2022 to 10/06/2022	**1st week of April,2022 & 1st week of June,2022**
	Algorithms, Convergence, Bisection method, False position method, fixed point iteration method, Newton's method, Secant method, LU decomposition, Gauss-Jacobi, Gauss-Siedel and SOR iterative methods. Lagrange and Newton interpolation: linear and higher order, finite difference operators. Numerical differentiation: forward difference, backward difference and central Difference. Integration: trapezoidal rule, Simpson's rule. Solving ordinary differential equations : Euler's method. Runge – Kutta method of second and fourth order, Prediction – correlation methods.		Dr. Asgar Ali Mr. Suvendu Maity Mr. Sujoy Pradhan		
UNITS	**PAPER: SEC-4: Probability and Statistics**	50			
	Sample space, probability axioms, real random variables (discrete and continuous), cumulative distribution function, probability mass/density functions, mathematical expectation, moments, moment generating function, characteristic function, discrete distributions: uniform, binomial, Poisson, continuous distributions: uniform, normal, exponential. Joint cumulative distribution function and its properties, joint probability density functions, marginal and conditional		Rudrani Jana Sima Mondal Mr. Sujoy Pradhan Dr. Samir Kumar Bhandari		

	distributions, expectation of function of two random variables, conditional expectations, independent random variables.				

Music

Teaching Plan: Department of Music: SEMESTER-I (HONOURS)

UNITS	PAPER: CC1 Elementary Knowledge of Music: Terminologies and Concepts	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
1.	Elementary study of sound: musical and non-musical.	75	Mrs Madhushree Sasmal	01-10-2021 to 24-02-2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
2.	Indian concept of nada.		Mrs Shampa Mallick		
3.	Swara – suddha, komal and tibra, chal, achal.		Mrs Shampa Mallick		
4.	Sruti - sruti and swarasthana (ancient and modern period)		Mrs Madhushree Sasmal		
5.	Knowledge of the following musical terms : Sangit, varna, alankar, saptak, (mandra, madhya, tar) thata, raga, astak, murchhana, alap, tan, badi, sambadi, vivadi, anubadi, bandish, gayaki, nayaki, bagyeyakar, murki, jamjama.		Mrs Shampa Mallick		
6.	Theory of mela, thata and raga a. Mela system as introduced by Venkatmakhi. b. Thata system as introduced by V. N. Bhatkhande. c. Difference between thata and raga / mela.		Mrs Madhushree Sasmal		

UNITS	**PAPER: CC2 Thata-Raga Swaramalika Lakshman giti in different Talas (Practical)**	75			1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
1.	Voice culture with the tanpura (manual): suddha swaras, komal swaras, tabraswars.		Dr Payel Mridha		
2.	Basic knowledge of tanpura and its tuning.		Dr Payel Mridha		
3.	Voice culture according to the array of notes of 10 thatas / thata-ragas e.g. i) Bilabal ii) Bhairab iii) Bhairabi iv) Ashabari v) Tori vi) Marowa vi) Purabi vii) Kalyan / iman viii) Bhupali ix) Khambaj x) Kafi		Mr Anupam Jana		
4.	a) alankar b) swaramalika in different talas (such as tintal, jhaptal, ektal) c) lakshman giti and drut kheyal of choosen prescribed ragas: Bhairab, Yaman,Bhupali, Bilawal		Dr Payel Mridha		
UNITS	**PAPER: GE-1 History of Indian Music**	75			1st internal examination on 4th week of December, 2022 and 2nd
1.	Music during the Indus Valley Civilization		Mr Anupam Jana		
2.	Music in the Vedic Period.		Mr Anupam Jana		
3.	Development of Dhrupad.		Mrs Madhushree Sasmal		

4.	Development of Khyal.		Mrs Madhushree Sasmal		internal examination on 2nd week of March,2022
5.	Theoretical knowledge of Akar Matric Swaralipi System.		Mrs Madhushree Sasmal		
6.	Theoretical knowledge of Hindusthani Notation System.		Mrs Madhushree Sasmal		
7.	Theoretical knowledge of the following Ragas. *Bhairab, Bilabal, Yaman,Bhupali, Asabari, Khambaj, kafi, Bhairabi.*		Mrs Madhushree Sasmal		
8.	Theoretical knowledge of Trital, Ektal, Choutal, Dadra, and Kharba. Ability towrite the thakas of the above Talas in Barabar ,Dwigun and Chowgun Laya.		Mr Tarun Mishra		

Teaching Plan: Department of Music: SEMESTER-II(HONOURS)

UNITS	**PAPER: CC3** Introduction of Rabindra Sangeet and Theoretical Knowledge of Ragas,Talas and Notations **(Theoretical)**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**REMARKS**
1.	The study and overview of Gitabitan and Swarabitan	75	Mrs Madhushree Sasmal	01-04-2022 to 09-07-2022	
2.	Musical atmosphere of jorasanko tagore palace		Mr Tarun Mishra		1st internal examination on 2nd week of May, 2022 and 2nd internal
3.	Introduction to the music masters of Rabindranath		Mrs Shampa Mallick		
4.	Rabindranath's life and creativity in short.		Mrs Madhushree Sasmal		
5.	Knowledge of the following ragas :Bilawal		Mrs Madhushree Sasmal		

	Khambaj Iman Kafi Bhairab Bhairabi Behag Ashabari Jounpuri Jogiya				examination on 2nd week of July,2022
6.	Knowledge of the following talas :Dadra Teora Rupak Kaharba Jhaptal Surfanktal Ektal Choutal Dhamar Trital		Mrs Shampa Mallick		
7.	Talas introduced by Rabindranath		Mrs Madhushree Sasmal		
8.	Knowledge of notations: (Bhatkhande system & Akarmatrik system).				
UNITS	**PAPER: CC4** Rabindra Sangeet: Themetic Variations (Practical)	75			1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
1.	Rabindra Sangeet: Themetic Variations (Practical)60%		Mrs Shampa Mallick		
2.	Rabindra Sangeet: Themetic Variations(Practical) 40%		Dr Payel Mridha		
3.	Practice of Rabindra Sangeet In taal		Mr Tarun Mishra		
UNITS	**PAPER: GE-2** Aspects of Thata, Mela, Raga & Tala (Theoretical)	75			

a.	Knowledge of the Ten Thata system of V.N. Bhatkhande		Mrs Madhushree Sasmal		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
b.	Definition of raga & a brief knowledge of the following:				
	i) Difference between thata & raga		Mr Anupam Jana		
	ii) Raga vargikaran & definition of suddha, chhayalog, sankirna, sandhiprakashraga, paramel prabesak raga		Mr Anupam Jana		
	iii) Theoretical knowledge of Akarmatrik Swaralipi & Hindustani SwaralipiPaddhati		Mrs Madhushree Sasmal		
	iv) Time theory of raga		Mr Anupam Jana		
	Aspects of Tala: 1. Theoretical knowledge of Trital, Ektal (Dwimatric & Trimatric), Chautal, Surphaktala & ability to write the thekas of the above Talas in Barabar, Dwigun & Chaugun Laya		Mr. Tarun Mishra		
	2. Definition of Tala, Matra & Laya • Swara : knowledge of suddha & vikrit swaras, achal swara, ardhodarshak swara • Brief knowledge of sruti & swarasthana (both ancient & modern) • Ten Principal Features (Dasaprana) of Tala		Mr. Tarun Mishra		

Teaching Plan: Department of Music: SEMESTER-III(HONOURS)

UNITS	PAPER: CC5 History of Indian Music – I (Theoretical)	75		01-10-2021to 05-02-2022	4th week of November,2021 &1st Week of January,2022
1.	History of Indian Music in : 1) Music during the Indus Valley Civilization 2) Music in Vedic period 3) Information about music as available in the Epics & Purans		Mrs Madhushree Sasmal		
2.	Detailed theoretical knowledge of the following Talas : Trital, Jhaptal, Chautal, Ektal, Dadra, Kaharwa, Rupak, Surphaktal, Dhamar & Tewra		Mr. Tarun Mishra		
3.	Detailed theoretical knowledge of the following Ragas : Bilawal, Yaman, Bhairava, Khamaj, Kafi & Ashavari		Mrs Shampa Mallick		
4.	Development of music of Sultenate Period & Mughal Period		Mrs Madhushree Sasmal		
5.	Study of the following texts with reference to musical aspects: Natyashastra of Bharata. Brihaddesi of Matanga, Sangeet Ratnakar of Sarangadeva, Naradi Sikhsa of Muni Narad, Rag Tarangini of Kabi Lochan, Sangeet Parijat Of Ahobal, Gitagobinda of Jayadeva, Chaturdandi Prakashika of Pt. Venkatmokhi		Mrs Madhushree Sasmal		
6.	Definition of the following : Sangeet , Nada, Swara, Saptak, Raga, Sruti, Dhwani, Aroha, Abaroha, Vadi, Samavadi, Murchhana,		Mrs Shampa Mallick		

	Thata, Sam, Tali, Khali, Tala, Laya,Anuvadi, Vivadi, Pakad, Jati, Matra, Vibhag, Gram, Alap.				
7.	Characteristics of musical sounds		Mrs Madhushree Sasmal		
UNITS	**PAPER: CC6** Practical Knowledge of Indian Music (Practical)	75			
1.	Ability to sing Alankaras in Barabar-Laya, Dwigun Laya & Chaugun Laya		Dr Payel Mridha		
2.	Identification of 10 Thatas with Swaramalika		Mr Anupam Jana		
3.	Drut Khayals with Alap, Vistars & Tanas in all the following Ragas : Khamaj,Kafi, Ashabari .		Mr Anupam Jana		
4.	General study of the following talas with the ability to recite the thekas in BarabarLaya, Digun & Chaugun Laya : Trital, Dadra, Kaharwa, Ektal & Jhaptal		Mr. Tarun Mishra		
5.	Identification of of Rabindra srista tala		Mr. Tarun Mishra		
UNITS	**PAPER: CC7** Practical Knowledge of RAGA -I(Practical)	75			
1.	Drut khayals with alap, vistars and Tanas in all the following rags : Bhairabi,Jaunpuri, Alahiya-Bilawal, Bhupali, Desh, Brindabani- sarang.		Mr Anupam Jana		

2.	Two Taranas in any two of the above mentioned rags.		Mr Anupam Jana		
3.	General study of the following talas and ability to recite the Thekas in Barabar-laya, Dwigun and chaugun laya.Choutal, Surfanktal, Dhamar, Teora, Rupak.		Mr. Tarun Mishra		
4.	Sight singing - Notation writing & reading (Hindustani and Akarmatrik systemboth)		Dr Payel Mridha		
UNITS	**PAPER: SEC-1 Knowledge of Tala(Theoretical)**	50			
1.	• Detailed theoretical knowledge of Tala with the ability to recite the thekas in Barabar-Laya, Dwigun-Laya,Chaugun-Laya & identification of Tala as mentioned below: • Jhaptal, Choutal, Dhamar, Kaharwa, Jhumra, Trital, dadra, ektal, teora		Mr. Tarun Mishra		
UNITS	**PAPER: GE-3** Theoretical knowledge of music (including advanced theory of Rabindranath)	75			
	a. Advanced theoretical knowledge of Rabindrasangeet – Study of Tagore's sangeetchinta,		Dr Payel Mridha		

	b. Experiments with various forms of music – Deshi, bideshi.		Mrs Shampa Mallick		
	c. Rabindrasangeet Talas, Geetinatya,Nrityanatya, Parjay, etc.- Rabindra Sangee		Mrs Shampa Mallick		
	d. Applied theory of Rabindra Sangeet : This part would deal with the study of : 1. Tagore Experiments with Talas 2. Different parjayas of Rabindra Sangeet 3. Tagore's Experiments various forms of music (Bhanga Gaan) 4. Tagore's Giti Natyas & Nritya Natyas				
	b. Description & history of Tanpura, Tabla- Banya & Pakhowaj		Dr Payel Mridha		
	c. Detailed knowledge of Regional Folk Songs of West Bengal		Dr Payel Mridha		
	d. Brief knowledge about : Kabi Gaan, Panchali Gaan, Akhrai, Jatra, Nataker Gaan.		Dr Payel Mridha		
	e. Detailed knowledge of Kirtan		Dr Payel Mridha		

Teaching Plan: Department of Music: SEMESTER-IV(HONOURS)

UNITS	**PAPER: CC8** History of Indian Music – II (Theoretical)	75		15-03-2022 to 25-06-2022	**4th week of April,2022**
1.	History of Indian Music : Knowledge of Paluskar Notation System, Hindusthani Notation system.		Mrs Madhushree Sasmal		

2.	Life sketch & musical contribution of the following Musicians: Sourindra Mohon Thakur, Swami Prajyananda, Krishnadhan Bandopadhaya,Bimal Roy, khestramohan Goswami, Rajeswar Mitra K.D Brihaspati,		Mrs Madhushree Sasmal		**&3rd week of June,2022**
3.	Study of the following texts: Sangeet Samaysar of Parsa Deva, Hriday Prakash ofHriday Narayan Deva, Raga Bibodh of Somenath		Mrs Madhushree Sasmal		
4.	Knowledge of the Musical instruments of Tata, Abanaddha, Ghana and Susir		Dr Payel Mridha		
5.	Time theory of raga & raga bargikaran		Dr Payel Mridha		
6.	Method of producing 72 Melas of pt. venkatmokhi		Mrs Madhushree Sasmal		
7.	Detailed theoretical knowledge of the following ragas & comparative study of similar type of ragas: Todi, Marwa, Puriyadhaneshri, Chayanat, Jaijawanti, Darbari-Kanada, Miyan-Ki-Mallahar, Gurjari-Tdi, Goud-Mallhar.		Mr Anupam Jana		
8.	Definition of the following: paramel prabesak raga, dhruba giti, suddha, chhayalag, sankirna, sandhi prakash raga, Purbanga & Uttaranga pradhan raga.		Mr Anupam Jana		
9.	Ten essential characters of raga		Dr Payel Mridha		
UNITS	**PAPER: CC9** Practical Knowledge of RAGA-II (Practical)	75			

1.	Two vilambit khayals from the mentioned ragas : behag, malkous, jaunpuri, kedar,bhimpalashri, purvi, marwa		Mr Anupam Jana		
2.	Drut khayal of above mentioned ragas		Mr Anupam Jana		
3.	Ability to show following talas with deferent layakaries : Jhumra, Addha, Chautal,Dhamar		Mr. Tarun Mishra		
4.	Ability to sing Bhajan any three of the following :Meerabai, Tulsidas, Kabir,Surdas		Dr. Payel Mridha		
UNITS	**PAPER: CC10** Rabindra Sangeet(Practical)	75			
1.	Tagoressong like,Dhamaranga,Khayalanga,Boulanga withreference to original /Dhramar/Kheyal/Boul/Folk Songs.		Mrs Shampa Mallick		
2.	Bhanu Singher Padabali (two songs only),		Dr. Payel Mridha		
3.	Selected scene from one Gitinatya & Nrityanatya .		Mrs Shampa Mallick		
4.	Tagores song like Dhrupadanga, reference to original Dhrupad		Dr. Payel Mridha		
UNITS	**PAPER: SEC-2 Stage Performance of Song-I (Practical)**	50			
	• Stage performance of Rabindra Sangeet, Nazrulgiti, Bangla Gaan		Dr Payel Mridha		
UNITS	**PAPER: GE-4** Practical Songs of Panchakobi except Rabindranath(Practical)	75			

1.	Any two songs from each composer Dwijendrageeti, Atulprosadi & Nazrulgeeti		Mrs Madhushree Sasmal		
2.	Rajanikanter Gann, Nazrulgeeti		Dr Payel Mridha		
Teaching Plan: Department of Music: SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC11** Practical Knowledge of Rabindra Sangeet (Practical)	75		14-09-2021 to 18-01-2022	**1st week of Novembe r, 2021 &4th week of December ,2021**
1.	Ability to sing Rabindra Sangeet as mentionsed below (one from each):		Mrs Shampa Mallick		
2.	Puja Parjay, Swadesh Parjay,Prem parjai, Prakriti parjai, Bichitra Parjay,Anusthanik Parjay,etc.		Mrs Shampa Mallick		
3.	Kabyageeti(only two songs),		Dr Payel Mridha		
4.	Songs based on Rabindra srista Tala (only two songs).		Mrs Shampa Mallick		
5.	Raga analysis of Rabindra Sangeet		Dr Payel Mridha		
6.	Ability to read Notation of unknown Rabindra Sangeet		Dr Payel Mridha		
UNITS	**PAPER: CC12** Practical Knowledge of RAGA-III and TALA(Practical)	75			
1.	Two Dhrupads & two Dhamars from the following ragas with Alap,Layakari & Upaj :Bahar,Durga, Bageshri, Sohini, Sudh-		Mr Anupam Jana		

	Sarang, Bhairav,Yaman,Brindabani – Sarang, Hindol, Behag, MalkosTodi				
2.	One Thumri & one Dadra in the following Ragas : Bhairavi, Khamaj, Pilu, Kafi.		Mr Anupam Jana		
3.	Ability to recite Notation.		Dr Payel Mridha		
4.	Ability to recite the following talas with deferent layakaries: Jat, Deepchandi, Dhamar, Jhumra.		Mr. Tarun Mishra		
UNITS	**PAPER: DSE-1** Concept of music in Tagore Literature	75			
1.	Concept of music as reflected in Tagore Literature		Dr Payel Mridha		
	1. "Komal Gandhar" : Punascha; 2. "Panchishe Baishakh Choleche" : Seshsaptak (43) 3. "Amar Kachhe shunte Cheyecho Ganer Katha" : Seshsaptak (17) 4. Ora Antyaja Ora Mantrabarjita : Patraput (15) 5. Ganer Basa : Punascha; 6. Sangit O Bhab : Sangit Chinta 7. Gan Sambandhe Probandha : Jiban Smriti/Sangit Chinta 8. Sangiter Mukti : Sangit Chitna 9. Shona : Santiniketan 10. Siksha O Sanskritite Sangiter Sthan : Sangit Chinta		Dr Payel Mridha		

UNITS	**PAPER: DSE-2** Karnatak Music	75			
1.	Knowledge of Karnatak Swaras and their comparison with the North IndianSwaras;		Mrs Madhushree Sasmal		
2.	Karnatak Melodic Concepts;		Mrs Madhushree Sasmal		
3.	Karnatak Concepts of Tala with reference to the System of Tala-Subdivisions. Tala-jatis and brief knowledge of the following Talas: Dhruva, Natya, Rupaka, Triputa, Jhampa, Ata and Eka;		Mrs Madhushree Sasmal		
4.	Knowledge of the following: Katapayadi, Varnam, Kriti, Rangam-Tanam-Pallavi,Tillana and Javali;		Mrs Madhushree Sasmal		
5.	Muscial Contributions of Purandava Das, Tyagaraja, Shyama Sastri andMuttuswami Dixitar;		Mrs Madhushree Sasmal		
6.	Brief knowledge of the following musical instruments of Karnataka Music;Karnatak Vina, Vichitra Vina, Mridanga, Ghatam and Nagas waram		Mr. Tarun Mishra		
Teaching Plan: Department of Music: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13** Theoretical knowledge of music (Theoretical)	75		21-02-2022	**1st week**
1.	Comparative study of suddha & vikrit swaras of Hindustani & Carnatic system		Mrs Madhushree Sasmal	to10-06-2022	**of April,2022**

2.	Placing of suddha swaras on veena & their vibretions as explained by Pt. Shrinivas		Mr Anupam Jana		**& 1st week of June,2022**
3.	Detailed theoretical knowledge of the following Talas & ability to compose talalipinotation in Ada, Kuada, Viada Laya : Jhumra, Deepchandi, Ada-Chautal, Matta, Panchamswari, Shikhar		Mr. Tarun Mishra		
4.	Merits & Demerits of a singer		Mrs Shampa Mallick		
UNITS	**PAPER: CC14** Practical Knowledge of Bengali song/ Bangla Gaan(Practical)	75			
1.	Puratani bangla gaan : Shreedhar Kathak, GirishGhosh		Mrs Madhushree Sasmal		
2.	Ability to sing Brahma Sangeet of the following : Rammohan Roy, Debendra NathThakur, Jyotirindra Nath Thakur		Mrs Madhushree Sasmal		
3.	Ability to sing any two folk songs of the following : Baul, Bhatiyali, Jhumur, Tusu		Mrs Madhushree Sasmal		
4.	Ability to sing Kirtan : Gyandas, Chandidas & Vidyapati (any one)		Mrs Madhushree Sasmal		
5.	Puratani bangla gaan : Dasarathi Roy, Kamalakanta,		Dr Payel Mridha		
UNITS	**PAPER: DSE-3 Practical knowledge of Bhajan and Bengali Songs/Bangla Gan (Practical)**	75			
1.	Ability to sing Bhajan : Meera Bai, Surdas, Kabir,Tulsidas		Dr Payel Mridha		

2	Ability to sing the following songs of D.L.Roy, Atulprasad, Rajanikanta,		Mrs Shampa Mallick		
3.	Puratani,agamoni, bijaya, jatra gaan,ramprasadi		Dr Payel Mridha		
4.	Baul, kirtan, Jhumur		Dr Payel Mridha		
5.	Ability to Nazrul Geeti.		Dr Payel Mridha		
UNITS	**PAPER: DSE-4** Practical knowledge of Raga (Practical)				
1.	Ability to sing Drut khayal on the ragas as mentioned below : Yaman, Bhairav, Ashabari,Bhairavi, Jounpuri		Mr Anupam Jana		
	Practice Raaga in Taal		Mr. Tarun Mishra		
Teaching Plan: Department of Music: SEMESTER-I(GENERAL)					
UNITS	**PAPER: DSC-1A/2A Theory of Indian Music**	75		01/10/2021to	
1.	***Aspects of Dwani & Swara*** : a) Nada & its basic characteristics b) Swara : knowledge of suddha & vikrit swaras, achal swara, ardhodarshak swara c) Brief knowledge of sruti & swarasthana (both ancient & modern) d) Brief knowledge of the following musical terms : Saptak, Murchhana, Tana, Alankar, Varna & Tuk e) Theoretical knowledge of Akarmatrik Swaralipi &		Mrs Shampa Mallick	24/02/2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination

	Hindustani Swaralipi paddhati				on 2nd week of March,2022
2.	***Aspects of Thata, Mela & Raga :*** a) Knowledge of the ten Thata & system of V.N. Bhatkhande b) Definition of raga & a brief knowledge of the following : 1. Difference between thata & raga 2. Raga vargikaran & definition of suddha, chhayalog, sankirna, sandhiprakashraga, paramel prabesak raga 3. Raga jati 4. Time theory of raga 5. Theoretical knowledge of raga prescribed in the syllabus		Mrs Madhushree Sasmal		
3.	***Aspects of Tala*** 1. Theoretical knowledge of Trital, Ektal(Dwimatric & Trimatric), Chautal, Surphaktala & ability to write the thekas of the above Talas in Barabar, Dwigun & Chaugun Laya 2. Detailed theoretical knowledge of Rabindra sristaTala & ability to show theThekas in Barabar-Laya, Dwigun-Laya, Chaugun-Laya 3. Definition of Tala, Matra & Laya. 4. Ten Principal Features (Dasaprana) of Tala		Mr. Tarun Mishra		

Teaching Plan: Department of Music: SEMESTER-II(GENERAL)

UNITS	**PAPER: DSC-1B/2B** History of Indian music –I	75	Mrs Madhushree Sasmal	01/04/2022	

1.	**Ancient period:** 1. Music in Vedic period 2. Development of Deshi Sangeet as can be traced from Matanga's Brihaddeshi 3. Development of Gandharva Sangeet as can be traced from Bharats Natyashastra 4. Knowledge of the music as available in the Epics, Buddhists literature & theSanskrit Drammas 5. Study of the following texts with reference to musical aspects: Naradiya Sikhsa ofMuni Narad, Dattilam of Dattila 6. Music during the Indus Vally Civilization			to 09/07/2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2.	Medieval Period: 1. Music in the Sultenata Period 2. Music in the Mughal Period 3. Development of Dhrupad 4. Development of khayal		Mr Anupam Jana		
3.	5. Development of kirtan in Bengal 6. Development of the following musical styles: Mangalgiti, Panchali, Shaktagiti 7. Life sketch of the following Musicians: Amir khusro, Tansen, Raja Manshing Tomar, Swami Haridas, V.N. Bhatkhande, Sadarang, Adarang, V.D. Paluskar, Ramnidhi Gupta 8. Brief study of the following texts: Sangeet Ratnakar of Sarandev, Chaturdandi Prakashika of Venkatmokhi, Ragtarangini of Kabi Lochan, Sangeet Parijat of Pt. Ahobal		Mrs Shampa Mallick		

Teaching Plan: Department of Music: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C Practical knowledge of different Parjayas of Rabindra Sangeet &Nazrul geeti**	75		01/10/2021to 05/02/2022	**4th week of Novembe r,2021 &1st Week of January,2 022**
1.	AAbility to sing six Rabindra Sangeet of different Parjayas : 1. Amaro Parano Jaha Chai 2. Nibiro Ghano Andhare 3. Darie Acho Tumi Amr 4. Na chahile jare paoa jai 5. Darao amr ankhir aga 6. Hridayer ekul okul		Mrs Shampa Mallick		
2.	AAbility to sing six Nazrul Giti as mentioned below : 1. Nishi nijhuma ghumo nahi ase 2. Musaphir mochhre ankhi jal 3. Aruno kanti ke go jogi 4. Chaitali chandni rate 5. Bulbuli nirab nargis bone 6. Kalo meyer payer talay		Dr Payel Mridha And Mrs Madhushree Sasmal		
UNITS	**PAPER: SEC-1** Knowledge of Tala	50			
	Detailed theoretical knowledge of Tala with the ability to recite the thekas in Barabar-Laya,Dwigun-Laya,Chaugun-Laya & identification of Tala as mentioned below: Jhaptal Choutal, Dhamar, Kaharwa, Jhumra, Trital, dadra, ektal, teora		Mr. Tarun Mishra		
Teaching Plan: Department of Music: SEMESTER-IV(GENERAL)					

UNITS	**PAPER: DSC-1D/2D History of Indian Music -II**	75		15/03/2022	**4th week of April,2022 &3rd week of June,2022**
1.	Development of the following Gharanas in Hindustani Music & their characteristics: Visnupur, Jaypur, kirana, Patiala, Gwalior, Agra, Beneras, Senia		Mr Anupam Jana	to25/06/2022	
2.	Evaluation of Notetion Systems with particular references to Dandamatric, Akarmatric, Bhatkhande		Mrs Madhushree Sasmal		
3.	Knowledge of the following styles of music : kabi-gaan, akhrai, dhap-kirtan, panchali, jatra, brhama sangeet, bangle tappa		Mrs Madhushree Sasmal		
4.	Contribution of the following persons in the field of Indian Music & Musicology :Khetramohan Goswami, Sourindra Mohan Tagor, Krishnadhan Bandopadhya, Dasharathi Ray		Mr Anupam Jana		
5.	Brief History of Growth of different important Centers of Classical Music with special Reference to Kolkata		Mr Anupam Jana		
UNITS	**PAPER: SEC-2** Practical performance of Khayal (Practical)	50			
1.	Practical Demonstration Test of Khayal 10 minutes duration in one Raga each from ragas mentioned below: Todi, Behag, Kedar, Malkous, Marwa		Mr Anupam Jana		
Teaching Plan: Department of Music: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A Practical knowledge of Bhajan, Bangla Gaan & Puratani Gan (Practical)**	75			

1.	Ability to sing Bhajan : Meera Bai, Surdas, Kabir		Dr Payel Mridha	14/09/2021 to18/01/2022	**1st week of November, 2021 &4th week of December ,2021**
2.	Ability to sing the following songs : D.L.Roy, Atulprasadi, Rajanikanta Baul, kirtan, Jhumur		Mrs Madhushree Sasmal		
3.	Ability to sing the following songs : Puratani,agamoni, bijaya jatra gaan,ramprasadi		Dr Payel Mridha		
UNITS	**PAPER: SEC-3** Stage performance of Song-I(Practical)	50			
1.	Stage demonstration of Rabindra Sangeet, Atulprosad, D.L.Roy, Rajanikanta Sen,		Mrs Shampa Mallick		
2.	Stage demonstration of Nazrulgiti,Bangla Gaan		Mrs Madhushree Sasmal		
UNITS	**PAPER: GE-1** History of Indian Music-I (Bengali Song/ Bangla Gaan)	75			
1.	Study of Regional folk songs		Mrs Madhushree Sasmal		
2.	Detailed knowledge of Kirtan		Mrs Madhushree Sasmal		
3.	Contribution of the following composers. a. Atulprasad b. D.L.Roy c. Kazi Nazrul d. Rabindranath & other members of Thakur bari		Dr Payel Mridha And Mrs Shampa Mallick		

	Rajanikanta				
Teaching Plan: Department of Music: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B Practical knowledge of Raga(Practical)**	75		21/02/2022 to10/06/2022	**1st week of April,2022 & 1st week of June,2022**
1.	Ability to sing Drut khayal as mentioned below : Yaman,Bhairav, Ashabari, Bhairavi,Jounpuri		Mr Anupam Jana		
UNITS	**PAPER: SEC-4 Stage performance of Song-II (Practical)**	50			
	Stage performance of Drut Khayal & Bhajan from ragas mentioned below : Brindabanisarang, Yaman, Ashabari, Khamaj, Bhairavi		Mr Anupam Jana		
	Stage performance of Bhajan : Meera Bai, Kabir, Tulsidas		Dr Payel Mridha		
UNITS	**PAPER: GE-2** History of Indian Music-II	75			
1.	Music during the Indus Valley Civilization		Mrs Madhushree Sasmal		
2.	Music in the Vedic Period.		Mrs Madhushree Sasmal		
3.	Development of Dhrupad		Mr Anupam Jana		
4.	Development of Khyal		Mr Anupam Jana		
5.	Theoretical knowledge of Akar Matric Swaralipi System.		Mrs Madhushree Sasmal		
6.	Theoretical knowledge of Hindusthani Notation System		Mrs Madhushree Sasmal		

7.	Theoretical knowledge of the following Ragas. *Bhairab , Bilabal, Yaman,Bhupali, Asabari, Khambaj, kafi, Bhairabi.*		Mr Anupam Jana		
8.	Theoretical knowledge of Trital, Ektal, Choutal, Dadra, and Kharba. Ability towrite the thakas of the above Talas in Barabar ,Dwigun and Chowgun Laya.		Mr. Tarun Mishra		

NCC

Teaching Plan: Department of NCC: SEMESTER-I(GENERAL)

		FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
UNITS	**PAPER: DSC-1A/2A/3A:** National Security, NCC, Indian Army – Organization ,National Integration & Awareness				1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Module I	**NCC organization**- 1. History of NCC, Aims and Objectives of NCC. 2. Organization &Training and NCC Song, Motto of NCC - Motivation of Cadets. 3. System of NCC Trainings. Incentives and benefits. 4. Awards, different types, Rank of officers and cadets. 5. Role of NCC Cadets in	**75**	Madhumita Maity		

	National programmes. 6. Opportunities of NCC Cadets in army and other services. 7. Camps, types of camps. Preparation and participation.			**01.10.2021-24.02.2022**	
Module II	**National Integration and Awareness**-1. Religions, Culture, Traditions and Customs of India. 2. National Integration: Importance and Necessity. Unity in diversity. 3. Freedom Struggle and Nationalist Movement in India. 4. National Interests, Objectives, Threats and Opportunities. 5. Problems / Challenges of National Integration. 6. National Integration Council. 7. Contribution of Youth in Nation Building		Debabrata Samanta		
Module III	**National Security Organizations-** 1. National Defence Policy. 2. Organization and Administration of defence. 3. Role of intelligence. 4. National security system.		Dilip Biswas		
Module IV	**Indian Army – Functional Organisations-** 1. Combat Branches-Infantry, Armoured. 2. Supporting Arms – Artillery including Air		Madhumita Maity		

	Defence, Engineers, Signals, Aviation. 3. Logistic Organisations – ASC, AOC, EME, AMC, ENGINEERS. 4. Other – Intelligence, Education, Legal.				
Module V	**Drill-** 1. General and words of command. 2. Attention, stand at ease and stand easy, turning and inclining at the halt. 3. Sizing, forming up in three ranks and numbering, open and close order march and dressing. 4. Saluting at the halt, getting on parade, dismissing and falling out. 5. Marching, Length of pace and time of marching in quick time and halt, slow march and halt. 6. Side pace, pace forward and to the rear. 7. Turning on the march and wheeling. 8. Saluting on the march . 9. Marking time, forward March and halt in quick time. 10. Changing step. 11. Formation of squad and squad drill. 12. Guard of Honour and Ceremonial drill.		Madhumita Maity		

	C1P: Drill (without arms) & Social activity (Practical)				
1	**Drill (Without arms)-** Drill without Arms : i) Savdhan (Attention), ii) Vishram (stand on easy), iii) Aram se (stand easy), iv) Tej Chal (quick march), v) Thum (halt), vi) Dahine Mur (Right turn), vii) Baen Mur (left turn), viii) Piche Mur (About turn), ix) Samne ka Salute, x) Patra ke sath Salute, xi) Line Tour (Falling out), xii) Visarjan (Dismiss).		Madhumita Maity		
2	**Social Activity -** i) Tree plantation, ii) Blood Donation, iii) Participation in Social Awareness Programme		Madhumita Maity		
3	**Field reports-** Students will be submitted a Field Reports on any Social Awareness Programme organized by the Institution.		Dilip Biswas		
4	**Laboratory Note Book-** Students will be required to maintain records of all works done		Madhumita Maity		

	in connection with the topics taught in this paper.				
Teaching Plan: Department of NCC: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B/3B:** Personality Development, Human Health, Social & Environmental awareness and Community Development.				1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
Module I	**Personality Development and Leadership-** 1. Personality Development introduction. Factors Influencing /shaping Personality: Physical, social, psychological and philosophical. 2. Self-Awareness – Know yourself/ Insight. Self Defense- Theory and practice, prevention of untoward incidence. Self defense mechanisms. Change your mind set. 3. Interpersonal relationship and communication. 4. Leadership Traits. Types of Leadership and perception. Effects of Leadership with historical examples. Attitude – Assertiveness and negotiation. 5. Time management. Stress management. 6.	**75**	Debabrata Samanta	**01.04.2022-09.07.2022**	

	Importance of Group /Team Work. 7. Influencing Skills. Sociability: Social Skills. Values / Code of Ethics.				
Module II	**Health and Hygiene-** 1. Structure & functioning of the human body. Hygiene & sanitation (Personal & Food hygiene). Physical & Mental Health. Infectious & Contagious Diseases & its prevention. Preventable diseases, fractures and types of treatments. 2. Basics of home nursing. First aids: methods and Practice. First aids in common medical emergencies. Snake bites. Wounds & Fractures. Dressing of wounds. 3. Yoga &Exercises – introduction. Role on physical and mental health.		Dilip Biswas		
Module III	**Environmental Awareness and Conservation-** 1. Natural Resources – Conservation & Management. Water Conservation &Rainwater harvesting. Waste Management. 2. Environment and ecology – pollution and its		Madhumita Maity		

	control; Water, Air, Noise and Soil. Wild life conservation. Energy Conservation.				
Module IV	**Social Awareness and Community Development-** 1. Basics of Social Service, weaker sections of our society and their needs. Social / Rural Development Projects: MNREGA, SGSY, NSAP etc. NGOs: Role & Contribution. Social service – family planning. 2. Drug Abuse & Trafficking. Causes & Prevention of HIV/AIDS; Role of youth 3. Social Evils - Dowry/Female Foeticide /Child abuse & trafficking, etc. Provisions of Protection of Children from Sexual Harassment Act 2012. 4. Traffic Control Organization and Anti-drunken driving. Traffic rule and road signs. 5. Counter Terrorism. Corruption 6. Contribution of youth towards social welfare. Civic Responsibilities. 7. NCC cadets and civil administration.		Madhumita Maity		
	DSC1BP: Practical				

1	**Drill-** Drill without Arms: i) Sizing, forming up in three ranks, numbering, open and close order march and dressing, ii) Getting on parade, dismissing and fall out, iii) Saluting at the halt, iv) Marching, length of space and time of marching, marching in quick tome and halt, v) Turning at the march and wheeling, vi) Saluting at the march, vii) Side space, pace forward and to the rear, viii) Marking time, forward and halt in quick time and changing step, ix) Formation of squad and squad drill.		Madhumita Maity		
2	**First Aids-** i. Principles of First aids. ii. First aids for Snake bite, Burns and Scalds, Drowning, Poisoning, Dog bite.		Dilip Biswas		
3	**Tactical exercise without troops-** a. Sand model on the following: a) attack, b) defense b. Outline organization of infantry Battalion in		Madhumita Maity		

	Lab Note Book c. Chart showing Organization, weapons at equipments at platoon level d. Verbal order at platoon level e. Movement without arms and section battle drill f. Message writing				
4	**Field reports-** Students will be submitted a Field Reports on any Health & Hygiene, / Environment Awareness Program organized by the Institution.		Madhumita Maity		
5	**News paper clippings-** News paper clippings on relevant defense related topics and a short essay on the basis of clippings to be produced.		Madhumita Maity		
6	**Field visit-** Field visit to defense establishment/ places of military interests. Students will submit a field report.		Dilip Biswas		
7	**Laboratory Note Book-** Students will be required to maintain records of all works done in connection with the topics taught in this paper.		Dilip Biswas		

Teaching Plan: Department of NCC: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C:** Defense Organization, Military Geography, Military History, Field Craft & Battle Craft and Weapon Training			**01.10.2021-05.02.2022**	**4th week of November,2021 &1st Week of January,2022**
Module I	**Defense Organization of India-** a) Principles of Defense Organization. Principles of defense organization and administration. Reconstruction of Indian Armed Forces - a) Indian armed forces under the British Rule, b) Reconstruction of Army after 1947, b) Reconstruction of Navy, c) Reconstruction of Air ForceHierchy of Higher Defense Organization of India of Present time. Hierarchy of Higher Defense Organization. b) Indian Armed Forces : Basic organisation of Armed Forces. Strength, task & role of Indian armed forces. Organizational structure of Indian Army : Different Commands of Indian army. Static formation of army, field formation of army. Composition of Indian army: a) Organizational structure of an	**75**	Kalpataru Samanta		

	infantry battalion, b) Organizational structure of an Armoured regiment, c) Organizational structure of artillery Field Regiment. c) Indian Navy: History, structure, organization, characteristics, command, support services, its role during war. d) Indian Air Force: History, structure, organization, characteristics and Different commands of Indian Air Force: Limitation of Air Force role during war.				
Module II	**Organization of Supported Arms-** a) Paramilitary Forces: Assam Rifles, Central Armed Police Forces, Special Frontier Forces. Central Reserve Police Forces (CRPF), Boarder Security Forces (BSF), IndoTibetan Boarder Police (ITBP), Shasastra Seema Bal (SSB), b) Special Forces: Special Frontier Forces, Central Industry Security Force (CISF). c) Para Special Force [Para (SF)]: Ghatak Force, Marine Commando (MARCOS), Guard Commando Force. d) Other Protection Forces:		Debabrata Samanta		

	National Security Guards (NSG), Special Protection Group (SPG), Railway Protection Forces (RPF). e) Second Line of Defense : Indian Coast Guard, National Cadet Corps (NCC). Territorial Army Badges of Ranks- Honours and Awards - Gallantry award - Doctrine, Corps and field forces - Concept of Integrated Defence staff- Modes of entry to army - Structural changes in Indian Defense Organization B. Military decoration of Indian army: Badges of Ranks- Honours and Awards - Gallantry award - Doctrine, Corps and field forces - Concept of Integrated Defence staff- Modes of entry to army - Structural changes in Indian Defense Organization				
Module III	**Military Geography-**a) Introduction: Meaning, nature, scope and elements of Military Geography. Man and Environment. Role of geography in military application. Military geography in India and defense problem in		Madhumita Maity		

	relation thereto-role of geography in different warfare. b) Evolution of Military Geography: a) History & Development. b) Founders of Military Geography - F. Ratzal, A.T. Mahan, c) Sir. Halfred Mackinder, Karl Haushofer, N.J. Spykman c) Inter-State relations & Geographical factors: a) Frontiers and Boundaries of India - its meaning & differences types of borders and boundaries. b) Communication routes- land, sea and aerial- strategic scope. c) Population and Power d) Geography and Foreign Policy of India: a) India's Geo-strategic significance, b) India's borders, c) Indian Ocean territory and strategic significance. e) Applied Military Geography: Brief idea on a) Global Positioning System (GPS), b) Global Information System (GIS) and c) Remote Sensing.				
Module IV	**Map Reading-** Theoretical aspects of Map Reading: Introduction to different types of Maps, and Conventional Signs. Scales & Grid		Madhumita Maity		

	System. Topographical Relief features, Contours and Gradients - Cardinal points and Types of North - Types of bearings and use of Service Protractor - Prismatic compass and its use. Setting a Map - finding North and own position - Map to Ground, Ground to Map - Point to Point March – use of GPS.				
Module V	**Military History-** a. Definition, Concept, Significance to study Military history. Military system of India since Vedic era to modern India.. A brief survey of the military tradition of India. Weapon, Battle dress. Kautilya's philosophy of war organization and art of war, weapons and interstate relation. War pattern and tactics in different periods in India – a comparative study. Historiography of military history of India. b. Biographies of renowned Generals: i. Niccolo Machiavelli (1469-1527), Giulio Douhet (1869 - 1930), Jorge Smith Patton (1885- 1945), Bernard Law Montogomery (1887-1976), J. E. Rommel		Madhumita Maity		

	(1891-1944) ii. Kodandera Madappa Cariappa (1899-1993), S.H.F.J. Manekshaw (1914-2008), Subrata Mukherjee (1911- 1960), Sundarilal Matharadas Nanda (1915-2009). c. Indian Army War Heroes – PVCs. d. Study of the following important battles of India with its background, causes, results and its review: Battle of Panipath (1526AD), Battle of Plessey (1757AD), Battle of Chillianwalla (1849AD), Kashmir Conflict (1947), Operation of Mizo National Front (1966), Indo Pak war 1965, 1971, Operation Cactus (1988), Sri-Lanka Mission (1987-1990) & Kargil war (1999).				
Module VI	**Field Craft, Battle Craft-** Introduction. Judging Distance and its methods. Description of ground. Recognition, description and indication of landmarks & targets. Observation, Camouflage and Concealment. Field Signals. Section Formations . Section Battle Drill. Fire fighting. Fire Control Orders.		Madhumita Maity		

	Fire and Movement. Knots and Lashings. Section Battle Drill.				
Module VII	**Weapon Training-** Theoretical aspects of Weapon Training: 1. Object of Weapon training . Types of weapons, parts, stripping and assembling of light guns. Characteristics of a rifle - rifle ammunition and its firepower. Rifle Mark III. 2. Stripping, assembling, care and cleaning and sight setting of .22 rifle. 3. Stripping, assembling, care and cleaning of 7.62mm SLR and its loading cocking and unloading. 4. Rules of Aiming. Firing position. The lying position, Holding& aiming. 5. Trigger control and firing a shot. 7. Range procedure and safety precautions. 8. Theory of Group and Snap shooting. 9. Short range firing, Aiming – Alteration of sight. 10. Rifle firing and follow up practice. 11. Parts of heavy weapons, stripping and assembling of heavy weapons. 12. Essentials of Good Shooting				

	DSC1CP: Drill, Military History & Map Reading (Practical)				
1	**Drill with Arms-** a. Getting on parade with rifle and dressing at the order. b. Dismissing and falling out. c. Ground / take up arms d. General salute, salami shastra e. Squad drill f. Short / long tail from the order and vice-versa g. Examine arms		Madhumita Maity		
2	**Military History-** a. Prepare sand models of Battle formation of the following Battles: i) Battle of Plessey, 1757, ii) Battle of Chilianwala, 1849, iii) Three battles of Panipath, iv) Indo-Pak war of 1947, 1962, 1971, v) Kargil war, 1999. b. Draw sketches on plan papers of the following Battles: i) Battle of Plessey, 1757, ii) Battle of Chilianwala, 1849, iii) Three battles of Panipath, iv) Indo-Pak war of 1947, 1962, 1971, v) Kargil war, 1999.		Dilip Biswas		

3	**Map Reading-** 1. Map – civil and military 2. Concept of military maps and map index 3. Topographical sheet 4. Scales and grid system 5. Conventional sign – civil and military 6. Compass : liquid prismatic compass – uses of compass during day and night 7. Location and identification of objects from ground to map and vice-versa 8. Preparation of night march chart 9. Preparation of weather chart 10. Field sketching, eye and memory sketching 11. Determination of visibility of survey maps of hilly region by comparing gradients and section drawing methods.		Madhumita Maity		
4	**Field reports-** Students will submit a field report based on participation in a NCC camps.		Dilip Biswas		
5	**Field visit-** Field visit to military establishment for the demonstration of different weapons, armaments and weapon carriers. Students will submit a field report.		Dilip Biswas		

6	**Laboratory note book-** Students will be required to maintain records of all works done in connection with the topic taught in this paper.		Madhumita Maity		
UNITS	**PAPER: SEC-1: Volunteering-** Course Contents: a) Meaning of volunteering, need for volunteering, types of volunteering, benefits of volunteering. b) United Nations volunteers: An introduction; Youth Empowerment and volunteerism; Role of youth in peace building, development and socio-economic change; Group presentations. c) Traits of an effective volunteers; Self awareness, Essential skills of a volunteer: Importance of effective communication, skills in Conflict Resolution, Team Building, Leadership.	**50**	Madhumita Maity		
Teaching Plan: Department of NCC: SEMESTER-IV(GENERAL)					

UNITS	**PAPER: DSC-1D/2D/3D:** Military Sociology, Military Psychology, Communication Process, Field Engineering, Weapon & Armaments and Adventure Trainings				**4th week of April,2022 &3rd week of June,2022**
Module I	**Military Sociology-** a) Study of Society, Social groups, social interaction: motivation, morality, Personality – Definition and determinants. Social aspects of war. Social effects of war. Post war social problems. Social background of military personnel of India. b) Armed Force and Society: Role of Indian Armed force society and inter-dependence, military aid to civil authorizes. Civil – Military relation in India. c) Indian Armed Forces and Disaster Management: Disaster – aims and objectives, Disaster management – meaning, concept, elements and preventive measures. War and disaster. d) Overseas bases and relations – peace keeping – anti piracy and exploration mission. e) Military Coups: causes and its consequences on society. f) Problem of ex-	**75**	Madhumita Maity	**15.03.2022-25.06.2022**	

	service men of India. Benefits of service for Jawans and Officers. One man one person demands. Role of women in Armed forces: contemporary trends.				
Module II	**Military Psychology-** Military Psychology - Meaning, definition, historical development, role, aim and importance. Relevance of Psychology in the defense problems. Use of the psychology in the war and military use of Psychology. Application of the principles of psychology in the Military training. Personal adjustment factors in adjustment during army life, the recruits of adjustment to combat. Problem of adjustment and the problem of Re-adjustment of ex-soldiers.		Kalpataru Samanta		
Module III	**Communication process-** Communication- main elements, types and methods of communications, media. Communication systems- internet, Faxi mail, Satellites. Characteristics of Wireless Technology (Mobile, Wi Fi, etc). Characteristics of Walkie		Debabrata Samanta		

	/Talkie. Basic Radio Telephony (RT) Procedure. Military Language. Latest trends and development (Multi Media, Video Conferencing, IT). Information system and type of information. Signals- introduction to radio, telephony procedure. Field signals. Air raid warnings.				
Module IV	**Field Engineering-** Principles and applications, camouflage and concealment. Section formation. Mines and types of mines fields, anti tanks and explosive.		Madhumita Maity		
Module V	**Adventure Training-** Introduction to adventure Training, Planning Organization & Conduct. Cycle & Trekking Expeditions. Organization & Conduct of Sightseeing. Spirit of Mountaineering. Selection of camp site Layout & Sanitation in camp.		Madhumita Maity		
Module VI	**Weapon and Armaments-** a. Evolution of arms and armaments in art of war. b. Modern weapons - Small Arms - Theories of small arms.		Madhumita Maity		

	History, characteristics, design, variant, operating mechanism and military significance of following common arms used in Indian Army: Glock, Mouser, IM1 Galil snaiper. .22 Rifle, .303 Rifle, 7.62 Self Loading Rifle . INSAS, LMG, 5.56 mm Rifle. Light Machine Gun (LMG).Multi caliber Individual Weapon System (MCIWS). Modern Submachine Carbine (MSMC), Artillery : Artillery Gun, No 35 HE Grenade, 2 inch Mortar. 40mm L-60 and L-70 BOFFORS GUN. DRDO 155 mm artillery gun, Dhanush Howitzer Indian Fields Gun. Shell and Ammunition: Explosive, Rockets and MortarProperties & Types. Missiles: Concept, characteristics, types. Anti Tank : Brief idea. Nuclear explosive: History, uses, effects, science for formation of nuclear bomb. Weapon Carriers: Characteristics, mechanisms of operation, fire power and military importance of following: Land war weapon carrier, Naval war weapon carrier, Air war weapon carrier, Strategic transport aircraft,				

	Tactile transport aircraft. Military Glider, Military Helicopter Fighter airplane, Bomber, Fighter- Bomber Airplane. Weapons of Mass Destruction - Chemical & Biological Weapons: concept, characteristics and , uses. Nuclear weapons: Nuclear Command Authority in India. Strategic forces command, Indian land based nuclear armed ballistic missile, : Indian Sea based nuclear armed ballistic missiles, Nuclear armed cruise missiles. Air Defense: Brief idea.				
	DSC1DP: Practical				
A	**Adventure training-** Parasailing, Sailing, Slithering, Rock climbing, Cycling and trekking		Madhumita Maity		
B	**Weapon Training-** Stripping as aiming & Sight setting of Riffle. Lying position 'and hold', including bolt manipulation. Trigger control and firing a shot. Aiming, Range figures targets–Range procedure and safety precautions. Alteration of Sight and firing				

	shots. Firing in different wind conditions. Range classification firing. On Guard hip firing. The point 2 point. Training stick (Self defense & attack). LMG - Stripping, assembling, piston group and barrel. LMG - Loading, unloading, Sight, aiming and holding.				
C	**Weapon Training – Field craft, Battle craft, Patrolling and Field engineering-** 1. Judging distance and indication of targets. 2. Camouflage & Concealment 3. Fire discipline & Fire control order. 4. Observation and Concealment exercise. 5. Simple Verbal orders. 6. Field Signals 7. Section battle drill.				
D	**Weapons and Armaments-** 1. Demonstrate following arms: .22 Riffles, .303 Riffles, Self Loading Rifles, INSAS LMG 5.56 mm, LMG, Sten Machine Carbine. Pistol & Revolvers. No 36 HE Grenade, Artillery Gun, Air Defense Gun. Students will require drawing and explaining the important stages of mechanisms of the above weapons. 2. Students will be required to				

	draw sectional diagrams showing the parts connected with the mechanisms of movements and firing of the following armaments: Tanks, Air craft - Fighters, Bombers, Transport, Helicopters. Naval Ships - Frigates, Destroyers, Submarine and Torpedo.				
E	**Project-** Project report will be based on Field visit to military establishment/ places of military interests.		Dilip Biswas		
F	**Laboratory Note Book and Viva Voce-** Students will be required to maintain records of all works done in connection with the topic taught in this paper.				
UNITS	**PAPER: SEC-2: Revolutionary war and low Intensity Operations-** Course Contents: A. Guerilla War / Asymmetric Warfare: 1. Meaning and concept, 2. Principal and characteristic 3. Guerilla strategy and Tactics, 4. Contributors to the Guerilla war B. Insurgency ad counters Insurgency: 1. Meaning		Madhumita Maity		

	and concept, 2. Basic Characteristics, 3. Causes, 4. Counter Measures.	**50**			
Teaching Plan: Department of NCC: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A/3A:** India's Defence Mechanism	**75**			**1st week of November, 2021 &4th week of December,2021**
Unit I:	**India's Defence Forces-** a) Rank Structure of three Services b) Recruitment Methods of three Services c) Important Training Institutions of three Services d) Second Line of Defence(Introduction to Paramilitary Forces, in brief)		Dilip Biswas		
Unit II	**Defence Organizations in India-** a) Power of President of India in relation to Defence b) Role and Functions of Ministry of Defence, Government of India c) Composition and Function of Defence Committee/National Security Council(NSC) d) Chief of Staff (COS) and Joint Service Organization		Debabrata Samanta	**14.09.2021-18.01.2022**	

Unit III	**Army Organization-** a) Organization of Army Headquarter(Role of Chief of Army Staff(COAS) and Principal Staff Officers(PSOs) b) Static and Field Formation of Indian Army c) Arms and Services		Madhumita Maity		
Unit IV	**Air Force Organization-**a) Organization of Air Force Headquarter; b) Role of Chief of Army Staff(COAS) and Principal Staff Officer(PSOs) c) Static and Field Formation of Indian Air force		MM		
Unit V	**Navy Organization-** a) Organization of Air Force Headquarter b) Role of Chief of Army Staff(COAS) and Principal Staff Officer(PSOs) c) Static and Field Formation of Indian Navy		MM		
	DSE1AP: Practical				
1	Paper Clippings on Security related Issues and a Case Study Report thereon.		MM		
2	Field Visit: Field Visit to a Place/Unit having importance on National Security and/or Strategic Defence.		DB		

3	Laboratory Note Book: Sand Model on Human Security/ Illegal Migration/Organised Crime.		MM		
UNITS	**PAPER: SEC-3:** Armed Forces (Specialized Subject)	**50**			
Unit I	**Organizations-** a) Basic Organizations of Armed Forces b) Organization of Army c) Badges and Ranks		MM		
Unit II	**Infantry Weapon and Equipment-** a) Characteristics of Rifle and 7.62 mm SLR, b) Ammunition, Fire Power, Stripping, Assembling and Cleaning				
Unit III	**Military History-** a) Biographies of Renowned Generals b) Indian Army War Heroes-PVCs				
Unit IV	**Communications-** a) Types of Communications b) Characteristics of Wireless Technology (Mobile, WiFietc)		DB		
UNITS	**PAPER: GE-1:** Introduction to the History of National Cadet Corps (NCC)				

Unit I	**History of National Cadet Corps-** National Cadet Corps of Independent India, The National Cadet Corps Act 1948, Motto of NCC, Aims and Objectives, Emblem, National Flag, NCC Song, Organisation of NCC- Army, Navy, Air Force, Training Organization		MM		
Unit II	**Youth Organization-** Introduction, Importance, Association of our Great Leaders with Youth Organization- Mahatma Gandhi, Jawaharlal Nehru, Netaji Subhas Chandra Bose, Sardar Ballabh Bhai Patel		DB		
Unit III	**Nationalist Movement in India-** Formation of Indian National Congress, Jalianwalabagh Massacre, Non-Cooperation Movement, Simon Commission, Civil Disobedience Movement, Quit India Movement, Emergence of Independence Day and Republic Day	**75**	DS		
Unit IV	**Military History-** Great Military Leaders: Maharana Pratap, Chhatrapati Shivaji, Tipu Sultan, Rani Lakhsmi Bai, Famous Battle/War:		MM		

	Sepoy Mutiny, World War I and II, Ind- Pak War, 1948, 1965, 1971, and 1999, Sin-Indian War 1962				
Unit V	**Introduction to Defence Services-** Army, Navy and Air Force; Organization Structure of NCC Organizations (COY, Battalion, Group, Directorate);NCC as a path to Career Building.		MM		
	GE1P:Practical				
1	Paper Clippings and Photographs of different NCC activities and Training Programme son Security related Issues and a Case Study Report thereon.		MM		
2	Field Visit: Report on Field Visit to a Place/Unit having importance on NCC activities and Training.		DB		
3	VIVA VOCE		DB		
Teaching Plan: Department of NCC: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B/3B:** International Terrorism				**1st week of April,2022 &**
Unit I	Terrorism, Meaning, Concept, Philosophy and Historical Perspective		MM		

Unit II	Causes of Terrorism: Social, Economic, Political and Religious		MM		**1st week of June,2022**
Unit III	International Terrorism, State Terrorism and State-sponsored Terrorism Context		DB		
Unit IV	Terrorism and National Security, Strategy for fighting against Terrorism		MM		
	DSE1BP: Practical				
1	Paper Clippings on Security related Issues and a Case Study Report thereon	**75**	MM	**21.02.2022-10.06.2022**	
2	Field Visit: Field Visit to a Place/Unit having importance on National Security and Strategic Defence				
3	Laboratory Note Book; Viva-Voce				
4	Educational Tours and its Reports				
UNITS	**PAPER: SEC-4:** Indian Air Force (Specialized Subject)				

Unit I	**General Service Knowledge-** a) Development of Aviation b) History of Indian Force	**50**	MM		
Unit II	**Principle of Flight-** a) Introduction b) Laws of Motion c) Glossary of Terms				
Unit III	**Airmanship-** a) Introduction b) Airfield Layout c) Role of the Air, Circuit Procedure d) ATC/RT Procedures e) Aviation Medicine				
Unit IV	**Maintenance-** a) Aero Engine Introduction b) Minimum Mechanical Knowledge for Maintenance c) Ammunition, Fire Power, Stripping, Assembling and Cleaning		DB		
UNITS	**PAPER: GE-2:** International Relations				
Unit I	Introduction to the Understanding of International Relations, Theories and Approaches		MM		
Unit II	Diplomacy and Foreign Policy: Theoretical Background, Contemporary Issues in Indian Context				

Unit III	International Relation of India with its Neighbouring Countries (Pakistan, Bangladesh, Nepal, Sri Lanka, Bhutan and China)				
Unit IV	End of Cold War and Emergence of New World Order (after 9/11/2001)		DS		
	GE2P: Practical	**75**			
1	Laboratory Note Book: Strategic Maps of India: India and her Neighbouring Countries; India and Indian States and Union Territories with Capital, Strategic Raw Materials, Defence Industries and Atomic Reactors		MM		
2	Short Presentation/ Lecture				
3	Records		DB		
4	VIVA VOCE				

NSS

Teaching Plan: Department of NSS: SEMESTER-I(GENERAL)

UNITS	PAPER: DSC-1A/2A/3A: History, Philosophy, Aims & Objectives of NSS	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
1	**Basic concept of NSS** **a. History and Objectives** **b. Significance of Emblem, Flag, Motto, Song, Badge Discipline** **c. Organisational Structure of NSS: National State, University, college** **d. NSS Functionaries : Roles and Responsibilities**	75	SUCHHANDA BERA	01/10/2021 TO 24/02/2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
2	**Concept of the Nation, Community, Family and Nature a. What is Nation and National integration** **b. Communities and intervention of Caste, Religion and language** **c. Family as primary Unit and Community** **d. Man and Nature**		RAJIV DEV GOSWAMI		

3	**From Campus to Community a. Concept of Activities : Regular and special camping & day camp** **b. Kinds of Activities: Legal Awareness, Health Awareness, First Aid, Career Gujdance, Child care, Leadership training, Skill development, afforestation, Old –age care, Blood donation, Disaster Management, Swachh Bharat, Campus development,** **c. Understanding Youth as an agent of social Change: Definition and categories of youth, Challenges and opportunities of youth.**		SUCHHANDA BERA		
4	**Volunteerism** **a. Indian Tradition of Volunteerism** **b. Needs and Importance of Volunteerism** **c. Motivation and constraints of Volunteerism**		RAJIV DEV GOSWAMI		

	d. Shramadan as a part of Volunteerism				
Teaching Plan: Department of NSS: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B/3B : Management of NSS Programme in Society**	75		01/04/2022 TO 09/07/2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
1	**Citizenship** **a. Basic features of Constitution of India** **b. Fundamental Rights And Duties** **c. Human Rights, Human Values And Personality Development.** **d. Consumer awareness and the legal rights of the consumer.** **e. RTI**		RAJIV DEV GOSWAMI		
2	**Health, Hygiene and Sanitation** **. Definition needs and scope of health education.** **b. Food and Nutrition.**		SUCHHANDA BERA		

	c. Safe drinking water, water borne diseases and Sanitation(Awachh Bharat Abhijan) **d. National health programme.** **e. Reproductive health** **f. Youth Health: Healthy lifestyles, HIV, AIDS Drugs and substance abuse. Home nursing. First Aid.**				
3	**Youth Development Programme : Yoga and Sports** **a. Youth Development Programme in India National Youth Day. Youth Development Programme at the National level, State level and voluntary sector. Youth focused and Youth-led organizations** **b. Yoga and Sports** **History, philosophy and concept of Yoga and Sports. Different yoga traditions and their impacts. Yoga as a preventive, promotive and**		SUCHHANDA BERA		

	curative method. Yoga and Sports as tools for healthy lifestyles.				
4	Environment Issues and Disaster Management a. Environment conservation, enrichment and sustainability. b. Climate change c. Waste management d. Natural resource management (Rain water harvesting, energy conservation, waste land development, soil conservation and afforestation) e. Energy conservation programme: concept of conservation- conservational and non - conservational energy. f. Introduction to Disaster Management, Classification of disasters. Role of Youth in Disaster Management.		RAJIV DEV GOSWAMI		

	g. Afforestation and tree plantation: Creation of tree consciousness among community. Prevention of soil erosion. Establishment of nurseries. Plantation OF trees and prevention and upkeep of trees. Weed control, pest management and rodent control.				
5	Methodology of conducting survey a. Need for action oriented surveys in NSS b. Identification and selection community problem for investigation c. Methods of collecting information d. Analysis of collected data and preparation of report e. Application of survey findings in problem solving process		RAJIV DEV GOSWAMI		
Practical					

1	First Aids a. Principles of First Aids. Importance of First Aids. b. First Aids for Snake bite, Burns, Drowning, Poisoning, Dog bite		SUCHHANDA BERA		
2	**Social Activity** **Tree plantation, Blood donation, Participation in Social Awareness Programme, Participation in Environment Awareness Programme, Participation in Health and Hygiene Awareness Programme. Participation in Awareness campaing Programme on welfare schemes of the central and state government.**		SUCHHANDA BERA		
3	**Campaigning Programme** **Campaigning on Awareness of Water hervesting techniques, Soil conservation techniques, Community health Programme of central and state government, Gender equality and women empowerment, Child health care Programme,**		SUCHHANDA BERA		

	Blood donors club. AIDS Awareness Campaigning, Self-employment opportunities as per local needs and feasibility.Animal health care Programme Dairy and poultry farming, Total literacy , Road safety, Biogas and smock less chulah.				
4	**Field reports Students will be asked to submit a Field reports on any social Awareness Programme organized by the Institution.** **5. Laboratory Note Book and Viva –voce.**		RAJIV DEV GOSWAMI		
Teaching Plan: Department of NSS: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C: Social work, Family, Community, Society & Youth and Life competencies, additional life skills & Civil /Self Defense.**	75		01/10/2021 TO 05/02/2022	**4th week of November,2021 &1st Week of January,2022**
1	**Family, Community, Society**		SUCHHANDA BERA		

	a. Concept of Family and Society. Growing up in the Family-dynamics and impact. **Community (PRLs and other community – based organization). Human Values – Concept & importance. Gender justice - Concept & needs Old age problems and care. Impact of modernization on family: Definition, nature and effects of modernization.** **b. Organization of Family and Child Care: Philosophy of family and child care programme. Nutrition: calories, protein and vitamin requirements of the child during development stages. Balanced diet. Nutrition education. Prevention of diseases caused by some deficiency. Common ailments of infancy and childhood, infectious diseases, immunization, booster doses. Role of Government and voluntary agencies in the development of Family and child care programme with special reference to: Integrated Child Development Service (ICDS), applied nutrition programme,**				

	mid-day meal programme, and special nutrition programme. Maternity and child care: Mother mental and physical health care during pregnancy and delivery. Child development from conception till maturity – role of parents. Peer groups, school community in socialization of the child health programme. Common ailments of infancy and child hood, infectious diseases, immunization, booster doses. **c. Population dynamics and family planning; Population problems, goals of family planning, methods of family planning, methods and media of communication in family planning. Population education and the role of NSS.** **d. Prevention and control of communicable diseases: infectious diseases, mass communication and the role of NSS.** **e. Community Mobilization: Mapping of Community Stakeholders. Designing the message in the context of the problem and the**				

	culture of the community. Identifying methods of Mobilization. Youth-Adult Partnership.				
2	**Society and Youth** **a. Definition and Profile of youth. Importance of youth for society. National youth policy. Other youth programme / schemes of GOI.** **b. Current issues and social problems. Poverty, ill health, illiteracy, rapid population growth, youth employment and under employment. Nature of social deviance, delinquency and crime, beggary, corruption, adulteration hoarding, profiteering, dowry system, etc. Problems of physically and mentally handicapped. Problems of socially/ educationally backward communities' i.e. Schedule castes Schedule tribes and Denitrified Tribes. Problem resulting from regional on national catastrophes – draught, flood, etc.** **c. Youth leadership: Meaning and types of leadership. Qualities of good leaders; traits of**		RAJIV DEV GOSWAMI		

	leadership. Importance and role of youth leadership. **d. Social harmony, National Integration and youth: Indian History and culture. Role of youth in peace building and conflict resolution. Role of youth in Nation building** **e. Youth and Crime: Sociological and Psychological factors influencing Youth Crime. Peer mentoring in preventing crimes. Awareness about anti ragging. Cyber-crime and its prevention. Juvenile Justice: concepts & needs.**				
3	**Social Work** **a. Social Work- History, philosophy, ideology. Social service and its need. Weaker sections of our society and their Needs.** **b. Relationship of social work with social services, social welfare, social security & social reforms.**		RAJIV DEV GOSWAMI		

	c. Family planning, HIV/AIDS: Causes & Prevention and contribution of Youth towards prevention of AIDS. Cancer, its causes and preventive measures. Drugs and substance abuse. Drug trafficking and crime. **d. Contribution of Youth towards social welfare. NGOs and their contribution to society Life Competencies, additional life skills and Civil/Self Defense** **a. Life Competencies: Definition and importance of life competencies. Communication - process, types & barriers. Inter personal. Motivation – Concept & Cycle. Problem solving and Decision making.** **b. Additional life skills: Communication, interpersonal, problem solving and decision making. Positive thinking. Self-confidence and self-esteem. Setting life goals and working to achieve them. Management of stress including time management.**				

	c. Civil/Self Defense: Civil defense services, aims and objectives of civil defense. Needs for Self-defense training. NCC, NSS, Home Guard, Scouts, Guide - objectives & role.				
4	**Life Competencies, additional life skills and Civil/Self Defense**		SUCHHANDA BERA		
	Practical				
1	**Studies on Socio Economic status a) Visit to selected villages - gathering basic data on socio - economic status.** **b) Visit to urban slum - gathering data on socio - economic status.** **c) Visit to tourist places of Medinipur District and gathering data on socio economic status**		RAJIV DEV GOSWAMI		
2	**Days Observation**		SUCHHANDA BERA		

	NSS Day, Gandhi Jayanti, Ektadiwas, Womens Day, Yoga Day, World Youth Day, World Aids Day, Aranya Saptah and Biographic Inspirational Personalities : Swami Vivekananda, Derozio, Netaji Subhash chandra Bose, Rajnarayan Bose , Mother Teresa.				
3	**Field reports** **i. Students will be asked to submit a Field Reports on any Environment/Health Awareness Programme organized by the Institution.** **ii. Students will submit a field report based on participation in NSS visit of nearby places of tourist/ historical importance and campaign on cleanliness and preservation organized by the institution.**		RAJIV DEV GOSWAMI		
4	**Project Work** **Preparation of a Project Report on topics taught in this paper.**		SUCHHANDA BERA		

	5. Laboratory Note Book: Students will be required to maintain records of all works done in connection with the topics taught in this paper.				
UNITS	**PAPER: SEC-1 :Computer Application**	50	NO FOUND STUDENT		
1	**Introduction to Computer Application** **Components of computer-input and output unit, storage unit, CPU, ALU, control unit. Starting & quitting windows, setting display, time & date, managing files and folders. Meaning, need and importance of information and communication technology (ICT). Application of computer and computer software in for social service programme.**		NO FOUND STUDENT		
2	**Word** **Introduction to word. Creating, saving and opening a document. Formatting & editing features, drawing table and graphs, page setup, paragraph alignment, spelling and grammar**		NO FOUND STUDENT		

	check, bullets and numbering, page number, header and footer, footnote and endnotes, mail merge, printing option and hyperlink. Preparation of word document.				
3	**Excel** **Introduction to Excel. Creating, saving and opening spreadsheet. Format and editing features, adjusting columns width and row height, Creating formulas, short and filter, inserting graph and pictures, printing option. Preparation of Excel worksheet.**		NO FOUND STUDENT		
4	**Power Point** **Introduction to Power Point. Creating, saving and opening a ppt file. Format and editing features, slide show, design, inserting slide number, picture, graph, table, hyperlink and graphics. Preparation of Power Point Presentation.**		NO FOUND STUDENT		

Teaching Plan: Department of NSS: SEMESTER-IV(GENERAL)

UNITS	**PAPER: DSC-1D/2D/3D : Method of Organising Human Service to the Nation through students and youths**	75		15/03/2022 TO 25/06/2022	**4th week of April,2022 &3rd week of June,2022**
1	**Special Camping Program** **Nature, objectives and types. Concept of camp: identification of community problems – importance of group living – team building. Ice breaking and team building activities. Adaptation of village. Selection of camp site and physical arrangement. Identification of specific theme. Planning for camp - pre, during and post campaigning activities. Organizatin of NSS camps through various committees and discipline in the camp. Co-ordination with local planning Government and other agencies. Healthy Programmes and activities to be undertaken in the camp. . Use of mass media in NSS activities. Feedback /Evaluation: post camping activities.**		SUCHHANDA BERA		
2	**Special Program**		SUCHHANDA BERA		

	a. Legal awareness, Health awareness, Environment awareness. b. First aid, Career guidance. c. Leadership training – cum- cultural guidance. d. Globalization and its economic, social, political and cultural impacts.				
3	**Rural work under NSS** **i) Nature of rural society, ii) Problems in rural and tribal areas: Agricultural problems – low productivity tenancy, problems of bonded labours; Rural migration to towns and cities; Rural medical health services – prevention of diseases environmental sanitation through disposal of garbage, construction of soak pits, drains, roads etc. And provision of safe drinking water supply; Need for subsidiary occupation for the poor organization of village industries; Difficulties in organizing the literacy programmes and rural libraries, iii) Rural Youth Programme organization youth club, Young Farmers club, Mahila Mandal, iv) Integrated Rural Development- concept, v) Structure of**		RAJIV DEV GOSWAMI		

	Extension Agencies in rural areas vi) Credit facilities in rural areas, vii) Land reforms and tenancy, viii) Programme for weaker sections of the society in relation to the 20- point Economic Programme, e.g. allotment of house sites to schedule castes/schedule tribes, legal aid to the rural poor etc. ix) Re-cycling of waste and use of gobar gas plants x) NSS and other youth programmes.				
4	**Urban work under NSS** **i) NSS work in urban slums – housing projects, health services, ii) Medical social service work and community health programme, iii) NSS programme in Welfare Institutions, iv) NSS programme in primary schools.**		SUCHHANDA BERA		
5	**Role and Importance of Government Organisations (GO) and Non-Government Organization(NGO)** **Meaning, characteristics and functions of NGO. Characteristics and Functions. Structure of**		RAJIV DEV GOSWAMI		

	Government Organisations and Non – Government Organisations. Co-ordination of National Service Scheme (NSS) with Government Organisations (GO) and Non-Government. Organisations (NGO)). Grants for NSS from GO's for activities- Regular Activities, Camping activities, Other Programme Development Scheme - e.g. HIV-AIDS, Blood Donation. Studies on UNICEF (United Nations Children's Emergency Fund), WHO (World Health Organization).				
Practical					
1	**Campus development program a. Campus development, tree planting maintenance and greening the campus cleaning.** **b. Campus development activities – clean environment campaign, formation of plastic free zones.** **c. Campus improvement activities.**		SUCHHANDA BERA		

2	**Agency visits** **Specified by the respective institution**		SUCHHANDA BERA		
3	**Special camp** **Students will attend one special camp in the selected village and undertake various activities based on the need of that village. Students will submit a report based on the NSS camps.**		SUCHHANDA BERA		
4	**Project Project report will be based on field work assignments in nearby village or urban slums of NSS interests.** **5. Laboratory note book and Viva Voce:** **Students will be required to maintain records of all works done in connection with the topic taught in this paper.**		RAJIV DEV GOSWAMI		

UNITS	**PAPER: SEC-2 : Value System & Gender Sensitivity**	50			
1	Value System a. Meaning of Values, Types of Values. b. Human Values & Social Responsibilities c. Indian Value System – the Concepts and its Features. d. Eleven Vows		NO FOUND STUDENT		
2	Gender Sensitivity and Women Empowerment a. Concept of Gender. b. Causes behind Gender related problems and remedial measures. c. Meaning of Woman Empowerment. d. Various Schemes for Woman Empowerment in India.		NO FOUND STUDENT		

Teaching Plan: Department of NSS: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A/3A : Entrepreneurship Development & Rural Resource Mobilization**	75		**14/09/2021 TO 18/01/2022**	**1st week of November, 2021 &4th week of December,2021**
1	**Entrepreneurship Development a. Definition, role of small scale industries in the nationaleconomy.** **b. Characteristics and types of small scale industries; demand-based and resources-based ancillaries.** **c. Government policy(s) for small scale industries; stages in starting a small scale industry.**		SUCHHANDA BERA		
2	**Project identification, planning and control** **a. Assessment of viability, formulation, evaluation, financing.**		SUCHHANDA BERA		

	b. Field-study, preparation of project report, demand analysis, materialbalance and output methods, benefit cost analysis. **c. The financial functions, cost of capital approach inproject planning and control** **d. Laws concerning entrepreneurship.** **e. Role of various national and state agencieswhich render assistance to small scale** **Industries.**				
3	**Rural resource mobilization** **a. Basic objectives** **b. Case study of eco-village, eco-tourism and agro-tourism.** **c. Micro financing with special reference to self-help groups.**		**RAJIV DEV GOSWAMI**		

	d. Rural entrepreneurship development through traditional technologies.				
4	**Ideal village** **a. Concept and case studies.** **b. Sustainability of model village.** **c. NGOs and SHGs- role in rural development**		**RAJIV DEV GOSWAMI**		
Practical					
1	**Model entrepreneur development project** **a. Project development.** **b. Entrepreneurship model framework**		**SUCHHANDA BERA**		
2	**Visits** **Visit to village-based and community-based entrepreneurship programme(s).**		**SUCHHANDA BERA**		
3	**Training**		**RAJIV DEV GOSWAMI**		

	Training (duration as per the college discretion) at village entrepreneurship/ SHG/NGO engaged in rural development. Students will submit a report on training. **4. Laboratory note book and Viva Voce:Students will be required to maintain records of all works done** **in connection with the topic taught in this paper.**				
UNITS	**PAPER: SEC-3 : Human Rights and Consumer Protection Rights**	50			
1	**Human Rights** **a. Human Rights definition** **b. Universal declaration of Human Rights** **c. Human Rights: voices of youths** **d. History of youth for Human Rights** **e. Importance of Human Rights education**		RAJIV DEV GOSWAMI		

2	**Fundamental rights of Indian Citizens** **a. Fundamental rights of Indian Citizens** **b. Fundamental Duties of the Indian Citizens** **c. Human Rights in India**		RAJIV DEV GOSWAMI		
3	**Consumer Rights** **Consumer Rights** **a. Consumer rights of Indian Citizens** **b. Directive Principle of State Policy**		SUCHHANDA BERA		
4	**Redressal of violation of consumer rights** **a. District Redressal Forum, State Forum** **b. National Council**		SUCHHANDA BERA		
5	**Consumer Safety** **a. Consumer and Food Safety**		SUCHHANDA BERA		

	b. Banking and Insurance problems **c. Misleading Advertisement**				
UNITS	**PAPER: GE-1 : First- Aid for Disasters Management**	75	SUCHHANDA BERA		
1	**Introduction to First –Aid Concept. Aims of first-aid. Significance. Types and Levels. Principles of first-aid.** **Emergency Medical Responder and Roles**		SUCHHANDA BERA		
2	**First –Aid Assessment and Supplies First –Aid Assessment and Supplies** **Recognizing Emergencies. Assessing the situation. Disaster Kit. Home First Aid Kit,** **Travel First Aid Kit. Organizing Shelter. Check-lists. Safety Tools. DRAB and ABCD of first-aid.**		SUCHHANDA BERA		

3	**Disasters specific safety guideline** **Landslides, Earthquakes, Fires, Floods, Hazardous Materials. Epidemics. Others. Life-stock safety and Management during disasters**		RAJIV DEV GOSWAMI		
4	**Emergencies and What to do** **The ABC Bites and Stings. Breathing. Bleeding. Fractures. Burns. Choking. Cold and** **Heat related illnesses. Convulsions and Seizures. Cardiac Problems. Dizziness and** **Fainting. Eye and Ear injuries. Head, neck and spine injuries. Infectious diseases. Poison. Shock. Stroke and Tooth injuries. Drowning, Dizziness and Fainting.**		RAJIV DEV GOSWAMI		
5	**Tools and Techniques for First Aid** **Concept of Basic Life Support. Bandaging, Slings and Binders. Checking**		RAJIV DEV GOSWAMI		

	Pulse. Cardiopulmonary resuscitation (CPR).Clearing Air-way obstruction. Using the Fire extinguisher.				
	Practical				
1	**Breathing and circulation , Life- saving practices**		SUCHHANDA BERA		
2	**Removing clothing , Casualty handling**		SUCHHANDA BERA		
3	**Preparation of First aid Toolbox**		SUCHHANDA BERA		
4	**Dressings , Cold compresses**		RAJIV DEV GOSWAMI		
5	**Principles of bandaging**		RAJIV DEV GOSWAMI		
6	**Roller bandages, Tubular gauze bandages, square knots, hand and foot cover**		RAJIV DEV GOSWAMI		
7	**Arm sling, Elevationsling, improvised slings**		RAJIV DEV GOSWAMI		
Teaching Plan: Department of NSS: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B/3B : Vocational Skill Development**	75		21/02/2022 TO 10/06/2022	**1st week of April,2022 & 1st**

1	**Vocational Skills** **a) Skill: Meaning, need & types.** **b) Soft and Technical Skill Development Training.** **c) Time Management, Team Work.** **d) Mentoring.**		DIPAK BERA		**week of June,2022**
2	**Vocational Training** **a) Vocation and Training programmes.** **b) Apprenticeship, Internship.** **c) Entrepreneurship Development Skills- Government, Self- Employment.** **d) Marketing of cottage products and outlets.** **e) Industrial Safety Measures.**		DIPAK BERA		
3	**Field applicationa) Marketing of cottage products and outlets**		DIPAK BERA		

	b) Role of cottage industry in development process **c) Micro financing with special reference to Self-Help groups** **d) Entrepreneurship Development Skills-Government, Self- Employment**				
	Practical				
1	**Each student will have the option to select two skills –areas out of the list of vocational skills based on the local conditions and opportunities**		SUCHHANDA BERA		
2	**15-20 days training on one such skill**		SUCHHANDA BERA		
3	**Required arrangements for developing these skills to be provided to each volunteer in collaboration with established agencies that possess the necessary in the related vocational skills**		RAJIV DEV GOSWAMI		

4	**Training: Students will attend two vocational training programme in the selected village.**		RAJIV DEV GOSWAMI		
UNITS	**PAPER: SEC-4 : Environment & Energy Conservation**	50			
1	**Environment – The need of sustainability Introduction to environment and the multidisciplinary nature of environment. Environment conservation and management as the key requirements of sustainability. Definitions, scope and importance, need for public awareness.**		SUCHHANDA BERA		
2	**Environmental Pollution Quantification of environmental pollution, various parameters and indexes. Types of environmental pollution and pollutants. Causes, effects and control measures of – Air pollution, Water pollution, Solid and e-waste management, Soil/land pollution, Noise pollution, Radioactive pollution**		SUCHHANDA BERA		

	and Thermal pollution. Role of an individual in prevention of pollution.				
3	**EMS AND EIA** **Introduction and basics of environmental management systems and environmental impact assessment tools. Linkages between technology, environmental quality and economic gain: Carbon trading, Clean Development Mechanism etc.**		RAJIV DEV GOSWAMI		
4	**Social issues and the environment** **Environment ethics, issues and possible solutions. Urban problems related to energy, water conservation, rain water harvesting, water shed management, rehabilitation problems and concerns – case study of Sardar Sarovar dam, environment protection acts.**		RAJIV DEV GOSWAMI		
5	**Energy- Sources, types and important aspects**		RAJIV DEV GOSWAMI		

	Physical understanding of issues and problems involved with the generation, storage, transport, and usage of various forms of energy in technological society. Types of energy resources as Renewable and Non-renewable energy, fossil fuels and hydropower, nuclear, solar, and wind energy, and issues related to energy conservation in everyday life. Effects of waste products associated with energy generation and usage and energy conservation measures.				
UNITS	**PAPER: GE-2 : Introduction to Disaster Management**	75			
1	**Introduction** **a) Disaster, Hazards, Vulnerability, Resilience, Risks.** **b) Factors & significance, causes, nature, types and magnitude of disasters.**		SUCHHANDA BERA		

	c) History of Disaster, Levels of disasters as per national guideline.				
2	**Consequences of disaster** **a) Causes and consequences of hazards- physical, economic, cultural.** **b) Repercussion of disasters and hazards, Economic damage.** **c) Loss of human and animal life. Destruction of Ecosystem.**		SUCHHANDA BERA		
3	**Environment Issues** **a) Environment conservation, enrichment and Sustainability** **b) Climate Change, Global Efforts for environment conservation** **c) Waste management, Solar Energy in India**		RAJIV DEV GOSWAMI		

	d) Natural resource management: Rain water harvesting, Energy Conservation, **e) Waste land development, Soil conservations and Afforestation.**				
4	**Disaster Management** **a) Role of youth in Disaster Management** **b) Role of NSS team in Disaster Management** **c) National Disaster Response Force and Civil Defense-organization and functions.** **d) Quick Response Team and NDRF.**		RAJIV DEV GOSWAMI		

Nutrition

Teaching Plan: Department of Nutrition: SEMESTER-I(HONOURS)

UNITS	PAPER: CC1T	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
1,2,3	Basic Nutrition: 1. Concept and definition of terms Nutrition, Malnutrition and Health: Brief history of nutritional science. Scope of nutrition.	40T+20P+10I+5A	SAINI MANDAL	01.10.2021 to 24.02.2022	1st internal examination on 4th week of

	2. Minimum Nutritional Requirements and RDA : Formulation of RDA and Dietary Guidelines: Reference Man and Reference Woman. 3. Body Composition and Changes through the life cycle.				December, 2022 and 2nd internal examination on 2nd week of March,2022
4,5	4. Energy in Human Nutrition: Idea of energy and its unit, energy balance, Assessment of energy requirements, Deficiency and Excess, Determination of energy in food, B.M.R & influencing factors, S.D.A. 5. Energy and other nutritional requirement of adult male and female engaged in different types of work (Sedentary, moderate, heavy).		DEBNANDA CHAKRABORTY		
6,7	6. Food as source of nutrients, function of food, definition of nutrition, nutrients and energy, adequate, optimum and good nutrition, malnutrition. 7. Nutrition- Fitness, Athletics and sports.		PIU SASMAL		
8,9,10	8. Food Guide- Basic food groups, How to use food guide (according to RDA). 9. Interrelationship between nutrition and health- Visible symptoms of goods health. 10. Function of nutrients- Carbohydrate, dietary fibre, protein, fat, vitamins, minerals, anti-oxidants, water.		KABERI KANDAR		

11,12,13	11. Effect of cooking and heat processing on the nutritive value of foods. 12. Processed supplementary foods 13. Food sanitation in hygiene.		SUTRISHNA DASH		
	PAPER: CC1P				
1,2,3a,3b	1. Use and care of kitchen equipment. 2. Weights and measures standards; household measures of raw and cooked foods. 3. Food preparation and classifying recipes as good, moderate or poor, sources of specific nutrients, Amount of ingredients to be in standard recipe- a) Portion size b) Beverages: tea, coffee, cocoa, fruit juice, milk, milkshakes.		SUTRISHNA DASH		
3c,4	c) Cereals and flour mixtures- basic preparation and there nutritive value- Boiled rice and rice pulao, chapatti, parantha, sandwiches, pastas, pancakes, cookies and cakes. 4. Vegetables and fruits: Simple salad, dry vegetables, curries, fruits preparation		SAINI MANDAL		

	using fresh and dried stewed fruit, fruit salad.				
5	5. Milk and milk products: Porridges, curds, anner and their commonly made preparations, milk based simple desserts and puddings, custard, kheer, ice-cream		KABERI KANDAR		
6	6. Meat- Cut of meats Meat preparations, Fish, poultry, hard and soft cooked, poached, scrambled, fried omelette, eggnogs		PIU SASMAL		
7,8	7. Soups: Basic, clear and cream soups. 8. Snacks: pakoras, cheese toast, upma, poha, peanut, chikki, ti and laddo		DEBNANDA CHAKRABORTY		
UNITS	**PAPER: CC2T : Food Science and food commodity**	40T+20P+10I+5A		01.10.2021 to 24.02.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
1,2,3,4,5,6,7	1. Basic concept on Food, Nutrients, Nutrition. 2. Classification of Food, Classification of Nutrients. 3. Carbohydrates - Definition, Classification, Structure and properties. Monosaccharides - glucose, fructose, galactose. Disaccharides -		DEBNANDA CHAKRABORTY		

	Maltose, lactose, sucrose. Polysaccharides - Dextrin, starch, glycogen, resistance starch. 4. Lipids - Definition, Classification & Properties. Fatty acids - composition, properties, types. 5. Proteins - Definition, Classification, S Amino acids - Classification, types, functions. 6. Carbohydrates - Sources, daily requirements, functions. Effects of too high - too low carbohydrates on health. Digestion & Absorption. Blood glucose and effect of different carbohydrates on blood glucose. Glycemic Index. Functional role of Sugars in food, Fermention of Sugar. 7. Proteins - Sources, daily requirements, functions. Effect of too high - too low proteins on health. Digestion & absorption. Assessment of Protein quality (BV, PER, NPU). Factors affecting protein bio-availability including anti-nutritional factors tructure & properties.			
8-12,27-31	8. Lipids - Sources, daily requirements, functions. Digestion & Absorption. Role & nutritional significances of PUFA, MUFA, SFA, W-3 fatty acid. 9. Dietary Fibre - Classification, sources, composition, properties & nutritional significance. 10. Minerals & Trace Elements, Bio-Chemical and Physiological Role, bio-availability & requirements, sources, deficiency & excess (Calcium, Sodium, Potassium Phosphorus, Iron, Fluoride, Zinc, Selenium, Iodine, Chromium).		SUTRISHNA DASH	

	11. Vitamins - Bio-Chemical and Physiological Role Physiological role, bio-availability and requirements, sources, deficiency & excess. 12. Water - Functions, daily requirements, Water balance. 27. Beverages: Tea; Coffee. Chocolate and Cocoa Powder-Processing, cost and nutritional aspects, other beverages-Aerated beverages, juices. 28. Preserved Products : Jams, Jellies, Pickles, Squashes, Syrups types, composition and manufacture, selection, cost, storage, uses and nutritional aspects. 29. Food Standards : ISI, Agmark, FPO, MPO, PFA. 30. New food: fast food, junk food, GM food, Free food 31. Food, preservation, food processing, food adulteration and food storage.			
13,14,15,16,17,18	13. Sensory characteristics of food 14 Food behaviour, modification of food beha15. Cereals and Millets: Cereal products, breakfast cereals, fast foods. Structure, processing, storage, use in various preparations, variety, selection and cost. 16. Pulses and Legumes: Production (in brief), structures, selection and variety. Storage, processing and use in different preparations. Nutritional aspects and cost.		KABERI KANDAR	

	17. Milk and Milk-products: Composition, classification, selection quality and cost, processing, storage and uses in different preparations. Nutritional aspects, shelf - life and spoilage. 18. Eggs: Production, grade, quality, selection, storage and spoilage, cost, nutritional aspects and use in different preparations.				
19-21	19. Meat, Fish and Poultry: Types, selection, purchase, storage, uses, cost, spoilage of fish poultry and meat, uses and preparations. 20. Vegetables and Fruits: Types, selection, purchase, storage, availability. Cost of use and nutritional aspects of raw & processed products and use in different preparations. 21. Sugar and Sugar products: Types of natural sweeteners, manufacture, selection, storage and use as preserver, stages in sugar cookery.		SAINI MANDAL		
22-26	22. Fats and Oils: Types and sources (animal and vegetable), processing, uses in different preparations, storage, cost and nutritional aspects. 23. Raising and Leavening agents: Types, Constituents, Uses in cookery and bakery, Storage. 24. Food Adjuncts: Spices, Condiments, Herbs, Extracts, Concentrates, Essences, Food Colours.		PIU SASMAL		

	Origin, classification, Description, uses, Specifications, procurements and Storage. 25. Convenience Foods: Role, types, advantages, uses, cost and contribution to diet. 26. Salt: Types and uses.				
	PAPER: CC2P : Nutritional Biochemistry (Practical)				
1a,1c	**1. Carbohydrate** a. Reactions of Mono, Di and Polysaccharides and their identification in unknown mixt c. Estimation of lactose in milk.		SUTRISHNA DASH		
1b	b. Estimation of reducing and total sugars in foods		KABERI KANDAR		
2a,2b	**2. Fats** a. Reactions of fats and oils		SAINI MANDAL		

	b. Determination of Acid value, Saponification of natural fats and oils.				
3a	**3. Proteins** a. Reactions of proteins in foods		DEBNANDA CHAKRABORTY		
3b,3c	b. Reaction of amino acids and their identification in unknown mixtures c. Estimation of total nitrogen of foods by Kjeldhal method.		PIU SASMAL		
UNITS	**PAPER: GE-1BASIC HUMAN NUTRITION**	60T+10I+5A		01.10.2021 to 24.02.2022	
1,2	1. Concept and definition of terms-Nutrition, Malnutrition and Health. Brief history of nutrition science. Scope of Nutrition. 2. Body Composition and Changes through the life cycle.		KABERI KANDAR		1st internal examination on 4th week of December, 2022 and 2nd internal examination on
3,6	3. Minimum Nutritional Requirement and RDA. Reference Man and Reference Woman.		SUTRISHNA DASH		

	6. Effect of cooking and heat processing on the nutritive value of foods.				2nd week of March,2022
4,5	4. Food groups. 5. Function of nutrients- Carbohydrate, dietary fibre, protein, fat, vitamins, minerals, anti-oxidants, water.		PIU SASMAL		

Teaching Plan: Department of Nutrition: SEMESTER-II(HONOURS)

UNITS	**PAPER: CC3** **CC-3 Nutritional Biophysics and biochemistry**	**FULL MARKS** **40T+20P+10I+5A**	**NAME OF THE TEACHER**	**MONTH OF TEACHING** **01.04.2022 to 09.07.2022**	**REMARKS**
1,2,3,4	1. Biochemistry: Definition, objectives, scope and interrelationship between biochemistry and other biological science. 2. Biophysics- general idea of biophysics in nutrition 3. Basic process and nutritional importances of Diffusion,Osmosis, Absorption, Viscosity, Surface tension, Colloids.		KABERI KANDAR		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022

	4. Principles of Thermodynamics and its importance in nutrition.				
5,6	5. Acid, Base, Buffer, pH and Acid-Base balance. 6. Molecular aspects of transport; Passive diffusion, facilitated diffusion, active transport.		DEBNANDA CHAKRABORTY		
7,8a,8b	7. Enzymes: Definition, types and classification of enzymes, definition and types of coenzymes. specificity of enzymes, Isozymes, enzyme Kinetics including factors affecting enzyme action, velocity of enzyme catalyzed reactions, enzyme inhibition. 8. Intermediary metabolism: a) Carbohydrate Metabolism, Glycolysis, TCA cycle & energy generation, gluconeogenesis, glycogenesis, glycogenolysis, blood sugar regulation. b) Lipids : Oxidation and biosynthesis of fatty acids (saturated &mono-unsaturated) : Synthesis and utilization of ketone bodies, Ketosis, fatty livers.		PIU SASMAL		
8c,9	c) Proteins : General reaction of amino acid metabolism, urea cycle.		SUTRISHNA DASH		

	9. Lipoproteins : Types, composition, role and significance in disease (in brief)				
10,11	10. Introduction to Nucleic acids: Structure, replication, transcription, genetic code (in brief) elementary knowledge of biosynthesis of proteins. 11. Fluid, Electrolytes and Acid-Base balance brief.		SAINI MANDAL		
	C3P Nutritional Biophysics and biochemistry(Practicals)				
1	1. To study the general properties of urease amd salivary amylase.		SAINI MANDAL		
2,3,4,5	2. Preparation of buffer of particular PH (Phosphate buffer, tris buffer) 3. Determination of strength of $KMNO_4$ using primary standard (oxalic acid). 4. Electrophoresis 5. Dialysis		SUTRISHNA DASH		
UNITS	**PAPER: CC4** **CC-4: HUMAN PHYSIOLOGY**	40T+20P+10I+5A		**01.04.2022 to 09.07.2022**	

1,2,3,4	1. Cell structure and function **2.** Blood cells: Haemoglobin, Blood groups, Coagulation factors, Anaemia. **3.** Skeletal System: bones, joints and bone deformities in brief. **4.** Cardiovascular System: Cardiac cycle, Cardiac output, Blood pressure, Hypertension, Radial Pulse		DEBNANDA CHAKRABORTY		
5,6,12	5. Lymphatic System: Lymph glands and its function, Splen- Structure and functions. **6.** Respiratory System:- Ventilation, functions, Lungs volume and capacities. **12.** Reproductive System: a. Structure and functions of male and female reproductive organs, Menstrual cycle, Puberty, Menopause, fertilization and development of fertilized ovum, placenta and its function.		KABERI KANDAR		

7,8,9,11	**7.** Gastrointestinal System: a. Structure of various parts of the GI tract b. Digestion and absorption of Carbohydrate, protein and fat. (Digestion and absorption of Carbohydrate, protein and fat repeated in CC2T 6, 7, 8) **8.** Endocrinology: List of endocrine glands, Hormonestheir secretion and function (in brief) **9.** Excretory System: Structure of Nephron, formation of urine. **11.** Skin: Structure and function of skin		SUTRISHNA DASH		
10	**10.** Central Nervous System: Parts, Sliding filament theory, neuromuscular junction, wallerian egeneration, Motor Nervous System- Upper motor Nervous System and lower motor Nervous System. Sensory Nervous System, Sympathetic and Parasympathetic nervous system.		SAINI MANDAL		
13	**13.** Special senses: Structure and function of eye and ear, common diseases in eye and ear (in brief).		PIU SASMAL		
	C4 P: HUMAN PHYSIOLOGY (Practicals)				

1	1. Identification of prepared Slides: (a) Lungs, (b) Supra Renal Gland, (c) Thyroid, (d) Pituitary (e) Testis, (f) Ovary, (g) Kidney, (h) Liver, (i) Pancreas, G) Small Intestine, (k) Large Intestine, (1) Spinal cord, (m) Cerebellum.		PIU SASMAL		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2	2. Preparation of blood film and identification of white blood cells, Differential count.		SAINI MANDAL		
3,4,5,6	3. Estimation of Haemoglobin. 4. Determination of Bleeding time and clotting time of blood, Blood grouping. 5. Measurement of Blood pressure and Pulse Rate. 6. Elicitation of Reflexes and jerks.		SUTRISHNA DASH		
7	7. Estimation of haemoglobin, RBC, WBC, TLC, DLC and ESR.		KABERI KANDAR		
UNITS	**PAPER: GE-2** **FOOD SCIENCE**			**01.04.2022 to 09.07.2022**	
1,2,3	1. Cereals and Millets: Cereal products, breakfast cereals, fast foods. Structure, processing, storage, use in various preparations, variety, selection and cost. 2. Pulses and Legumes: Production (in brief), structures, selection and variety. Storage,		KABERI KANDAR		1st internal examination on 2nd week of May, 2022 and 2nd internal

	processing and use in different preparations. Nutritional aspects and cost. 3. Milk and Milk-products: Composition, classification, selection quality and cost, processing, storage and uses in different preparations. Nutritional aspects, shelf - life and spoilage.				examination on 2nd week of July,2022
4,5,6	4. Eggs: Production, grade, quality, selection, storage and spoilage, cost, nutritional aspects and use in different preparations. 5. Meat, Fish and Poultry: Types, selection, purchase, storage, uses, cost, spoilage of fish poultry and meat, uses and preparations. 6. Vegetables and Fruits: Types, selection, purchase, storage, availability. Cost of use and nutritional aspects of raw & processed products and use in different preparations.		DEBNANDA CHAKRABORTY		
7,8,9	7. Sugar and Sugar products: Types of natural sweeteners, manufacture, selection, storage and use as preserver, stages in sugar cookery. 8. Fats and Oils: Types and sources (animal and vegetable), processing, uses in different preparations, storage, cost and nutritional aspects. 9. Raising and Leavening agents: Types, Constituents, Uses in cookery and bakery, Storage.		SAINI MANDAL		

10,11,12	10. Food Adjuncts: Spices, Condiments, Herbs, Extracts, Concentrates, Essences, Food Colours. Origin, classification, Description, uses, Specifications, procurements and Storage. 11. Convenience Foods: Role, types, advantages, uses, cost and contribution to diet. 12. Salt : Types and uses.		PIU SASMAL		
13,14,15,16,17	13. Beverages : Tea; Coffee. Chocolate and Cocoa Powder-Processing, cost and nutritional aspects, other beverages- Aerated beverages, juices. 14. Preserved Products : Jams, Jellies, Pickles, Squashes, Syrups types, composition and manufacture, selection, cost, storage, uses and nutritional aspects. 15. Food Standards : ISI, Agmark, FPO, MPO, PFA. 16. New food: fast food, junk food, GM food, Free food 17. Food, preservation, food processing, food adulteration and food storage.		SUTRISHNA DASH		
Teaching Plan: Department of Nutrition: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC5**			01.10.2021 to 05.02.2022	
	CC5T: Family meal management and meal planning	40T+20P+10I+5A			**4th week of November,2021 &1st Week**
1,2	1. Nutrition during Pregnancy: Physiology of pregnancy, factors (nonnutritional) affecting pregnancy outcome, importance of		SAINI MANDAL		

	adequate weight gain during pregnancy, antenatal care and its schedule, Nutritional requirements during pregnancy and modification of existing diet and supplementation, nutritional factors affecting breast feeding. Deficiency of nutrients and impact- energy, iron, folic acid, protein, calcium, iodine. Common problems of pregnancy and their managements- nausea, vomiting, pica, food aversions, pregnancy induced hypertension, obesity, diabetes and Adolescent Pregnancy. 2. Nutrition during Lactation: Physiology of Lactation: Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation. Care and preparation of nipples during breast feeding.				**of January,2022**
3,4,5,6	3. Nutrition during infancy: Infant physiology relevant to feeding and care. Breast feeding - colostrums, its composition and importance in feeding. Initiation of breast-feeding and duration of breast-feeding, Advantages of exclusive breast-feeding, Nutritional and other advantages of breast-feeding. Introduction of complementary foods, initiation of management of weaning, breast feeding etc. Bottlefeeding circumstances under which bottle-feeding is to be given. Careand sterilization of bottles.		SUTRISHNA DASH		

	Preparation of formula. Mixed feeding, breast feeding and artificial feeding. Teething and management of problems. 4. Nutrition to toddlers / preschool/school going children or adolescent. 5. Management of preterm and low birth weight children – their special needs. 6. Growth and development from infancy to adulthood: Importance of nutrition for ensuring adequate development, Preventions of growth faltering. Growth assessment by Height, Weight, BMI, Skin fold thickness, Waist Hip Ratio.			
7	7. Geriatric nutrition – Dietary requirement, Geriatric health problems, Nutritional care.		DEBNANDA CHAKRABORTY	
8,9,10	8. Sports Nutrition- nutritional demand on different sports and dietary recommendations. 9. Space Nutrition- Body composition changes in space, special diet in space persons. 10. Meal planning for the family		PIU SASMAL	
11,12,13	11. Indian meal pattern- vegetarian and non-vegetarian 12. Food faddism and the faulty food habits 13. Nutritive value of common Indian recepies.		KABERI KANDAR	
	C5P: Family meal management and meal planning (practical)			
1-9			DEBNANDA CHAKRABORTY	

	1. Planning and preparation of balanced diet for a pregnant women 2. Diet during complication of pregnancy 3. Planning and preparation of balanced diet for a lactating women 4. Preparation of weaning food 5. Planning and preparation of balanced diet for a pre-school children 6. Planning and preparation of balanced diet for school going child. Preparation of packed lunch 7. Planning and preparation of balanced diet for adolescents 8. Planning and preparation of balanced diet for adult men and women of different Physical activity and economic status. 9. Planning and preparation of balanced diet for senior citizen.			
UNITS	**PAPER: CC6**			01.10.2021 to 05.02.2022
	C6T: Community Nutrition and Nutritional Epidemiology	40T+20P+10I+5A		
1,2,3,4	1. Concept of community, types of community, factors affecting health of Community. 2. Nutritional Anthropometry, Biochemical tests and Biophysical methodology - Merits, Limitations		DEBNANDA CHAKRABORTY	

	3. Diet Survey: Need and importance, methods of dietary survey- Merits and Limitations. Family food security. 4. Clinical Signs: Merits, Limitations, Need and importance, identifying signs of PEM, vitamin A deficiency,Vit.–D deficiency and iodine deficiency, Classify clinical sign according to WHO.			
5,6,7,8	5. Nutritional problem in the community 6. National Nutritional Intervention Programme to combat malnutrition 7. Food availability, factors affective food availability and its consumption. 8. Infection and Immunization:Importance and Schedule of Vaccination of Children, Adult andforeign travelers. Full and partial immunization. Role of community for universal vaccination implementation		KABERI KANDAR	
9,12,13,14	9. Principles of Epidemiology: Concept of disease, rate of a disease in a population (attack rate, morbidity rate, mortality rate, incidence and prevalence rate). 12. Epidemiological methods: descriptive studies, analytical studies and experimental studies. 13. Study of the epidemiologic approach – time, place, person distribution.		SAINI MANDAL	

	Determinants of disease. Vital statistics and their significance. 14. Demography- Demography cycle and its applications. Socio-demographic and psychosocial variables.			
10,11,15,16,17	10. Dietary Exposure-National, Household, Institution and Individual level (NHFS and NNMB) 11. Biomarkers and nutrient intakes. 15. Public health hazards from contaminated foods 16. Comparison with norms, standards, Z-scores. 17. Interpretation of the nutritional assessment data and its significance		PIU SASMAL	
18,19,20	18. Determining Validity and Reliability 19. Sources of errors for different methods of measurement relating to nutritional exposures. 20. Malnutrition and Infection vicious cycle-UNICEF conceptual model of Malnutrition.		SUTRISHNA DASH	
	C6P: Community Nutrition and Nutritional Epidemiology (Practical)			
1a,b,c,2	1. Diet and nutrition surveys a. Identification of vulnerable and risk groups		SAINI MANDAL PIU SASMAL	

	b. Diet survey for breast feeding and weaning practices of specific groups c. Use of anthropometric measurement of children and adolescent girls and boys 2. Preparation of visual aids to highlight community nutrition, nutritional awareness, nutritional surveillance.			
3a,b	3. Field visit to- a. Observe the working of nutrition and health oriented programmes (survey based result). b. Hospitals to observe nutritional deficiencies.		SUTRISHNA DASH SAINI MANDAL PIU SASMAL DEBNANDA CHAKRABORTY KABERI KANDAR	
UNITS	**PAPER: CC7**	40T+20P+10I+5A		01.10.2021 to 05.02.2022
	C7T: Basic Dietetics			
1,2,3,4	1. Role of dietician: The hospital and community 2. Basic Concepts of diet therapy 3. Principle of diet therapy and therapeutic nutrition for changing needs 4. Routine Hospital Diets: Regular, light, soft, fluid, parenteral and eternal feeding		KABERI KANDAR	
5,6,7	5. Diets for febrile conditions, infections and surgical conditions.		DEBNANDA CHAKRABORTY	

	6. Diet for gastro-intestinal disorders- Constipation, diarrhoea, peptic ulcer 7. Diet for Renal Diseases- Nephritis, Nephrotic syndrome, Renal failure.			
8,9,10	8. Diet for obesity and different cardiovascular disorders 9. Diet for diabetes mellitus 10. Nutrition in cancer		PIU SASMAL	
11,12,13	11. Nutrition in Immune system dysfunction (AIDS &Allergy) 12. Nutrition support in metabolic disorder 13. Nutrition in burn and surgery		SUTRISHNA DASH	
14,15,16,17	14. Nutrition- Addictive behaviour in anorexia nervosa, bulimia and alcoholism 15. Nutrient Drug interaction 16. Feeding infants and children's- problems in feeding children in hospital 17. Nutrition and diet clinics- Nutrition education in general, Patients check-up and dietary counselling, educating the patient and follow up.		SAINI MANDAL	
	C7P: Basic Dietetics (Practical)			
1--9	1. Planning and preparation of normal diets. 2. Planning and preparation of fluid diets. 3. Planning and preparation of soft/semi solid diets.		PIU SASMAL	

	4. Planning and preparation of high and low calorie diets. 5. Planning and preparation of diets for diabetes mellitus 6. Planning and preparation of diet for hypertension and atherosclerosis 7. Planning the preparation of diets for nephritis and nephrotic syndrome 8. Planning and preparation of diets for Peptic Ulcers. 9. Low and medium cost diets for PEM, anaemia and vitamin A deficiency Downloaded			
UNITS	**PAPER: SEC-1**	40T+5I+5A		01.10.2021 to 05.02.2022
	SEC1T: Biostatistics and Bioinformatics			
1,2	1. Data and Data Types: Primary data and Secondary Data. 2. Measures of Central Tendency: Mean, Median, Mode.		SAINI MANDAL	
3,4	3. Dispersion: Range, Standard Deviation. 4. Hypothesis Testing: Chi-square Test, Student‘t’ test, Analysis of Variance (ANOVA).		KABERI KANDAR	
5	5. Bioinformatics and Health Informatics: Concept and applications.		DEBNANDA CHAKRABORTY	

6	6. Nucleic acid and Protein Data Bases, Nutrient data bases.		PIU SASMAL	
7	7. Sequence similarity searching by BLAST, Principle, features and types of BLAST, Significance of Multiple Sequence Alignments, Phylogenetic Tree.		SUTRISHNA DASH	
UNITS	**PAPER: GE-3**			01.10.2021 to 05.02.2022
	GE3T: Community Nutrition and Nutritional Programme	60T+10I+5A		
Part-1:	**Community Nutrition and Nutritional Programme**			
1,2,3,4	1. Concept of community, types of community, factors affecting health of Community. 2. Basic concept of Nutritional Programme Formulation. 3. ICDS Programme – Aims, Objectives, Target group, Services provided, Advantages, Limitation, Suggestion for improvement. 4. MDMP – Aims, Objectives, Target group, Service provided, Advantages, Limitation, Suggestion for improvement.		SAINI MANDAL	
5,6,7,8	5. ANP, SNP, CNP, BFP – Aims and Objectives, Target group, Service provided, Advantages, Limitation. 6. PHC and Public distribution system to combat malnutrition		DEBNANDA CHAKRABORTY	

	7. Identifying signs and symptoms of vitamin A deficiency, Vit.–D deficiency, iodine and iron deficiency, and role of prophylaxis programme to overcome such deficiencies. 8. Nutritional Anthropometry, Biochemical tests and Biophysical methodology - Merits, Limitations			
9,10,11,12	9. Diet Survey: Need and importance, methods of dietary survey- Merits and Limitations. Family food security. 10. Concept of Surveillance Systems: Role of international, national, regionalagencies and organizations. 11. Nutritional problem in the community : Epidemiology, etiology and prevention of Marasmus, Kworshiorkar, Scurvy, Ricket, Osteomalacia, Obesity. 12. Importance of dietitian in community		SUTRISHNA DASH	
Part-2:	**Nutrition in specific pathophysiological conditions:**			
1,2,3,4	1. Hospital diets- liquid, clear fluid, soft & normal diets. 2. Diet therapy in diabetes mellitus and obesity. 3. Dietary management and nutritional factors involved in cardiovascular disease like atherosclerosis,hyperlipidemia, hypertension.		SAINI MANDAL	

	4. Diet therapy in peptic ulcer, gastritis, diarrhea, colitis, constipation, flatulence and jaundice.				
5,6,7,8	5. Diet during febrile condition, infection, surgical condition, nephritis, and nutritional anemia. 6. Therapeutic uses of dietary fibers with special reference to chronic constipation, diverticular disease, irritable bone syndrome, obesity and diabetes, possible adverse effects of dietary fibers. 7. Rehydration therapy- Elementary idea about rehydration, Conditions for rehydration. Different types of rehydration therapy with special emphasis on ORS -its types and importance, Age dependent ORS quantity for rehydration therapy. 8. Nutrition and Infection:Infection, a cause of malnutrition and vice-versa. Nutrition and immunity during childhood and in adult.		PIU SASMAL		
Teaching Plan: Department of Nutrition: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC8**	40T+20P+10I+5A		15.03.2022 to 25.06.2022	
	C8T: Diet and Diseases				**4th week of April,2022**
1,2	**1.** Inborn error of metabolism – Lactose Intolerance, Galactosamia, Phenylketonuria and its dietary management.		DEBNANDA CHAKRABORTY		

	2. Etiology, symptoms, diagnostic tests and dietary management of intestinal diseases: Diarrhea, Steatorrhoea, Diverticular disease, Inflammatorybowel disease, Ulcerative Colitis, Flatulence, Constipation, Irritable Bowel Syndrome, Haemorrhoids.				**&3rd week of June,2022**
3,6	**3.** Etiology, symptoms, diagnostic tests and dietary management of Malabsorption syndrome, Celiacsprue, tropical sprue, Intestinal brushborder deficiencies (Acquired disaccharide intolerance), Protein losingenteropathy. RUTF. **6.** Arthritis and gout: Etiology, symptoms, diagnostic tests and dietary management.		PIU SASMAL		
4	**4.** Disease of the liver, Exocrine Pancreas and Biliary System. Liver function tests, application of diet therapy and nutritional care in liver disease. Dietary care and management in Viral Hepatitis, Cirrhosis of liver, Wilson's diseases. Dietary care and management in diseases of Gall Bladder and Pancreas Cholelithiasis, Cholecystitis, Cholecystectomy,Pancreatitis.		KABERI KANDAR		
5	**5.** Anaemias: Pathogenesis and dietary management - Nutritional Anaemias, Sickle Cell Anaemias, Thalassemia, Anaemia resulting from Acute Haemorrhage.		SUTRISHNA DASH		

	C8P: Diet and Diseases (Practical)			
1---8	1. Planning and preparation of diet for diarrhoea patient. 2. Planning and preparation of diet for Steatorrhoea patient. 3. Planning and preparation of diet for Diverticular disease patient. 4. Planning and preparation of diet for Ulcerative Colitis patient. 5. Planning and preparation of diet for Flatulence patient. 6. Planning and preparation of diet for Constipation patient. 7. Planning and preparation of diet for Irritable Bowel Syndrome patient. 8. Planning and preparation of diet for Haemorrhoids patient.		DEBNANDA CHAKRABORTY	
9--15	9. Planning and preparation of diet for Celiac sprue patient. 10. Planning and preparation of diet forViral Hepatitis patient. 11. Planning and preparation of diet for Cirrhosis ofliver patient. 12. Planning and preparation of diet for Cholelithiasis patient. 13. Planning and preparation of diet for Pancreatitis patient. 14. Planning and preparation of diet for Anaemia patient.		KABERI KANDAR	

	15. Planning and preparation of diet for Thalassemia patient.			
UNITS	**PAPER: CC9**	40T+20P+10I+5A		15.03.2022 to 25.06.2022
	C9T: Food Microbiology			
1,2,11	1. Introduction to microbiology and its relevance to everyday life. General characteristics of bacteria, fungi, virus, protozoa and algae. 2. Cultivation of microorganisms: Nutritional requirements of microorganisms, types of media used, methods of isolation. 11. Fermented Foods- Dietary different fermented products, importance of fermented foods.		PIU SASMAL	
3,4	3. Growth of microorganisms: Growth curve, effect of environmental factors in growth of microorganism – pH, water activity, oxygen availability, temperature and others. 4. Primary sources of microorganisms in foods, physical and chemical methods used in destruction of micro organisms in foods - sterilisation and disinfection		SAINI MANDAL	
5,8	5. Food Spoilage: Contamination of micro organisms in the spoilage of different kinds of foods, such as cereal and cereal products,		KABERI KANDAR	

	vegetable and fruits, fish and other sea foods, meat and meat products, eggs and poultry, milk and milk products, canned foods. 8. Beneficial effect of microorganisms-concept of probiotics and related factors			
6	6. Assessing the microbiological quality of food: indicator organisms, microbiological standards, principles of GMP & HACCP in food processing. Safety management at household and industrial level.		SUTRISHNA DASH	
7,9	7. Foodborne infections: Bacterial food infections-Salmonellosis, Shigellosis and Listeriosis. Food poisoning (Staphylococcal and Botulism) - Symptoms, mode of transmission and methods of prevention, Concept of aflatoxin intoxication. 9. Environmental microbiology: Water and water borne diseases, air and air borne diseases, soil and soil borne diseases, sewage and diseases. 10. Waste product handling: Planning for waste disposal- solid wastes and liquid wastes.			
	C9P: Food Microbiology (Practical)			
1,5	1. Study of equipments in a microbiology lab. 5. Preparation of traditional Indian fermented food and its quality checking e.g. testing of physical, chemical and nutritional properties.		SUTRISHNA DASH	

2	2. Preparation of different culture media.		PIU SASMAL	
3,4	3. Staining of bacteria with gram staining. 4. Microbiological examination of milk (Methylene blue reduction test).		SAINI MANDAL	
UNITS	**PAPER: CC10**	40T+20P+10I+5A		15.03.2022 to 25.06.2022
	C10T: Food processing and Preservation			
1,2,3,4	1. Significance, principles of different methods of food processing: thermal processing- Cooking (moist heat, dry heat, combination method of cooking), blanching, pasteurization, sterilization, canning. 2. Principles of microwave cooking and solar cooking. 3. Principle of freezing, changes occurring during freezing. Types of freezing - slow freezing, quick freezing. Food preservation by drying and dehydration, differences between sun drying and dehydration (i.e. mechanical drying), types of driers used in the food industry. 4. Preservation by Irradiation: Units of radiation, kinds of ionizing radiations used in food irradiation. Mechanism of action, concept of cold sterilization.		SUTRISHNA DASH	

5	5. Principle and methods of making pickles, jam and jellies from different vegetables / fruits.		KABERI KANDAR	
6,7	6. Principle and methods of preparation of food from cereals. 7. Principle and methods of preparation of meat, fish, poultry and egg products.		SAINI MANDAL	
	C10P: Food processing and Preservation (Practical) **Practical:**			
A: 1,2	1. **Milk cookery**: Experimental milk cookery. Preparation of selected common recipes. 2. **Egg cookery:** Experimental cookery on eggs-boiled eggs, poached eggs, Omelettes and custards. Preparation of selected common recipes.		DEBNANDA CHAKRABORTY	
3,4	3. **Vegetables Cookery:** a. Different methods of cooking vegetables – effect of shredding, dicing, acid and alkali, pressure cooking, steaming with and without lid. e.g. Potato, beetroot, carrot and greens. Recipes with Vegetables 4. **Fruits**: Prevention of browning on fruits. Preparation of selected common recipes.		KABERI KANDAR	
5,6	5. Estimation of Sodium, Potassium, Calcium and Iron in different food staffs. 6. Estimation of vitamin C content of food by biochemical method.		SUTRISHNA DASH	

B	**B:** **Visit to a food processing industry.**		DEBNANDA CHAKRABORTY KABERI KANDAR	
UNITS	**PAPER: SEC-2**	40T+5I+5A		15.03.2022 to 25.06.2022
	SEC2T: Women Health & Nutrition			
1,2	1. Factors (non-nutritional) affecting pregnancy outcome, importance of adequate weight gain during pregnancy, antenatal care and its schedule, Nutritional requirements during pregnancy and modification of existing diet and supplementation, Deficiency of nutrients, specially energy, iron folic acid, protein, calcium, iodine. Common problems of pregnancy and their managements, specially - nausea, vomiting, pica, food aversions, pregnancy induced hypertension, obesity, diabetes. Adolescent pregnancy. 2. Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation. Care and preparation of nipples during breast feeding.		SAINI MANDAL	
UNITS	**PAPER: GE-4**	40T+20P+10I+5A		15.03.2022 to 25.06.2022

	GE4T: Family Meal Management			
1,2,3	**1.** Introduction to meal management - balanced diet, food groups & the planning of balance diet. **2.** Food guides for selecting adequate diet . **3.** Diet therapy		SUTRISHNA DASH	
4,5,6,7	**4.** Diet & stress in current scenario. **5.** Meal planning for the family. **6.** Indian meal patterns - vegetarian & non-vegetarian. **7.** Food faddism & the faulty food habits.		SAINI MANDAL	
8,9,10	**8.** Nutritive value of common Indian recepies. **9.** Nutrition in pregnancy - Physiological stages of pregnancy, nutritional requirements. Food selection, complication of pregnancy. **10.** Nutrition during lactation - Physiology of lactation, nutritional requirements.		KABERI KANDAR	
11,12,13	**11.** Nutrition during infancy - growth & development, nutritional requirements, breast feeding, infant formula, introduction of supplementary foods. **12.** Nutrition during early childhood (Toddler/Preschool)- Growth & nutrient need, nutrition related problems, feeding patterns. **13.** Nutrition of school children- Nutritional requirement, importance of snacks, school lunch.		PIU SASMAL	
14,15,16	**14.** Nutrition during adolescence - Growth & nutrient needs, food choices, eating habits, factor influencing needs.		DEBNANDA CHAKRABORTY	

	15. Nutrition during adulthood - Nutritional requirements, feeding pattern. **16.** Geriatric nutrition: Factors affecting food intake and nutrient use, nutrient needs, nutrition related problems.			
	GE4P: Family Meal Management (Lab) Practical:			
A: 1,2,3	**A:** 1. Planning and preparation of a balanced diet for a pregnant woman. 2. Diet during complication of pregnancy. 3. Planning and preparation of a balanced diet for a lactating woman.		SAINI MANDAL	
4,5,6,7,8,9	4. Preparation of weaning foods. 5. Planning and preparation of a balanced diet for pre-school child. 6. Balanced diet for school going child. Preparation of packed lunch. 7. Planning and preparation of a balanced diet for adolescence. 8. Planning of meals for adult belonging to different income group. 9. Planning meal for senior citizen.		PIU SASMAL	
B	**B: Project work with proper diet plan based on survey.**		SUTRISHNA DASH	

Teaching Plan: Department of Nutrition: SEMESTER-V(HONOURS)

UNITS	**PAPER: CC11**	40T+20P+10I+5A			**1st week of November, 2021 &4th week of December,2021**
	CC11T: Public Health and Hygiene			14.09.2021 to 18.01.2022	
1	1. **Food adulteration**: common, adulterants, and health hazards. Food standards and food laws. National and International; PFA, FSSAI, HACCP, ISO Certification; Consumer guidance society, Consumer rights, Consumer court, Central facilities for assessing food adulteration, Role of food inspectors.		SUTRISHNA DASH		
2,3	2. **Community Water and Waste Management**: Importance of water to the community, etiology and effects of toxic agents, water borne infectious agents, sources of water, safe drinking water/portability and tests for portability, community, waste and waste disposal, sewage disposal and treatment, solid waste and disposal, liquid waste disposal. 3. **Food Borne Disorders**: Food borne infections- Typhoid, Para typhoid, cholera, infective hepatitis, amoebiasis - Food borne intoxications- Disorders caused by; Natural toxins, chemical toxins and Microbiological toxins in food- Lathyrism, staphylococcal intoxication, Botulism, clostridium perfrignens, Mycotoxins.		DEBNANDA CHAKRABORTY		

4,5	4. **Food handling and Public Health**: Preventing food borne illness and the speed of communicable disease; Sanitation of food serving institution; environmental sanitation, hygienic in food handling and personal hygiene of food handler. 5. **Air & health**- Indices of thermal comfort , Pollution a) Sources b) Pollutants c) Monitoring d) Effects e) Prevention & control.		KABERI KANDAR	
6	6. **Mental health**- Health & diseases, Concept of a) Normality b) Mental health, Magnitude of the problem, Prevention of mental diseases, Alcohol related & drug related problems, mental health services in India.		SAINI MANDAL	
7,8	7. **Health care delivery system**: Patterns of health care delivery, History of development of health care delivery system in India, Reports of different committees, Three–tier health care delivery system, Primary health center, Subcentre, CHV, Urban health infrastructure. 8. **Demography & Population Control**: Introduction, Definition, Demographic cycle, Population Pyramid, Fertility, Factors affecting fertility, Indicators of fertility, Population explosion as a public health problem,		PIU SASMAL	

	Approaches for population control, Family planning methods.			
	C11P: Public Health and Hygiene (Lab) Practical			
1----5	Assignment programme on public health, nutrition and disease – covering any one of the following fields 1. Protein under nutrition and its recovery. 2. Vitamin or Mineral under nutrition and its recovery. 3. Dietary management of non-communicable disease. 4. Dietary management of growing child. 5. Impact of nutrition education on awareness development in the field of personal health.		SUTRISHNA DASH SAINI MANDAL PIU SASMAL DEBNANDA CHAKRABORTY KABERI KANDAR	
UNITS	**PAPER: CC12**	40T+20P+10I+5A		14.09.2021 to 18.01.2022
	C12T: Research Methodology			
1,2	**1.** Introduction to Research Methodology: Meaning of Research, Objectives of Research, Motivations in Research, Criteria of Good Research, Types of Research– Fundamental research, Applied Research, Action research, Qualitative Research, Quantitative Research, Historical research. **2.** Defining the Research Problem : Scientific Problem, Formation of scientific Problem, criteria of good research problem		DEBNANDA CHAKRABORTY	

3,4	**3.** The Review of Literature: Meaning of Review of Literature, Need and importances of Review of Literature, Objectives of Review of Literature **4.** The Research Hypotheses: Definitions of Hypothesis, Functions of Hypothesis, types of Hypothesis, Characteristics of a Good Hypothesis		PIU SASMAL	
5,6	**5.** Sampling – Criteria, Design, Characteristics of good sampling, types of sampling method. **6.** Methods of Data Collection: Primary and secondary data, Criteria of good data, Observation Method, Interview method, questionnaire and Schedules, Case Study Method.		KABERI KANDAR	
7,9	**7.** Experimental design – single and multi group experimental design, Quasi experimental Design 9. Ethical issues in research: Code of Ethics in Research – Ethics and Research Process – Importance of Ethics in Research		SUTRISHNA DASH	
	C12P: Research Methodology (Lab)			
1----5	A Project work on public health / nutritional biochemistry / nutritional survey to be submitted. Formulation of the Project: 1. Meaning of scientific research and its methods. Formulation of project design.		SUTRISHNA DASH SAINI MANDAL PIU SASMAL DEBNANDA CHAKRABORTY	

	2. Types of project design- exploratory, descriptive, experimental, cross sectional or longitudinal. 3. Methods: survey, case study, anthropological or experimental 4. Tools and techniques: observation, interviewing, questionnaire schedules or rating scales 5. Tabulation and interpretation: Tabular and graphic representation of data and its interpretation, bar diagram, pie diagram. Statistical procedures - variables, mean, standard deviation, test of hypothesis (t-test), chi-square test, degrees of freedom, null hypothesis, z-score.		KABERI KANDAR	
UNITS	**PAPER: DSE-1**	40T+20P+10I+5A		14.09.2021 to 18.01.2022
	DSE1T: Food Sanitation and Hygiene			
1,2	**1.** The relationship of micro organisms to sanitation. Role of microbiology – Environmental effects of microbial growth. Effects of micro- organisms on food degradation and food borne illnesses- bacteria, virus, molds, yeasts, and parasites. **2.** Other food hazards – chemicals, antibiotics, hormones, metal contamination poisonous		DEBNANDA CHAKRABORTY	

	foods.			
3,4	**3.** Food contamination- sources and transmissions. Water, air, sewage and soil as reservoirs of infection and ways of spread. Other agents of contamination - Humans, domestic animals, vermins, birds. **4.** Importance of personal hygiene of food handler - habits -clothes, illness. Education of food handler in handling and serving food.		PIU SASMAL	
5,6	**5**. Safety in food procurement, storage, handling and preparation – control of spoilage – safety of left over foods. **6.** Cleaning methods – sterilization, and disinfection –products and methods –use of detergents, heat, chemicals, and tests for sanitizer strength.		SAINI MANDAL	
7,8	**7.** Control of infestation: rodent control- rats, mice; vector control- use of pesticides **8.** Food sanitation, control and inspection- planning and implementation of training programme for health personnel.		KABERI KANDAR	
	DSE1P: Food Sanitation and Hygiene (Lab)			
1-2	1. Study of personal and environmental hygiene habits of street food handlers. Intervention and result analysis. Project submission and presentation. 2. Preservation of fruits and vegetables for later use-peas, carrots, cauliflower, chutney, soup, pickle, jam, jelly, marmalade, squash.		SUTRISHNA DASH SAINI MANDAL PIU SASMAL DEBNANDA CHAKRABORTY	

			KABERI KANDAR	
UNITS	**PAPER: DSE-2**	60T+10I+5A		14.09.2021 to 18.01.2022
	DSE2T: Quality Control and Food Standards			
1	1. Principal aspects of sampling of food: Importance of sample collection, sampling tools and containers, sample collection techniques, sampling for microbiological analysis of food, routine versus investigational sampling, quantity of sample to be collected, packaging and sealing of sample, dispatch of sample, documentation and commodity specific sampling procedure.		SAINI MANDAL	
2	**2.** Codex Alimentarius Commission (CODEX): Introduction, standards, codex of practice, guidelines and recommendations, applying codex standards, Codex India, core functions of National Codex Contact Point, National Codex Committee of India		PIU SASMAL	
3	**3.** International Organization of Standardization (ISO): Overview, structure, interpretation and case studies of food safety and Quality management including ISO-22000, ISO-9001:2000, ISO22000:2005, ISO 17025/CODES/GLP, Retailers standards: BRC		SUTRISHNA DASH	

	food and BRC IOP standards, IFS, SQF: 1000, SQF: 2000.				
4	**4.** Hazard Analysis Critical Control Point (HACCP): History, structure, pre- requites and principles, HACCP applications, HACCP based SOPs.		KABERI KANDAR		
5	**5.** Good Manufacturing Practices (GMP), Good Hygienic Practices (GHP), Good Agricultural Practice(GAP), Good Veterinary Practice (GVP),Storage and distribution of food, sanitation and safety in food services.		DEBNANDA CHAKRABORTY		
Teaching Plan: Department of Nutrition: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13**	40T+20P+10I+5A		21.02.2022 to 10.06.2022	**1st week of April,2022 & 1st week of June,2022**
	CT13: Dietetics and Counselling				
1,2	**Unit-I: Introduction to Psychology and counselling** Introduction to psychology – Definition , Nature and Scope. Attention and perception – Types of attention and factors influencing attention , principles of perceptual organization and abnormalities in perception. Learning and memory- Types of learning, Types of memory, Forgetting and its causes. Motivation and emotion- Types of motives, types of emotions,		DEBNANDA CHAKRABORTY		

	emotional expression. Personality- nature and definition , factors influencing personality, Psycho analytic theory of personality. Nature and goals of counselling. Principles of counselling. Characteristics of a good counsellor. Ethical principles of counselling. Special areas of counselling: Educational, family, health, community and counselling of alcoholic, and drug addicts. **Unit-II: Counselling Skills** Approaches to counselling – i. Psycho analytic approach, ii. Behaviouristic, iii. Humanistic approach. Pre – Helping phase: i. Rapport building skills, ii. Attending and listening skills, **Stage I skills:** Empathy, respect, Genuineness and concreteness, **Stage II skills:** Advanced empathy, self disclosure, Immediacy and Confrontation. **Stage III skills:** Goal setting, Action plan Programme and Brainstorming.			
3,4	**Unit-III: Basics of Diet Counceling** Diet Counselling - meaning, significance, process, types. Goals of counselling, individuals, group and family counselling. Basic sequence in counselling. Materials needed for counselling – models, charts, posters, AV aids, Hand outs etc.		SAINI MANDAL	

	Communication process in counselling and linguistics in clinical dietary practices, problems in communication. Role of Counsellor & Counselee. Techniques of obtaining relevant information- 24 Hour Dietary recall, List of food likes and dislikes, Lifestyle. Dietician as a part of medical team and research team. Impact of counselling on health and disease of individuals – discussion of hospital case studies. **Processes involved in dietary counselling** Managing resources of the communicator/counselor. Designing of counseling plans – goals & objectives, evaluation instruments. Implementation: facilitating self-management of disease condition. Evaluation: evaluating adherence to dietary changes. Counseling approaches after evaluation. **Unit-IV: Practical consideration in giving dietary advice and counselling** a) Factors affecting and individual food choice. b) Communication of dietary advice c) Consideration of behaviour modification d) Motivation.			
5,8	**Unit-V: Counselling and educating patient**		KABERI KANDAR	

	a) Introduction to nutrition counselling, b) Determining the role of nutrition counsellor, c) Responsibilities of the nutrition counselor , d) Practitioner v/s client managed care, e) Conceptualizing entrepreneur skills and behavior , f) Communication and negotiation skills. **Unit-VIII: Computer application** a) Execution of software packages. b) Straight line, frequency table, bar diagram, pie chart, Preparation of dietary charts for patients. c) Statistical computation- mean, median, standard deviation, conclusion and regression test.			
6,7	**Unit-VI: Teaching aids used by dietitians** Charts, leaflets, posters etc., preparation of teaching material for patients suffering from Digestive disorders, Hypertension, Diabetes, Atherosclerosis & Hepatitis and cirrhosis. **Unit-VII: Diet Counselling at Hospital and Community level** Role of counselling in hospital. Role of counselling in community. Organizing health camps and patient feedback – at hospital level. Organizing health camps and patient feedback – at community level.		PIU SASMAL	

	Dietary counseling through the life span - Diet counselling plans for obese people, Diabetics, CVD, dyslipidemia, cancer risk prevention, renal diseases, liver disorders mother and child care, Prenatal and pregnant women, Lactating women Childhood nutrition problems like, SAM, weight management, vitamin and mineral deficiencies, School children, adolescents, young adults, fitness, weight management, eating disorders. Geriatric counselling. Patient follow up / home visits,			
9,10	**Unit-IX: Computer application in dietetic management** a) Use of computers by dietician, b) Dietary computations, c) Dietetic management ,d) Education/ training , e) Information storage, f) Administrations , g) Research **Unit -X: Nutritional/medicinal role of traditional foods:** Traditional food beliefs, role of Ayurveda, Naturopathy, Yoga and other traditional medicines in disease management.		SUTRISHNA DASH	
	C13P: Dietetics and Counselling (Practical)			
1----7	**1.** Computer application for collection of data of different diseases. Submitting computed data.		SUTRISHNA DASH SAINI MANDAL	

	2. Preparations of teaching aids in the field of nutrition. **3.** Preparation of case history of a patient and feeding of information in the hard disc. **4.** Understanding the use of conventional and non-conventional methods of counseling **i.** Face to face counseling. **ii.** Use of software for counseling e.g Dietcal. **iii.** Use of any one Diet App for counseling and assessing food intake. **5.** Planning Nutrition counseling sessions and identifying ways to adhere to dietary changes for the following conditions: Lactation counseling, SAM. Eating disorders. Overweight / Obesity in School children, adolescent and adults. Metabolic syndrome. Diabetes- Gestational Diabetes. Renal disease, Liver disorders. **6.** Organizing health camps and patient feedback – both at hospital level and community level. **7.** Project planning for any one disease.		PIU SASMAL DEBNANDA CHAKRABORTY KABERI KANDAR	
UNITS	**PAPER: CC14**	40T+20P+10I+5A		21.02.2022 to 10.06.2022
	C14T: Entrepreneurship development, Enterprise management and Entrepreneurship for small catering units			
1,2	**Unit-I: Entrepreneurship development**		KABERI KANDAR	

	Entrepreneurship - concept, definition, need and significance of entrepreneurship development in India, entrepreneurship growth process, barriers, entrepreneurship education model. Entrepreneur- their characteristics, types, gender issues, role demands and challenges. Entrepreneurial motivation. Challenges faced by Women Entrepreneurs **Unit- II: Enterprise Planning and Launching** Types of enterprises classification based on capital, product, location, ownership pattern and process. Sensing business opportunities and assessing market potential; market research. Appraising of project and feasibility			
3	**Unit-III: Enterprise Management and Networking** a. Organization and Management - Principles of management. Functions of management/ manager. b. Managing Production: Organizing Production; input- output cycle. Ensuring Quality c. Managing marketing: Understanding markets and marketing. Functions of marketing. 4Ps of marketing (same as marketing mix).		SAINI MANDAL	

	d. Financial Management: Meaning of Finance. Types and sources of Finance. Estimation of project cost. Profit Assessment. Networking of Enterprises. Importance of Financial Management. Budgets and Budgeting process. Cost concepts			
4,7	**Unit - IV: Personnel management** Functions of a personnel manager, Factors to consider while planning the kind and number of personnel: Menu, type of operations, Type of service, Job description and job specification **Unit-VII: Development of a business plan**		DEBNANDA CHAKRABORTY	
5	**Unit-V: Food service units, Menu planning, Food production process, Space and equipment** **1. Food service units:** Origin of Food Service units. Kinds of food service units. **2. Menu Planning:** Importance of menu. Factors affecting menu planning, Types of menu. **3. Food Production Process:** Food purchase and receiving, Storage. Quantity food production: Standardization of recipes, Recipe adjustments and portion control, Quantity food production techniques.		PIU SASMAL	

	Food service. Food hygiene and sanitation. **4. Space and Equipment:** Types of kitchen areas, Flow of work and work area relationship. Equipment a) Factors affecting selection of equipment, b) Equipment needs for different situations			
6	**Unit VI: Planning of a small food service unit** **a. Preliminary Planning:** Survey of types of units, identifying clientele, menu, operations and delivery. **b. Planning the set up:** a) Identifying resources, b) Developing Project plan, c) Determining investments		SUTRISHNA DASH	
	CC14P:Entrepreneurship development, Enterprise management and Entrepreneurship for small catering units (Practical)			
1	1. SWOT analysis with respect to entrepreneurial competencies through case profiling of successful entrepreneurs and enterprises.		KABERI KANDAR	
2,3,5	2. Achievement Motivation lab-development of entrepreneurial competencies. 3. Survey of an institution facilitating entrepreneurship development in India. 5. Market survey for food items both raw and processed. Survey of food service units.		SUTRISHNA DASH SAINI MANDAL PIU SASMAL DEBNANDA CHAKRABORTY	

			KABERI KANDAR	
4	4. Preparation of business plan.		DEBNANDA CHAKRABORTY	
6,7,9	6. Standardization of a recipe. 7. Preparing Quick Foods for scaling up for quantity production. 9. Demonstration of a specialized cuisine.		SUTRISHNA DASH	
8	8. Planning menus for the following: a. Packed meals for office employees. b. Nutritious Tiffin for school children. c. School/college canteens.		PIU SASMAL	
10	10. Develop a checklist for good hygiene practices.		SAINI MANDAL	
UNITS	**PAPER: DSE-3**	40T+20P+10I+5A		
	DSE3T: Geriatric Nutrition			
1	**Unit-I: Introduction to ageing** Definition of ageing, senescence, old age or aged people, gerontology, geriatrics, and Geriatric nutrition. Classification of old population. Introduction to geriatric care- concept of gerontology. Ageing - Biology of ageing. Theories of ageing – disengagement theory, activity theory, selective theory and continuity. Microscopic theories, changes in ageing		DEBNANDA CHAKRABORTY	

	scenario. Interaction between biological and psychological in ageing. Interaction between physiological and social processes in ageing. Drug, food, and nutrient reaction. Dietetics of Geriatric care-Nutritional requirement. Food requirement, dietary modification. Implication of ageing population for rehabilitation: Demography, mortality and morbidity.			
2,3	**Unit-II: Issues and challenges of ageing** Issues and challenges of ageing – economic dependence/ poverty, elderly in rural/ urban area. Abuse, neglect, abandonment, physical, health and sensory problems. Crime against elderly, retirement and related issues. Ageing sensory system and issues with falling. Common complaints during ageing. Geriatric guidance and counselling. Depression in old age. Exercise-yoga, meditation . Behavior therapy: rational- emotive behavior therapy (REBT), horticultural therapy. Music therapy, Art therapy, Bibliotherapy **Unit-III: Clinical Geriatric** Physiological and biochemical changes during old age. Nutritional requirements and general dietary guidelines for elderly. Major nutritional and health problems during old age - osteoporosis ,obesity, neurological dysfunction. Anaemia. Malnutrition and constipation. Infection and Immunity. Degenerative disorders in elderly- Dementia, Alzheimer, Parkinson's disease. Disorders of upper GIT. Disorders of		PIU SASMAL DEBNANDA CHAKRABORTY	

	lower GIT. Disorders of Liver. Disorders of Billiary system and pancreas. Infection of Respiratory system. Coronary heart disease. Assessment of nutritional status of older adults.			
4	**Unit – IV: Social Geriatric** Types of family – Joint family System, Role of Elders and Younger generation. Isolation, Loneliness and Dependency – Dependency Ratio – Generational equality. Financial aspects – Sources of income, Old age pension. Role of Govt. and NGOs in Socio – economic status of the elderly. Geriatric service for the elderly in western countries and India. Structure of geriatric service, family as basic unit- models of geriatric service. Day hospital, day care centre, long stay care institution. Home for the aged, function of the day hospital staff and patients of day hospital. Ethical issues in geriatric medicine- age limits on health care. Life sustaining measures.		KABERI KANDAR	
	DSE-3: Geriatric Nutrition (practical)			
1,2	1. Visit to old- age homes- assessment of nutritional status of old people, diet counselling. 2. Preparation of dishes suitable for older person- soft, semisolid, easily digestible, nutritious and calorie dense balanced diet.		SUTRISHNA DASH DEBNANDA CHAKRABORTY	

UNITS	**PAPER: DSE-4**	40T+20P+10I+5A		21.02.2022 to 10.06.2022
	DSE3T: Bakery Technology and Mushroom Culture			
	Bakery Technology			
1	**Unit- I:** Bakery industry: Current status, growth rate, and economic importance of Bakery Industry in India. Product types, nutritional quality and safety of products, pertinent standards & regulations.		SAINI MANDAL	
2	**Unit- II:** Bread, Buns and Pizza base - Ingredients & processes for breads, buns, pizza base, Equipments used, product quality characteristics, faults and corrective measures		KABERI KANDAR	
3	**Unit- III:** Cakes - Ingredients & processes for cakes, Equipments used, product quality characteristics, faults and corrective measures. Different types of icings		DEBNANDA CHAKRABORTY	
4,6	**Unit- IV:** Biscuits, Cookies & Crackers - Ingredients & processes, Equipments used, product quality characteristics, faults and corrective measures. **Unit- VI:** Breakfast Cereals, Macaroni Products and Malt - Production and quality of breakfast cereals, macaroni products and malt.		SUTRISHNA DASH	

5	**Unit- V:** Modified Bakery Products - Modification of bakery products for people with special nutritional requirements e.g. high fibre, low sugar, low fat, and gluten free bakery products.		PIU SASMAL	
	Mushroom Culture:			
1	**1.** Definition and characteristics of mushroom.		SUTRISHNA DASH	
2,3	**2.** Morphology and life cycle of Mushroom**. 3.** Identification and classification of mushroom		SAINI MANDAL	
4,5	**4** Nutritional and medicinal value of edible mushrooms; poisonous mushrooms. **5.** Types of edible mushrooms available in India- Volvariella volvacea, Pleurotus citrinopileatus, Agaricus bisporus.		DEBNANDA CHAKRABORTY	
6,7	**6.** Process of mushroom cultivation. **7.** Storage and nutrition: short term storage (Refrigeration- upto 24 hours), long term storage (canning, pickles, papads), drying, storage in salt solutions.		PIU SASMAL	
	DSEP: Bakery Technology and Mushroom Culture (Practical)			

1,2,3,4,5	1. Preparation of pizza base and assessment of its quality 2. Preparation of bread and assessment of its quality 3. Preparation of buns and assessment of quality 4. Preparation of butter cake and assessment of its quality. 5. Preparation of sponge cake with icing and assessment of its quality.		KABERI KANDAR		
6,7	6. Preparation of cookies and assessment of quality. 7. Preparation of biscuits and assessment of quality.		SUTRISHNA DASH		
8	8. Visit to Mushroom Culture Centres/ Farms for: Process involved in mushroom cultivation Types and varieties of mushroom. Visual Identification of edible and poisonous mushroom Marketing.		SUTRISHNA DASH PIU SASMAL DEBNANDA CHAKRABORTY		
9	9. Different Food preparation from mushroom.		SAINI MANDAL		
Teaching Plan: Department of Nutrition: SEMESTER-I(GENERAL)					
UNITS	**PAPER: DSC-1A/2A/3A**	40T+20P+10I+5A		01.10.2021 to 24.02.2022	1st internal examination on

	DSC1AT : Nutritional aspect of food items.				4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
1,2,3	**Course Contents:** **1. Concept and definition of terms:** • Food, Food Groups, Food Pyramid, Functions of food. • Nutrient and Nutritive value, Concept of Balanced Diet. **2. Cereals, Pulses and legumes:** • Nutritional aspects of wheat, rice and oat. • Types of pulses and legumes, uses, and nutritional aspects. **3. Milk and milk Products**: • Nutritive value of milk, composition of milk, • Types of processed milk, milk products (butter, curd, paneer and cheese), Pasteurization.		SUTRISHNA DASH		
4,5	**4. Egg, Fish and meat:** • Nutritional aspects and uses. • Nutritional aspects of edible fish and meat, concept of red and white meat. **5. Vegetables and fruits:** • Uses and nutritional aspect of commonly available vegetables. • Fresh fruits and dry fruits– raw and processed product		DEBNANDA CHAKRABORTY		
6,7	**6. Salts, Fats and oils:** • Uses and nutritional aspects of various salts. • Types, sources, use and nutritional aspects of fats and oils. **7. Methods of cooking:**		KABERI KANDAR		

	• Dry, moist, frying and microwave cooking. • Effect of various methods of cooking on foods, nutrient losses in cooking.				
	DSC1AP: Practical				
1-5	Food preparation and nutritive value as per portion size wherever applicable - 1. **Beverages:** Lassi 2. **Cereals:** Fried Rice 3. **Milk and milk products:** Payasam 4. **Eggs:** Egg pudding 5. **Snacks:** Sandwiches		SUTRISHNA DASH		
Teaching Plan: Department of Nutrition: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B/3B** **Nutrients and its physiological role**	40T+20P+10I+5A		**01.04.2022 to 09.07.2022**	
1,2	**1. Concept and definition of terms:** Growth, Development, Nutrition, Malnutrition and Health, Scope of Nutrition. **2. Introduce of protein, carbohydrate and fats** Dietary sources, physiological role and deficiency disorders.		DEBNANDA CHAKRABORTY		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
3	**3. Role of Vitamins and Minerals:** • Fat soluble vitamin-Physiological role, dietary sources and deficiency disorders. • Water soluble vitamin- Physiological role, dietary sources and deficiency disorders.		SUTRISHNA DASH		

	• Minerals-Physiological role, dietary sources and deficiency disorders in special references to calcium, iron, sodium and potassium.				
4,5,6	**4. Principles of meal planning:** • Food exchange list, Factors affecting meal planning and food related behavior. • Dietary guidelines for Indians. **5. Minimum nutritional requirement and RDA:** • Formulation of RDA, dietary guidelines with reference to man and woman. **6. Energy in human nutrition:** • Energy and its unit, Energy assessment and balance, Factors of energy requirement, BMR and its regulation, SDA of food**.**		KABERI KANDAR		
	DSC1BP: Practical				
1-4	1. Growth chart: Plotting and Interpretation using primary or secondary data in accordance with both ICMR and WHO Chart. 2. Clinical assessment and sign of nutrient deficiency disorders: Protein energy malnutrition (PEM), Anemia, Rickets, Goiter (Slide/Photography). 3. Clinical assessment and sign of vitamin deficiency disorders: Vitamin A, Vitamin C and Vitamin B-complex (Slide/Photography). 4. Clinical assessment and sign of obesity and metabolic disorders risk factors.		PIU SASMAL		

Teaching Plan: Department of Nutrition SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C**	40T+20P+10I+5A		01.10.2021 to 05.02.2022	**4th week of November,2021 &1st Week of January,2022**
	DSC1CT : Nutrition: Infancy to old age				
1	**1. Nutrition during infancy:** • Breast feeding, Formula feeding, Weaning, Supplementary foods, Nutritional management of Preterm baby.		KABERI KANDAR		
2	**2. Nutrition for children:** • Diet in early childhood, elementary school age, high school age.		PIU SASMAL		
3	**3. Nutrition during pregnancy and lactation:** • Nutritional demands of Pregnancy, Food selection during Pregnancy, Complications of pregnancy and dietary management, Diet during Lactation		SAINI MANDAL SUTRISHNA DASH		
4	**4. Geriatric nutrition:** • Planning of meals for older people, Nutrition of aged persons, Physiological complications in geriatric group and dietary modifications required.		DEBNANDA CHAKRABORTY		
	DSC1CP: Practical				
1,2,3	1.Preparation of normal diets for infant (Dahl soup). 2. Preparation of normal diets for preschool children (Dalia).		DEBNANDA CHAKRABORTY		

	3. Preparation of normal diets for pregnant lady and lactating mother (Khicheri with mixed vegetables).			
UNITS	**PAPER: SEC-1**	25T+15P+5I +5A		01.10.2021 to 05.02.2022
	SEC1T: Diet Therapy - I			
1,2	**1.** Definition of Dietetics, dietitian, goals of diet therapy. 2. **Basic concepts of Diet therapy:** Therapeutic adaptations of normal diet, Classification of therapeutic diets (Progressive diets – Normal, Soft, Clear fluid diet and Full fluid).		PIU SASMAL	
3	3. **Dietitians and hospital basic diets:** • Types of dietitians and role of dietitian in a hospital. Routin hospital diets. Specially modified therapeutic diet. • Nutritional adequacy of hospital diets, Basic concept and methods of (i) Oral feeding (ii) Tube feeding (iii) Parenteral feeding.		KABERI KANDAR	
4	4. Etiology, symptoms, diagnostic tests and dietary management of Gastro-intestinal tract and liver diseases - Diarrhoea, Constipation, Irritable Bowel Syndrome, Peptic ulcer , Jaundice and Cirrhosis of liver.		SUTRISHNA DASH	

5,6	5. Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management: Diabetes mellitus, Diabetes insipidus 6. Etiology, symptoms, diagnostic tests and dietary management of Malabsorption syndrome, Lactose intolerance, Food allergy		SAINI MANDAL		
7,8	7. Anemia: definition, causes, classification and dietary management of nutritional anaemia. 8. Fever: Definition, causes, types, symptoms and dietary management.		DEBNANDA CHAKRABORTY		
	SEC1P: Practical				
1	Planning and preparation of therapeutic diets for the following diseases: Diabetes melilitus (case specific), Hepatitis (case specific), gastrointestinal diseases (case specific), anemia (case specific).		PIU SASMAL		
Teaching Plan: Department of Nutrition: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D/3DT: Nutritional Surveillance and Programme**	40T+20P+10I+5A		15.03.2022 to 25.06.2022	
1	**1. Assessment of Nutritional Status and Surveillance:** • Direct Nutritional status assessment of human groups - Biochemical, Biophysical and anthropometric methods.		SAINI MANDAL		**4th week of April,2022**

	• Indirect assessment: Secondary sources of community health data.				**&3rd week of June,2022**
2	**2. Concept of surveillance systems:** • Role of international and national organizations and agencies (WHO, FAO, UNICEF, CARE, NIN, CFTRI, ICMR).		SUTRISHNA DASH		
3	**3. Communication in Nutrition and Health Education:** • Type, process and media of communication. • Importance and relevance of Information, Education and communication (IEC) in Nutrition and Public Health..		PIU SASMAL		
4	**4. National Nutritional Intervention Programmes:** • Objective, Target group, Scheme details - Integrated Child Development Services (ICDS), Mid Day Meal Programme (MDMP), Vit A prophylaxis Prophylaxis programme, Anemia prophylaxis programme.		DEBNANDA CHAKRABORTY		
5	**5. Immunization Programme:** • Immunization: National Immunization schedule for children and adults, Immunization for foreign travelers.		KABERI KANDAR		

	DSC1DP: Practical			
1-3	1. Anthropometric measurement of Weight for age, height for age, weight for height and its comparison with reference value. 2. Determination of BMI and comments on results. 3. Measurement of circumference of chest, upper arm, waist - hip ratio.		SUTRISHNA DASH	
UNITS	**SEC2T: Diet Therapy –II**	25T+15P+5I +5A		15.03.2022 to 25.06.2022
1	Etiology, clinical features, dietary and general management of Weight Imbalances**:** Underweight, Overweight and Obesity.		DEBNANDA CHAKRABORTY	
2	Etiology, clinical features, dietary and general management of Weight Imbalances**:** Underweight, Overweight and Obesity.		PIU SASMAL	
3	**3.** Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management of Hypertension, Renal diseases in special reference to Glomereulo -nephritis, Uremia, and Nephrosis.		SUTRISHNA DASH	
4	**4.** Diseases of the cardio vascular system: a. Brief review of lipoproteins (TC, TG, LDL, HDL, VLDL),		SAINI MANDAL	

	b. Atherosclerosis – etiology, risk factor and dietary management				
5	**5.** Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management of Cancer		KABERI KANDAR		
	SEC2P: Practical				
1-3	1. Planning and preparation of therapeutic diet for obesity (Case Specific), 2. Planning and preparation of therapeutic diet for Hyper tension (Case Specific), 3. Planning and preparation of therapeutic diet for Renal Diseases (Case Specific),		PIU SASMAL		
Teaching Plan: Department of Nutrition: SEMESTER-V(GENERAL)					
UNITS	**DSE1T: Food Standards and Food Safety Guidelines**	40T+20P+10I+5A		14.09.2021 to 18.01.2022	
1	**1. Microorganisms and Sanitation:** • The relationship of microorganisms to sanitation. Effects of microorganisms on food degradation and food – borne illness. • Importance of personal hygiene of food handlers: Habits, cloths, illness, education of food handler		SAINI MANDAL		**1st week of November, 2021 &4th week of December,2021**

	in handling and serving food. Concepts of food contamination.				
2	2. **Food additive and food safety:** • Concept of food safety, definition and factors affecting food safety. • Food additives-various types and their effects on health.		SUTRISHNA DASH		
3,4	3. **Food processing** – Definition, types, enzyme of importance in food processing – Proteases, lipases, oxidoreductase and hydrolase. 4. **Food security:** Concept of food security**,** factors affecting food security		DEBNANDA CHAKRABORTY		
5	5. **Food adjuncts and preserved products:** • Elementary idea on food preservation: principles and different methods – drying, freezing, frying, canning,etc. • Spices (Chilies, Turmeric, Garlic and Ginger), use and nutritional aspect. • Jams, Jellies, Squashes–uses and nutritional aspects.		PIU SASMAL		

6	6. **Food adulteration:** • Definition, Reasons and types. • PFA definition of food adulteration, Common adulterants in food and their effects on health. • Common household methods to detect adulterants in food,		SUTRISHNA DASH	
7	**7. Food laws and Regulatory authority:** • Food Laws, Consumerisms: Definition, consumer protection, Consumer education, Legal mode of protection, Machinery for redresal of consumer grievances. • Prevention of Food Adulteration (PFA) Act. • Regulating authority - Codex Alimentarius, ISI, Agmark, Fruit Products Order (FPO), Meat Products Order (MPO), Bureau of Indian Standards (BIS), Food Standards and Safety Authority of India (FSSAI).		KABERI KANDAR	
	DSE1P: Practical			
1-7	Detection of common adulterants in foods: 1. Detection of vanaspati in ghee/ butter. 2. Detection of khesari flour in besan. 3. Detection of argemone oil in edible oil.		SUTRISHNA DASH	

	4. Detection of metanil yellow in turmeric or colour sweet products. 5. Detection of dried papya seeds in black pepper. 6. Detection of artificially foreign matter in tea (dust/leaves). 7. Visit to food preservation centre/industry and demonstration of preparation and packaging of jam, jelly, chilli sauce, tomato ketchup, squash, pickles, etc.			
UNITS	**SEC3T: Basic Molecular Biology and Immunology**	40T+5I+5A		14.09.2021 to 18.01.2022
	Molecular Biology			
1,2	1. Nucleic acid: Bases, nucleosides and nucleotides. 2. DNA structure: DNA double helix (Watson and Crick Model). Types of DNA and RNA, DNA and RNA as genetic material		SAINI MANDAL	
3	3. DNA replication: Semi-conservative replication, Basic mechanism of replication (Prokaryotes / Eukaryotes).		PIU SASMAL	
4	4. Transcriptional unit and basic concept of transcription (Prokaryotes / Eukaryotes		KABERI KANDAR	
5	5. Genetic code and basic mechanism of translation (Prokaryotes / Eukaryotes).		SUTRISHNA DASH	

6	6. Basic concept of genomics, proteomics and metabolomics.		DEBNANDA CHAKRABORTY		
	Immunology:				
1	1. Introduction: Basic concept of immunity, Types of immunity-innate, acquired, active and passive immunity.		DEBNANDA CHAKRABORTY		
2	2. Humoral immune system: Mechanisms of humoral immunity, Immunoglobulin isotypes -IgG, IgM, IgA, IgD, and IgE.		KABERI KANDAR		
3	3. Cell mediated immune system: Types of effector T cells, mechanisms of cell mediated immunity		SUTRISHNA DASH		
Teaching Plan: Department of Nutrition: SEMESTER-VI(GENERAL)					
UNITS	**DSE-2T: Community Nutrition and Epidemiology**	40T+20P+10I+5A		21.02.2022 to 10.06.2022	
1,2	1. **Concept of population and Community:** Concept and characteristic features of population. Concepts and types of community. Concept of community nutrition. Factors affecting health of community – environmental, social, political, cultural and economical.		KABERI KANDAR		**1st week of April,2022 & 1st week of June,2022**

	2. **Community water and waste management:** Source of water, safe drinking water, etiology and effects of toxic agents. Microbial examination of water, Water-Potability test (MPN Test). Sewage disposal and treatment.				
3	3. **Nutritional problems in community:** a. Nutrition and health in National Development. b. Malnutrition – meaning, factors contributing to malnutrition, over nutrition. c. Nutritional disorders : Epidemiology, clinical features, prevention and dietary treatment for protein energy malnutrition, nutritional anaemias & vitamin deficiency disorders. d. Nutritional and infection relationship : Immunization and its importance, Food borne infection,and intoxication diseases, foods involved, methods of prevention, infestation of food borne diseases, outbreak, Prevention sign and control of infection.		PIU SASMAL		
4,5a	4. **Community nutrition programme planning** – identification of problem, analysis of causes, resources constraints, selection of interventions, setting a strategy, implementations and evaluation of the programme. **5. Nutritional status assessments and Nutritional intervention programmes :**		DEBNANDA CHAKRABORTY		

	a. Nutritional status assessment: Meaning, need, objectives and importance. Methods of assessing nutritional status: i. Sampling techniques, identification of risk groups. ii. Direct assesement – Diet surveys, Nutritional anthropometry – height, weight, BMI, MUAC, head and chest circumference, Diet survey by recall method, Clinical assessment, biochemical assessments. iii. Indirect assesement – Food balance sheet, ecological parameters and vital statistics.			
5b,c,6	**b. National and International agencies in uplifting the nutritional status:** • FAO,WHO, UNICEF, CARE, ICMR, ICDS, ICAR, CSIR, CFTRI ANP,VHAI,NIN. • Role of voluntary health organization in the improvement of community health. **c. Nutritional intervention programmes** :		SUTRISHNA DASH	

	Nutritional intervention programme to combat malnutrition. Concept of food fortification and food enrichment. **6. Nutrition Education :** Definition, objectives of nutrition education. Methods of imparting nutrition education.			
7,8	**7. Concept of Disease**: Endemic, Epidemic and Pandemic, Acute and Chronic. Communicable and Non-communicable diseases, Zoonosis, Epizootic and Enzootic. **8. Principles of Epidemiology**: Epidemiological study-Descriptive and Analytical. Rate of Disease in a Population-Attack rate, Mortality and Morbidity rate, Prevalence and Incidence of a disease, The incubation period, Quarantine period. Factors that Influence the Epidemiology of Disease.		SAINI MANDAL	
	DSE2P: Practical			
1-10	1. Preparation of homemade ORS. 2. Identification of vulnerable and risk groups, 3. Preparation of weaning foods for infants. 4. Preparation of low cost and medium cost school tiffin. 5. Use of anthropometric measurements in children. 6. Diet survey by 24 Hours recall methods.		SUTRISHNA DASH	

	7. Preparation of visual aids. 8. Field visit to : a) Observe the working of nutrition and health oriented programmes (survey based results), b) Hospitals to observe nutritional deficiencies 9. Visit to old age home / ICDS Centre / Nutrition Rehabilitation Centre (NRC) / Slum area / any public place and Prepare a report on nutritional status and health concern (at least 10-15 case studies to be done). 10. Visit to a Rural Technology Centre/Community Welfare Centre and prepare a brief field report on Rural Technology and Community Development				
UNITS	**SEC4T: Women Health & Nutrition**	40T+5I+5A		21.02.2022 to 10.06.2022	
1,2	1. Factors (non-nutritional) affecting pregnancy outcome, importance of adequate weight gain during pregnancy, antenatal care and its schedule, Nutritional requirements during pregnancy and modification of existing diet and supplementation, Deficiency of nutrients, specially energy, iron folic acid, protein, calcium, iodine. Common problems of pregnancy and their managements, specially - nausea, vomiting, pica, food aversions, pregnancy induced hypertension, obesity, diabetes. Adolescent pregnancy.		SAINI MANDAL		

	2. Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation. Care and preparation of nipples during breast feeding.				

Philosophy

Teaching Plan: Department of Philosophy: SEMESTER-I(M.A)

UNITS	PAPER: 101: Indian Logic	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal Examination
	1. Definition and Process of Anumāna: Nyāya, BauddhaandAdvaitaPerspectives 2. Role of Parāmarśainanumana : The Mimāṁsā – Nyāyadebate 4. Definition of Vyāṗti (Siddhāntalakṣaṇa of Siddhānta-Muktāvalī, uptorupatvavyāpyajātimattvānprithivītvāt with reference to AdvāitaVedānta and Bauddha Theories of Vyāpti. 5. Pakṣāta	50	SANKAR PRASAD SING	25/10/2021 t0 20/01/22	3rd week of December,2021
	3. Induction in Indian Logic: Role of Pratyaksa in anumāna, Vyābhicārāgraha, Upādhi4andUpādhinirāśa, tarka, sāmānyalakṣaṇa and Jnanalaksanapratyakṣa in Vyāṗtigrahopāya. 6. Characteristics of Saddhetu and five types of Hetvābhāsa : Nyāya perspective		SITALI JANA		
UNITS	PAPER: 102: Western Logic	50			
	1. The Method of Conditional Proof, Indirect Proof. 2. Multiply General Proportions, Symbolisation, Revised Quantification Rules, Proving Validity and Invalidity, Logical Truth involving quantifiers.		SUJIT MAITY		
	3. Truth tree and its applications		SUCHHANDA BERA		

UNITS	**PAPER: 103:** Indian Epistemology	**50**			
	1. Definition and Types of pramāandapramā: Nyāya , Bauddha andAdvaitaVedānta Theories 2. Nyāya Perception, Definition, Process and Types, Bauddhadefinion of Perception,Advaita Vedanta definition of Perception 3. Svaprakāśatva and Paraprakśāsatvaofknowledge:Mimāṁsā and Nyāya view 4. The debate about the ascertainment (jñapti) of validity:Mimāṁsāand Advaita Perspectives		**MOULI MANDAL**		
	5. Theories about erroneous perception (Khyātivāda) :ātmakhyāti, satkhyāti,asatkhyāti,akhyāti,anyathākhyāti, viparītakhyāti, anirvracanīyakhyāti.		**MANIKA DAS**		
UNITS	**PAPER: 104:** Western Epistemology	**50**			
	1. Nature and definition of Knowledge, Gettier Problem. 2. Possibility of Knowledge – Different sceptical views.		**KISHAN KHAN**		
	3. Justification Knowledge claims – Foundationalism and Coherentism 4. The difference between pure and empirical cognition, the difference between analytic and synthetic judgement, the possibility of synthetic a priori judgement.		**SURAJIT MANNA**		
UNITS	**PAPER: 105:** Indian Classic	**50**			
	Samkhya-tattva-kaumudi (ed. by Narayan ChandraGoswami)		**RATNA PANDA**		
	Samkhya-tattva-kaumudi (ed. by Narayan ChandraGoswami)		**SK. TABARAK ALI**		
Teaching Plan: Department of Philosophy: SEMESTER-II(M.A)					
UNITS	**PAPER: 201:** Indian Metaphysics	**50**			**Internal Examination**
	1. Causation:Ākasmikatāvāda, Svabhāvavāda, Anekāntavāda, Kṣaṇabhaṅgavāda, Asatkaryavāda or Ārambhavāda, Satkāryavāda,Visistadvaitavāda,Vivartavāda		**RATNA PANDA**	**07/02/2022 to 11/07/2022**	**2nd week of June,2022**
	2. The Concept of Isvara (God): Proofs in favour of and against the existence of Isvara		**SUJIT MAITY**		

	4. Concept of Mind (manas): in the Nyāya - Vaiśeṣika, BauddhaandAdvaitaVedānta system.				
	3. Self (Atman): The debate about the theory of self-Cārvāka,Bauddha, Advaita andNyāya Perspectives.		**MANIKA DAS**		
	5. Theory of Space and Time in Indian Tradition. 6. Universal (Sāmānya): The debate between the Nyāya and theBauddha.		**SANKAR PRASAD SING**		
UNITS	**PAPER: 202:** Western Metaphysics	**50**			
	1. Concepts of Metaphysics – its types and possibilities. 2. Substance – The Aristotelian conception, universal and particular, Realism and Nominalism.		**SURAJIT MANNA**		
	3. Theories of Causation / Theories of Mind-Body Problem 4. Persistence of Person: Concept of Personhood, Psychological Continuity approach, Physical continuityapproach		**KISHAN KHAN**		
UNITS	**PAPER: 203:** Modern Indian Philosophy	**50**			
	1. Swami Vivekananda: Practical Vedanta, Universal Religion,Education 3. Mahatma Gandhi: God and Truth - Nature of World - Nature of Man - Non-Violence - Satyāgraha - Philosophy of end and means - Swaraj - Ideal state and Sarvodaya		**SK. TABARAK ALI**		
	2. RabindranathTagore: General Philosophical Standpoint - Reality and God - Doctrine of Nature of Man: Finiteaspect and infinite aspect –Religion of Man - Ways of selfrealization– Humanism, Ideas ofEducation		**SUCHHANDA BERA**		
	4. Sri Aurobindo: Two negations - Reality as Saccidānanda - Nature of Creation :Involution,Maya or Lila,evolution - Nature of Man –Supermind - Nature of Gnostic Being - Gnostic Being AndJīvanmukta - The Divine Life - Integral Yoga. And/orK.C.Bhattacharya: Concept of Philosophy, Subject as freedom, The doctrine of Maya		**SITALI JANA**		
UNITS	**PAPER: 204:** CBCS(philosophical issues)	**50**			
	(Philosophy of Love) 1. RabindranathTagore 2. SwamiVivekananda		**SK. TABARAK ALI**		

	(Philosophy of Peace) 3. Buddha 4. Gandhi		**TAMASA SARANGI**		
UNITS	**PAPER: 205:** Western Classic	**50**			
	Plato:Republic		**MOULI MANDAL**		
Teaching Plan: Department of Philosophy: SEMESTER-III(M.A)					
UNITS	**PAPER: 301:** Indian Philosophy of Language	**50**			
	1. Word - ClassificationofWords 2. Nature ofŚakti-MeanstoŚaktigraha 3. Locus of Śakti -Vyāktiśaktivāda, ākṛtiśaktivāda, jātiśaktivāda, jātyākritiviśityaśaktivāda		**RATNA PANDA**	**15/09/2021 to 20/01/2022**	**3rd week of December,2021**
	4. Grammarian theory ofsphoṭa 5. Conditions for understanding of sentence –akāṅkṣā, yogyatā, āsatti andtātparya		**MANIKA DAS**		
	6. Theories of sentence-meaning- Śaktivāda, abhihitānvayavādaandanvitābhidhānavāda 7. Critical Apprehension of Madhva view of Sabdaas Pramana, Seven types of dosa,		**SITALI JANA**		
UNITS	**PAPER: 302:** Western Philosophy of Language	**50**			
	1. The Linguistic turn, Issues and Problems, Sense and Reference, Proper names, Definite Descriptions, Concepts and Objects.		**SK. TABARAK ALI**		
	2. Wittgenstein: Picture Theory of Meaning (TLP), Philosophy and Language, Language game(PI) 3. Speech Act Theory		**KISHAN KHAN**		
UNITS	**PAPER: 303:** Advanced Logic (optional)	**50**			
	1. The PM System: Primitive Ideas, The Syntactical Rules, Definition, The Postulates, Rules for Deduction of Theorems, Proof of Theorems, Consistency andCompleteness		**SUCHHANDA BERA**		
	2. Basic Modal Notions, System T, S4 and S5. Three grades of ModalInvolvement.		**SUJIT MAITY**		

	PA PER: 303: Advaita Vedanta (optional)	**50**			
	Brahma-Sūtra-Bhāṣya of Śaṅkarācārya 1. Śaṅkarā'sAdhyāsa-Bhāṣya with Bhāmaṭī-uptoadhyāsalakṣaṇa 2. Śāṅkara- Bhāṣyaof Brahma-Sūtra,Adhyaya 1, Padā1, Sutras 1, 2 and3. AdvaitaVedanta (optional)		**SANKAR PRASAD SING**		
UNITS	**PAPER: 304:** CBCS(Socio-Ethical Problems)	**50**			
	1. (Secular Philosophy and Philosophers) 1. from – Six Secular Philosophers – by L.W. Beck (SelectedChapters)		**SK. TABARAK ALI**		
	2. Gender Justice with Special Emphasis on ThirdGender		**TAMASA SARANGI**		
UNITS	**PAPER: 305:** Applied Philosophy (optional)	**50**			
	1. The Meaning and Basis of Equality, Racism and Equality, Affirmative Action 2. Various Forms of Violence against Women		**SURAJIT MANNA**		
	3. The Death Penalty 4. Media Ethics : Definition, Concerns, Freedom and Responsibility, Neutrality and Objectivity 5. Business Ethics		**MOULI MANDAL**		
Teaching Plan: Department of Philosophy: SEMESTER-IV(M.A)					
UNITS	**PAPER: 401:** Indian Ethics	**50**			
	1. Special Features of Indian Ethics:Karmavada, Classification of Dharma- Sādharaṇa dharma and Viśeṣa dharma, VidhiandNisedha 2. Some thical concepts: Ṛta, Ṛṇa, Yama and Niyama, Triratna andPancamahāvrata, Brahmavihara, Lokasaṁgraha **3. Buddhist Ethics: From the Dhammapada, Yamakavagga, Appamadavagga, Papavagga,, andDandavagga**		**SITALI JANA**	**07/02/2022 to 11/07/2022**	**2nd week of June,2022**
	4. Ethics of Niṣkāma karma: From 2nd and 3rd chapters of the Bhagavad Gita **5. Sociocentric Hindu Morality: Duties according to Varṇa and āśrama; Sex-morality and the treatment of Women, Social responsibilities of the Individual**		**MANIKA DAS**		

	6. Epics and Ethics : Moral Dilemma , Different views.				
UNITS	**PAPER: 402: Western Ethics**	**50**			
	1. VirtueEthics 3. Utilitarianism : For and Against		**KISHAN KHAN**		
	2. Metaethics :Cognitivism : Naturalism of Moore ; Noncognitivism: Emotivism Of Stevenson, PrescriptivismofHare. 5. Theory of Justice : Theoryof Rawls.		**SUJIT MAITY**		
	4. Kantian Ethics : ForandAgainst		**RATNA PANDA**		
UNITS	**PAPER: 403:** Advanced Logic (optional)	**50**			
	3. Set Theory: Operations, Relations and Functions from Patrick Suppees, AnIntroduction to Logic. (Chapter 10, and11)		**SUJIT MAITY**		
	4. Problem of Induction, Hypothesis, Evidence, Patterns of Scientific Explanations		**SUCHHANDA BERA**		
	PAPER: 403: Advaita Vedanta (optional)	**50**			
	Vedāntā – Paribhāṣā of Dharmarajādhvarīndra 1. PratyakṣaParicceda- upto the division ofNirvikalpaka andSavikalpakaPratyakṣa 2. Viṣaya- Paricceda - (upto the Theory of World -Creation) 3. Prayojana–Paricceda		**SANKAR PRASAD SING**		
UNITS	**PAPER: 404:** Continental Philosophy	**50**			
	1. Definition of Phenomenology, Development of Husserl's Thought, The Natural World Thesis, Reduction, Intentionality of Consciousness, TheLife-world.		**SURAJIT MANNA**		
	2. Special featuresof Existentialism, The Nature of Being – Sartre, and Heidegger, Freedom, ExistentialHumanism 3. Nature and features of Hermeneutic method of Philosophy.		**SK. TABARAK ALI**		
UNITS	**PAPER: 405:** Applied Philosophy (optional)	**50**			
	1. Euthanasia		**TAMASA SARANGI**		
	2. Genetic Engineering andEthics 3. Organdonation		**SUJIT MAITY**		
	4. Environmental Ethics : Some CentralDebates		**MOULI MANDAL**		

	5. Climateethics 6. Futuregeneration				
Teaching Plan: Department of Philosophy: SEMESTER-I(HONOURS)					
UNITS	**PAPER: CC1:** Indian Philosophy				
	Introduction: Division of Indian Philosophical Schools:Āstika and Nāstika b) Cārvāka School- Epistemology, Metaphysics, Ethics.		SITALI JANA	**01/10/2021 to 24/02/2022**	1st internal examination on 4th week of December, 2022 & 2nd internal examination on 2nd week of March,2022
	c) Jainism- Concept of Dravya, Sat, Guṇa, Paryāya Anekāntavāda, Syādvāda and Saptabhaṅginaya. d) Buddhism- Four noble Truths, Theory of Dependent Origination (Pratītyasamutpādavāda), Definition of Reality(Arthakriyākāritva), Doctrine of Momentariness, (Kṣanabhangavāda), Theory of no-soul (Nairātmyavāda), Four Schools of Buddhism (Basic tenets).	**75**	MANIKA DAS		
	e) Nyāya – Pramā and Pramāṇa, Pratyakṣa (Definition), Sannikarṣa, Classification ofPratyakṣa: Nirvikalpaka, Savikalpaka, Laukika, Alaukika;		SUCHHANDA BERA		
	f) Anumiti, Anumāna (Definition), vyāpti, parāmarśa, Classification of Anumāna: pūrvavat, śesavat, smānyatodṛsta, kevalānvayī, kevalavyātirekī, anvayavyātirekī, svārthānumāna, parārthānumāna, Upamāna (definition), Śabda (definition)		MOULI MANDAL		
	g) Vaiśeṣika—Seven Padārthas, dravya, guṇa, karma, sāmānya, viśeṣa, samavāya, abhāva, h) Different types of causes: samavayi, asamavayi and nimitta. Asatkāryavāda.		SURAJIT MANNA		
UNITS	**PAPER: CC2:** History of Western Philosophy	**75**			
	Pre Socratic Philosophy: A brief outline.		KISHAN KHAN		
	b) Plato: Theory of Knowledge, Theory of Forms c) Aristotle : Critique of Plato's theory of Forms, Doctrine of four causes, Form and Matter		SK. TABARAK ALI		
	d) St. Thomas Aquinas: Faith and Reason, Essence and Existence.		TAMASA SARANGI		
	e) Descartes:Cartesian method of doubt, cogito ergo sum, criterion of truth, types of ideas, Proofs for the existence of God, Mind- body dualism Proofs for the existence of the external world,		SUJIT MAITY		

	f) Spinoza: Doctrine of substance, Attributes and Modes, Existence of God, Pantheism, Three orders of knowing.		SANKAR PRASAD SING		
	g) Leibniz: Monads, Truths of reason, Truths of facts, Innate ideas, Some metaphysical principles: Law of Identity of indiscernibles, Law of sufficient reason, Law of continuity, Doctrine of Pre-established harmony.		RATNA PANDA		
UNITS	**PAPER: GE-1:** Western Logic	**75**			
	a) Introductory topics: Sentence, proposition, argument, truth and validity. b) Aristotelian classification of categorical propositions, distribution of terms. Existential Import, c) Boolean interpretation of categorical propositions. Immediate inference. Immediate inference based on the square of opposition, conversion, obversion and contraposition.		SUCHHANDA BERA		
	d) Categorical syllogism: Figure, mood, rules for validity, Venn Diagram method oftesting validity, fallacies e) Symbolic Logic: Use of symbols, Truth-functions: Negation, Conjunction, disjunction, implication, equivalence.		SK. TABARAK ALI		
	f) Tautology, Contradiction, Contingent statement forms. Construction of truth-table, using truth-tables for testing the validity of arguments and statement forms. g) Mill's methods of experimental inquiry.		TAMASA SARANGI		
Teaching Plan: Department of Philosophy: SEMESTER-II(HONOURS)					
UNITS	**PAPER: CC3:** Indian Philosophy	**75**			1st internal examination on 2nd week of May, 2022 and 2nd internal
	a) Sāmkhya - Satkāryavāda, Nature of Prakṛti, its constituents and proofs for its existence. Nature of Puruṣa and proofs for its existence, Plurality of Puruṣas, theory of evolution.		SK. TABARAK ALI	**01/04/2022 to 09/07/2022**	
	b) Yoga - Citta, Cittavṛtti, Cittabhūmi. Eight fold path of Yoga, God.		SITALI JANA		
	c) Mīmāmsā (Prābhakara and Bhātta) :Anvitābhidhānvāda and avihitānvayavāda, Arthāpatti and Anupalabdhi as sources of knowledge		MOULI MANDAL		

	d) Advaita Vedānta - Sankara's view of Brahman, Saguṇa and Nirguṇa Brahman, Three grades ofSattā: prātibhāsika, vyavahārika and pāramārthika, Jīva, Jagat and Māyā.		MANIKA DAS		examination on 2nd week of July,2022
	e) Viśistādvaita - Rāmānuja's view of Brahman, Jīva, Jagat. Refutation of the doctrine of Māyā.		SURAJIT MANNA		
UNITS	**PAPER: CC4:** History of Western Philosophy	**75**			
	a) Locke : Refutation of innate ideas, the origin and formation of ideas, simple and complex ideas, substance, modes and relations, nature of knowledge and its degrees, limits of knowledge, primary and secondary qualities, representative realism.		TAMASA SARANGI		
	b) Berkeley: Refutation of abstract ideas. Criticism of Locke's distinction between primary and secondary qualities, Immaterialism, esse-est-percipi, role of God.		RATNA PANDA		
	c) Hume:Impression and ideas, association of ideas, distinction between judgements concerning relations of ideas and judgements concerning matters of fact,		KISHAN KHAN		
	HUME: theory of causality, theory of self and personal identity, scepticism.		SUJIT MAITY		
	d) Kant : Conception of critical Philosophy, distinction between a priori and a posteriori judgements, distinction between analytic and synthetic judgements.		SUCHHANDA BERA		
	Synthetic a priori judgements, General problem of the Critique, Copernican Revolution in Philosophy, Transcendental Aesthetic : Space & time - Metaphysical & Transcendental expositions of the ideas of space & time.		SANKAR PRASAD SING		
UNITS	**PAPER: GE-2:** Philosophy of Mind	**75**			
	a) Sensation: What is sensation? Attributes of sensation b) Perception: What is perception? Relation between sensation and perception, Gestalt theory of perception, illusion and hallucination.		SUCHHANDA BERA		
	c) Consciousness: Conscious, Subconscious, Unconscious,Evidence for the existence of the Unconscious, Freud's theory of dream.		TAMASA SARANGI		
	d) Memory: Factors of memory, Laws of association, Forgetfulness. Learnung: The trialand Error theory, Pavlov's Conditioned Response theory, Gestalt theory		RATNA PANDA		

	e) Intelligence: Measurement of Intelligence, I.Q., Testof Intelligence, Binnet-Simon test.		SURAJIT MANNA		
Teaching Plan: Department of Philosophy: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC5:** Philosophy of Mind	**75**		01/10/2021 to	
	a) Psychology: Definition, Nature and Scope b) Methods of Psychology: Introspection, Extrospection, Experimental Methods – variables - dependent &independent, controls in experiment, limitations of experimental method. c) Sensation and Perception: Nature of sensation, nature of perception, relation between sensationand perception, Gestalt theory of perception. Illusion and Hallucination.		SUCHHANDA BERA	05/02/2022	**4th week of November,2021 &1st Week of January,2022**
	d) Learning: Theories of Learning - Trial and error theory, Thorndike's laws of learning, GestaltTheory, Pavlov's theory of conditioned response, B.F. Skinner's theory of Operant Conditioning(reinforcement, extinction, punishment) e) Philosophical Theories of Mind: Interactionism, Double-aspect theory, Philosophical Behaviorism, Materialism mind - brain identity theory, The Person theory (Strawson)		SUJIT MAITY		
	. f) Consciousness: Levels of mind—Conscious, Sub-conscious, Unconscious, proofs for the existence of Unconscious, Freud's theory of Dream. g) Personality: Types, Factors and Traits of Personality.		SURAJIT MANNA		
UNITS	**PAPER: CC6:** Social and Political Philosophy	**75**			
	a) Nature and Scope of i) Social Philosophy ii) Political Philosophy iii) Relation between social and Political Philosophy. b) Primary concepts: Society, community, association, institution, family: nature, different forms of family, role of family in the society.		MANIKA DAS		
	c) Social Class and Caste: Principles of class and caste, Marxist conception of class, Varṇaśrama dharma. d) Theories regarding the relation between individual and society: I. Individualistic theory II. Organic theory III. Idealistic theory e) Secularism—its nature, Secularism in India.		KISHAN KHAN		

	f) Social Change: Nature, Relation to Social progress, Marx-Engles on social change, Gandhi onsocial change . g) Political Ideals: Nature of Democracy and its different forms, direct and indirect democracy, liberal democracy, democracy as a political ideal, Socialism: Utopian and Scientific, Anarchism.		SIYALI JANA		
UNITS	**PAPER: CC7:** Philosophy of Religion	**75**			
	a) Nature and scope of Philosophy of Religion. Doctrine of karma and rebirth, doctrine of liberation, (Hindu, Bauddha and Jaina views). b) The Philosophical teachings of the Holy Quran: God the ultimate Reality, His attributes, Hisrelation to the world and man. c) Some basic tenets of Christianity: The doctrine of Trinity, The theory of Redemption		RATNA PANDA		
	d) Religious Pluralism, Inter-religious dialogue and Possibility of Universal Religion. e) Arguments for the existence of God: Cosmological, Telelogical and Ontological arguments, Nyāya arguments		TAMASA SARANGI		
	f) Grounds for Disbelief in God: Sociological theory (Durkheim), Freudian theory, Cārvāka, Bauddha and Jaina views g) The Peculiarity of Religious Language: The doctrine of analogy, Religious statements as Symbolic, Religious language as Non-Cognitive (Randal's view), the language game theory (D.Z. Phillip).		SANKAR PRASAD SING		
UNITS	**PAPER: SEC-1:** : Philosophy of Human Rights	50			
	a) Definition and Nature of Human Rights b) The Idea of Human Rights: Its Origins and Historical Developments during Ancient period, Modern period and Contemporary period c) The Idea of Natural Law and Natural Rights: Thomas Hobbes and John Locke. d) The Natural Rights Tradition: Some Reactions from Jeremy Bentham, Edmund Burke and Thomas Paine		MOULI MANDAL		
	e) Natural Right, Fundamental Right and Human Right		SK. TABARAK ALI		

	f) Preamble, Fundamental Rights and Duties (Indian Constitution) g) Contemporary Perspectives: Joel Feinberg—Basic Rights				
UNITS	**PAPER: GE-3:** Theory of Inference in Nyāya	**75**			
	a. Definition & classification of Anumiti.		SUCHHANDA BERA		
	b. Importance of Pañcabayabinyāya.		SURAJIT MANNA		
Teaching Plan: Department of Philosophy: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC8:** Western Logic	**75**			
	a) Logic and Arguments, Deductive and Inductive Arguments, Argument forms and arguments, statement forms and statement, Truth and Validity. Categorical propositions and classes: quality, quantity and distribution of terms, Translating categorical propositions into standard form. b) Immediate inferences: Conversion, Obversion and Contrapositon, Traditional square of opposition and Immediate Inferences based there on; Existential Import, symbolism and Diagrams for categorical propositions. c) Categorical Syllogism: Standard Form categorical Syllogism; The Formal nature of Syllogistic Argument, Rules and Fallacies, General Rules; To test Syllogistic Arguments for validity (by applying general rules for syllogism); To solve problems and prove theorems concerning syllogism.		RATNA PANDA	**15/03/2022 to 25/06/2022**	**4th week of April,2022 &3rd week of June,2022**
	d) Boolean Interpretation of categorical propositions; Review of the Traditional Laws of Logic concerning immediate inference and syllogism; Venn Diagram Technique for Testing Syllogisms, Hypothetical and Disjunctive Syllogisms, Enthymeme, The Dilemma.		KISHAN KHAN		
	e) Induction: Argument by Analogy, Appraising Analogical Arguments, Refutation by Logical Analogy. f) Causal Connections: Cause and Effect, the meaning of "Cause"; Induction by Simple Enumeration; Mill's Method of Experimental Inquiry; Mill's Method of Agreement, Method of Difference, Joint Method of Agreement and Difference,		TAMASA SARANGI		

	Method of Residues, Method of Concomitant Variations; Criticism of Mills Methods, Vindication of Mill's Methods g) Science and Hypothesis: Explanations; Scientific and Unscientific, Evaluating Scientific Explanations; The pattern of Scientific Investigation; Crucial Experiments and Ad Hoc Hypotheses.				
	h) Probability: Alternative Conception of Probability; The Probability Calculus; Joint Occurrences; Alternative Occurrences.		SK. TABARAK ALI		
UNITS	**PAPER: CC9:** Western Logic	**75**			
	a) Symbolic Logic: The value of special symbols; Truth-Functions; Symbols for Negation, Conjunction, Disjunction, Conditional Statements and Material Implication; Material Equivalence and Logical Equivalence; Dagger and stroke functions; inter-definability of truth functors. b) Tautologous, Contradictory and Contingent Statement-Forms; The Paradoxes of Material Implication; The three Laws of Thought.		SUCHHANDA BERA		
	c) Testing Argument Form and Argument for validity by i. The Method of Truth-table. ii. The Method of Resolution (Fellswoop & Full Sweep)[dot notation excluded] d) Determining the logical character of statement form and statements by i. The Method of Truth-table. ii. The Method of Resolution [dot notation excluded]		SK. TABARAK ALI		
	e) The Method of Deduction: Formal Proof of Validity: Difference between Implicational Rules and the Rules of Replacement; Construction of Formal Proof of Validity by using nineteen rules; Proof of invalidity by assignment of truth-values. f) Quantification Theory: Need for Quantification Theory, Singular Propositions; Quantification; Translating Traditional subject predicate proposition into the logical notation of propositional function and quantifiers; g) Quantification Rules and Proving Validity; Proving Invalidity for arguments involving quantifiers.		SUJIT MAITY		
UNITS	**PAPER: CC10:** Epistemology and Metaphysics (Western)	**75**			

	a) Concepts, Truth. b) Sources of Knowledge. c) Some Principal uses of the verb "To know", Conditions of Propositional Knowledge, Strong and weak senses of "know".		SURAJIT MANNA		
	d) Analytic truth and logical possibility. e) The apriori. f) The Problem of Induction. g) Cause and Causal Principles		SANKAR PRASAD SING		
	h) Realism, Idealism i) Phenomenalism j) Substance and Universal		MOULI MANDAL		
UNITS	**PAPER: SEC-2:** Man and Environment	50			
	a) **Classical Indian attitude to Environment** a. The Upanisadic world-view, b. Tagore's understanding of nature, c. The post-Upanisadic view of nature. .		MANIKA DAS		
	b) Respect for Nature a. The attitude of respect, b. Bio-centric outlook to nature, c. Ethical standards and rules that follow from the attitude of respect to nature, d. The idea of inherent worth of nature **c) Intrinsic Value of nature** a. Moore's talk of 'intrinsic properties', b. Chilsom's idea of intrinsic value, c. Attfield on the intrinsic value of nature, d. Callicott's idea of intrinsic value of nature, e. Rolston III on intrinsic value of nature, f. intrinsic value and objective value		KISHAN KHAN		
	d) Deep ecology and its third world critique a. Arne Naess on Deep Ecology, b. Ramchandra Guha's critique of Deep Ecology **e) Eco-feminism** a. Understanding nature and the feminine, b. Dualisms in Western tradition, c. Masculinity, humanity and nature		SITALI JANA		
UNITS	**PAPER: GE-4:** : Termination of Life & Ethics	**75**			

	a. Euthanasia.		SURAJIT MANNA		
	b. Abortion.		SUCHHANDA BERA		
Teaching Plan: Department of Philosophy: SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC11:** Nyaya Logic and Epistemology-I	**75**		14/09/2021 to	
	a) Definition of buddhi or jñāna (cognition), its two kinds; Definition of smṛti; Two kinds of smṛti (memory);Definition of anubhava, its division into veridical (yathārtha) and non-veridical (ayathārtha);Three kinds of nonveridical anubhava; Definitions clarified in Tarkasaṁgraha Dīpikā.		RATNA PANDA	18/01/2022	**1st week of November, 2021 &4th week of December,2021**
	b) Four-fold division of pramā and pramāṇa. Definition of "Kāraṇa" (special causal condition) and "kāraṇa" (general causal condition). The concept of anyathāsiddhi (irrelevance) and its varieties.The definition of kārya (effect). Kinds of cause: smavāyi, a-samavāyi and nimitta kāraṇa (definitions and analysis).		SK. TABARAK ALI		
	c) Definition of pratyakṣa and its two-fold division: nirvikalpaka and savikalpaka jñāna. Evidence for the actuality of nirvikalpaka. d) Sannikarsa and its six varieties. Problem of transmission of sound; the claim of "anupalabdhi" as a distinctive pramāṇa examined.		SANKAR PRASAD SING		
UNITS	**PAPER: CC12:** Ethics (Indian)	**75**			
	a) Introduction: Concerns and Presuppositions, Concept of Sthitaprañjna, Karmayoga: (Gīta) Puruṣārthas and their inter-relations. b) Meaning of Dharma, Concept of ṛṇa and ṛta. Classification of Dharma: sādhāraṇadharma and Asadharana Dharma,Varnasrama Dharma		SITALI JANA		
	c) Vidhi and Niṣedha d) Buddhist Ethics: Pancaśīla, Brahmavihārabhāvanā (Bauddha) Anubrata, Mahābrata, Ahimsā.		MANIKA DAS		
	e) Jaina Ethics: anubrata, mahā̃brata f) Mimā̃ṁsa Ethics: nitya naimittika karma and kāmya karma, the imperative in kāmya karmas and in kāmya karmas involving hiṁsā.		SUCHHANDA BERA		

UNITS	**PAPER: DSE-1:** Philosophy of language (Indian)	**75**			
	a) Definition and classification of pada b) Introduction of concepts of āsatti, yogyatā, tātparya, ākāṁṣā c) Different types of lakṣaṇā		SUJIT MAITY		
	d) śābdabodha e) anvitābhidhānvāda and abhihitānvayavāda.		TAMASA SARANGI		
UNITS	**PAPER: DSE-2:** Ethics (Applied Ethics)	**75**			
	a. Nature and scope of applied ethics. b. Killing: Suicide, Euthanasia, Animal killing c. Poverty, Affluence and Morality		SURAJIT MANNA		
	d. War and Violence: Terrorism. e. Right: Nature and Value of Human Rights—Discrimination on the basis of race, caste and religion. f. The Ethics of Care.		MOULI MANDAL		
	g. Value beyond sentient beings, Reverence for life, Deep Ecology, Concepts of Kinship Ethics. h. Ecological Concern in Indian thoughts: Jaina and Bauddha views**.**		KISHAN KHAN		
Teaching Plan: Department of Philosophy: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13:** Nayaya Logic and Epistemology-II	**75**			
	a) Definiton of anumāna, anumiti and parāmarśa. Analysis of pakṣatā. Definition of vyāpti, Vyāptigraha. b) Definition of pakṣadharmatā—svārthānumiti and parārthānumiti; Analysis of pañcāvayavī Nyāya. Necessity of parāmarśa. Three kinds of linga or hetu: kevalānvayī, kevalavyᾶtirekī and anvayavyᾶtirekī. Definiton of pakṣa, Sapakṣa and vipakṣa with illustrations. Marks of sadhetu.		SUCHHANDA BERA	21/02/2022 to 10/06/2022	**1st week of April,2022 & 1st week of June,2022**
	c) Hetvābhāsa-two types of definition. Five kinds of hetvābhāsa: (1) "Savyᾶbhicāra'' and its three kinds-defined and illustrated; (2) "Viruddha" defined and illustrated: (3) "Satpratipakṣa" defined and illustrated; (4) Three kinds of "Asiddha" enumerated; (a) āśrayāsiddha (b) svarūpāsiddha and (c) vyāpyatvāsiddha. Vyāpyatvāsiddha defined		TAMASA SARANGI		

	as“sopādhika hetu”. Upādhi and its four kinds (definition and illustration) (5) “Bādhita” (definition and illustration).				
	d) “Upamāna pramāṇa”: Definition and analysis.“Śabda pramāṇa” : Definition and analysis. “Śakti” (the direct signifying power), the padapadārtha- sambandha considered as Īśvara-saṁketa, Controversy between the Mīmāṃsakas and the Naiyāyikas regarding the nature of Śakti as universal or particular. e) “Śaktigraha” (ascertainment of the meaning-relation), lakṣaṇa, varieties of lakṣaṇa, Analysis of “Gauṇī-vṛtti” (the secondary signifying power of a term), “Vyānjanā- vṛtti” (the suggestive power of a term) analysed as a kind of śakti or lakṣaṇā.		SURAJIT MANNA		
	f) The definition of lakṣaṇā, The concept of “yoga-rūḍhi”. The conditions of “śābda- bodha”, ākānkṣā, yogyatā and sannidhi. Two kinds of statements distinguished—Vaidika and Laukika. g) “Arthāpatti” as a distinctive pramāṇa: Controversy between the Mīmāṃsakas and the Naiyāyikas.		SUJIT MAITY		
	h) The theory of prāmāṇya: the issue between svataḥ-prāmāṇyavāda and parataḥ- prāmāṇyavāda regarding utpatti and jñapti; The Prābhākara theory of akhyāti		SITALI JANA		
UNITS	**PAPER: CC14:** Ethics (Western)	**75**			
	a) Nature and Scope of Ethics, Classification of Ethics: a: Prescriptive, b: Meta Ethics, c: Applied Ethics. b) Moral and Non-moral actions, Object of Moral Judgement - Motive and Intention		MANIKA DAS		
	c) Moral Theories: Plato and Aristotle d) Standards of Morality: Hedonism - Ethical, Psychological. Utilitarianism: Act utilitarianism, Ruleutilitarianism. Deontological Theories: Act - Deontological Theories, Rule-Deontological Theories - Kant’s Theory.		MOULI MANDAL		
	e) Theories of Punishment f) Environmental Ethics: Its nature, Concepts of Anthropocentrism and Non anthropocentrism, value beyond sentient beings, reverence for life.		SITALI JANA		
UNITS	**PAPER: DSE-3:** The Problems of Philosophy--Bertrand Russell	**75**			
	a) Chapter 1 - 3 (15) b) Chapter 4 - 6 (15)		SANKAR PRASAD SING		

	c) Chapter 7- 9 (15) d) Chapter 10 - 12(15)		SK. TABARAK ALI		
UNITS	**PAPER: DSE-4:** Rabindranath Tagore	**75**			
	a) Reality and God **b)** Nature of Man		RATNA PANDA		
	c) Surplus in Man d) Nature of Religion e) Tagore's Humanism		KISHAN KHAN		
Teaching Plan: Department of Philosophy: SEMESTER-I(GENERAL)					
UNITS	**PAPER: DSC-1A/2A:** Indian Philosophy	**75**			
	1. Introduction: (a) General Features of Indian Philosophy 2. Cārvāka: (b) pratyakṣa (perception) as the only Source of Knowledge (c) Refutation of anumāna (inference) and śabda (testimony) as Sources of Knowledge (d) jaḍavāda and dehātmavāda.		SITALI JANA	01/10/2021 to 24/02/2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	3.Jainism: (a) anekāntavāda (b) syādvāda and nayavāda 4. Buddhism: (a) Four Noble Truths (a) (b) pratītyasamutpāda (b) kṣaṇabhaṅgavāda (c) nairātmyavāda		SUCHHANDA BERA		
	5. Nyāya–Vaiśeṣika: (a) pramāṇa: pratyakṣa (perception), anumāna (inference), upamāna (comparison) and śabda (testimony) (b) Saptapadārtha (Seven Categories)		SURAJIT MANNA		
	6. Sāṁkhya: (a) Satkāryavāda (Theory of Causality) (b) Pariṇāmavāda (Theory of Evolution) 7. Yoga : (a) cittavṛttinirodha (b) aṣṭāṅgayoga		RATNA PANDA		
	8. Mīmāṁsā (a) arthāpatti (b) anupalabdhi 9. Advaita Vedānta: (a) (a)Brahman, jīva and jagat		SK. TABARAK ALI		
Teaching Plan: Department of Philosophy: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B:** Western Philosophy:	**75**		01/04/2022 to 09/07/2022	1st internal examination on 2nd week of May,
	1. Metaphysics: Nature of Metaphysics, Elimination of Metaphysics 2. Realism: Naïve Realism, Scientific Realism, Representative Realism		SURAJIT MANNA		

	3. Idealism: Subjective Idealism, Objective Idealism		SUCHHANDA BERA		2022 and 2nd internal examination on 2nd week of July,2022
	4. Critical Theory of Kant 5. Theories of Causation: Regularity Theory and Entailment Theory		SK. TABARAK ALI		
	6. Substance: Views of Descartes, Spinoza, Locke and Berkeley 7. Relation between Mind and Body: Interactionism and Parallelism		RATNA PANDA		
	8. Theories of Evolution: Mechanistic and Emergent		SITALI JANA		
Teaching Plan: Department of Philosophy: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C**: Logic	**75**		01/10/2021-05/02/2022	**4th week of November,2021 &1st Week of January,2022**
	1. Basic Concept of Logic: (a) Nature and Scope of Logic, (b) Sentence, Proposition and Statement , (c) Inference and Argument, 2. Types of Argument and Inference: (a) Deductive Argument and Inductive Argument, (b) Immediate inference and Mediate inference, (c) Categorical Syllogism, (d) Truth Functional Argument and Quantificational Argument 3. Opposition of Propositions: Rules and Fallacies 4. Immediate Inference: Rules and Fallacies		RATNA PANDA		
	5. Categorical Syllogisms: Rules and Fallacies, Venn diagram 6. Truth functional Argument: Rules and Fallacies 7. Inductive Argument: Rules and Fallacies 8. Analogical Reasoning 9. Science and Hypothesis		TAMASA SARANGI		
UNITS	**PAPER: SEC-1:** Ethics in Practice	50			
	1. Morality and Ethics 2. Motive and Intention 3. Moral action and Moral Judgment 4. Normative Theories: (a) Ethical Egoism & Utilitarianism, (b) Kant's Moral Theory		SURAJIT MANNA		
	5.puruṣārtha (Buddha and āstika views) 6. Vedic Concepts of ṛta, yajña, ṛṇa, vidhi and niṣedha 7. Concept of ahiṁsā in Yoga		SITALI JANA		

	8. Concept of niṣkāmakarma preached in Śrīmadbhagavadgīitā				
	9. Concept of pañcaśīla in Buddhism 10. Jaina Concepts of pañcamahāvrata, triratna, anuvrata and mahāvrata 11. Awareness, Views and Praxis on Basic Moral Concerns of Environment: (a) Environmental awareness and Buddhism (b) Rabindranath Tagore's Environmental Praxis (c) Land Ethics (d) Shallow and Deep Ecology		SANKAR PRASAD SING		
Teaching Plan: Department of Philosophy: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D:** Contemporary Indian Philosophy	**75**			**4th week of April,2022 &3rd week of June,2022**
	1. Rabindranath Tagore (a)Nature of man : The Finite Aspect of Man, the Infinite Aspect of Man ,the FiniteInfinite Aspect of Man, (b) Nature of Religion, (c) Problem of Evil (f) Surplus in man 2. Swami Vivekananda (a)Practical Vedānta, (b) Universal Religion, (c) Yoga		RATNA PANDA	15/03/2022 to 25/06/2022	
	3. Sri Aurobindo (a)Nature of Reality, (b) Human Evolution– its different stages, (c) Integral Yoga 4. S. Radhakrishnan (a)Nature of Man, (b) Nature of Religious Experience, (c) Nature of Intuitive Apprehension		TAMASA SARANGI		
	5. Md. Iqbal (a)Nature of the Self, (b) Nature of the World, (c) Nature of God 6.Mahatma Gandhi (a) God and Truth, (b) Ahimsa, (c) Trusteeship		SITALI JANA		
UNITS	**PAPER: SEC-2:** Man and Environment	50			
	1. Meaning: (a) Word -meaning and Sentence-meaning, (b) Testability and Meaning 2. Definition 3. Concept and Truth		SURAJIT MANNA		
	4. Knowledge: Nature and Source of Knowledge 5. Determinism and Freedom		SANKAR PRASAD SING		

Teaching Plan: Department of Philosophy: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A:** : Philosophy of Religion	**75**		14/09/2021 to 18/01/2022	**1st week of November, 2021 &4th week of December,2021**
	1. Nature and Scope of Philosophy of Religion: (a) Religion, Dharma, Dhamma, (b) Philosophy of Religion, Comparative Religion and Theology 2. Origin and Development of Religion 3. Fundamental Features of Major Religions: Hinduism, Christianity, Islam, Buddhism: Basic Tenets, Prophets (if any), Incarnation, Bondage and Liberation 4. Arguments for the Existence of God (Indian and Western): Sāṁkhya-Yoga Arguments, Nyāya Arguments, Cosmological Arguments, Teleological Arguments, Ontological Arguments		TAMASA SARANGI		
	5. Arguments against the Existence of God: Sociological Arguments, Freudian Arguments, Buddhist Arguments 6. Religious Pluralism & Mysticism 7. Monotheism, Polytheism, Henotheism 8. Immanence and Transcendence of God		MANIKA DAS		
UNITS	**PAPER: SEC-3:** Philosophy in Practice	**75**			
	1. Common and Differentiating Characteristics of Philosophy and darśana 2. Nature of Inquiry in Philosophy and darśana 3. Outlines of the types of Inquiry in Philosophy and darśana: (a) Epistemic Inquiry in Philosophy and darśana, (b) Metaphysical Inquiry in Philosophy and darśana, (c) Axiological Inquiry in Philosophy and darśana		SK. TABARAK ALI		
	4. A few Model World-views and corresponding paths leading to Perfection (a) Plato's view, (b) Kant's view, (c) Sāṁkhya view and (d) Advaita Vedānta View 5. Methods of Philosophical Discourse (a) Reasoned Speculation, (b) Conceptual Analysis, (c) Linguistic Analysis, (d) Logical Argumentation, (e) Critical Reflection 6. Methods of Dārśanika Discourse (kathā) (a) chala, (b) jāti, (c) nigrahasthāna, (d) vāda, (e) jalpa, (f) vitaṇḍā		RATNA PANDA		
UNITS	**PAPER: GE-1:** Indian Philosophy	**75**			
	1. Introduction: General Features of Indian Philosophy		SITALI JANA		

	2. Cārvāka: (a) pratyakṣa (perception) as the only Source of Knowledge (b) Refutation of anumāna (inference) and śabda (testimony) as Sources of Knowledge (c) jaḍavāda and dehātmavāda 3. Jainism: (a) anekāntavāda (b) syādvāda and nayavāda 4. Buddhism: (a) Four Noble Truths (b) pratītyasamutpāda (c) kṣaṇabhaṅgavāda (d) nairātmyavāda				
	5.Nyāya–Vaiśeṣika: (a) pramāṇa: pratyakṣa (perception), anumāna (inference), upamāna (comparison) and śabda (testimony) (b) Saptapadārtha (Seven Categories) 6. Sāṁkhya: (a) Satkāryavāda (Theory of Causality) (b) Pariṇāmavāda (Theory of Evolution) 7. Yoga : (a) cittavṛttinirodha (b) aṣṭāṅgayoga 8. Mīmāṁsā (a) arthāpatti (b) anupalabdhi 9. Advaita Vedānta: Brahman, jīva and jagat		SURAJIT MANNA		
Teaching Plan: Department of Philosophy: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B**	**75**		**21/02/2022 to 10/06/2022**	**1st week of April,2022 & 1st week of June,2022**
	Saptapadārtha		MANIKA DAS		
	Saptapadārtha		TAMASA SARANGI		
UNITS	**PAPER: SEC-4:** Logical Reasoning and Application	50			
	A. The main objective of logical reasoning. B. Definitions: Pakṣa, sādhya, hetu, sapakṣa and Vipakṣa. C.Construction of kevalānvayī, kevalavyātirekī anvayvyātirekī anumiti D. Hetvābhāsa and its different kinds, detection of hetvābhāsa		RATNA PANDA		
	E Reasoning in practice I)Fallacy of relevance, Fallacies of ambiguity, Fallacies of weak induction, Avoiding fallacies ii)Logical applications of the concept of pakṣatā iii)Functional applications of ordinary operative relations between sense-organs and respective objects. F. Inductive reasoning in law I)The method of Inquiry in Law		SK. TABARAK ALI		

	ii)Causation in Legal reasoning iii)Analogical Reasoning in legal argument iv)Probability in legal argument G. Deductive Reasoning in Law I)Determining the correct rule of Law ii)Identifying, formulating, and applying rules of law. Iii)The law of libel iv)Logic is right reasoning				
UNITS	**PAPER: GE-2:** Philosophy of Mind	**75**			
	(a) Sensation: What is sensation? Attributes of sensation. (b) Perception: What is perception? Relation between sensation and perception, Gestalt theory of perception, illusion and hallucination. (c) Consciousness: Conscious, Subconscious, Unconscious,Evidence for the existence of the Unconscious, Freud's theory of dream.		SURAJIT MANNA		
	(d)Memory: Factors of memory, Laws of association, Forgetfulness. Learnung: The trialand Error theory, Pavlov's Conditioned Response theory, Gestalt theory. (e) Intelligence: Measurement of Intelligence, I.Q., Testof Intelligence, Binnet-Simon test.		SITALI JANA		

Physical Education

Teaching Plan: Department of Physical Education: SEMESTER-I(GENERAL)

		FULL MARKS	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**REMARKS**
UNITS	**PAPER: DSC-1A/2A(Foundation and history of physical education)**				

Unit-1	**Introduction** 1.1. Meaning, definition and scope of Physical Education. 1.2. Aims and objectives of Physical Education. 1.3. Misconception and modern concept of Physical Education. 1.4. Needs and importance of Physical Education in modern society	75	Kalpataru Samanta	01.10.2021 to 24.02.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Unit-2	**Biological and sociological foundations of physical education** 2.1. Biological Foundation- Meaning and definition of growth and development. Factors affecting growth and development. Differences of growth and development. Principles of growth and development. 2.2. Age- Chronological age, anatomical age, physiological age and mental age.		KalpataruSamanta (Chapter-2.1,2.2)		

	2.3. Sociological Foundation- Meaning and definition of Sociology, Society, Socialization in Physical Education and Sports, Sports Ethics. 2.4. Role of games and sports in National and International integration.		Dr.Debabrata Samanta (Chapter-2.3,2.4)		
Unit-3	**History of physical education** 3.1 Historical development of Physical Education and Sports in India- Pre-Independence period and Post-Independence period. 3.2 Olympic Movement- Ancient Olympic Games and Modern Olympic Games. 3.3 Brief historical background of Asian Games and Commonwealth Games. 3.4 National Sports Awards- Arjuna Award, Rajiv Gandhi Khel Ratna Award, Dronacharya Award, Dhyanchand Award		Dr.Debabrata Samanta		
Unit-4	**Yoga education**		Dr.Dilip Biswas		

	4.1 Meaning and definition of the term Yoga, types, aims, objectives and importance of Yoga. 4.2 History of Yoga. 4.3 Astanga Yoga 4.4 Hatha Yoga				
	Paper:DSC1AP/2AP (Field Practical)				
1	**Marching** 1. Marching- fall in attention, Stand at ease, stand easy, Eyes right, Eyes front, Right Turn, Left Turn, About Turn, Mark Time Mark, Forward Mark	20	Dr.Debabrata Samanta	01.10.2021 to 24.02.2022	
2	**Suryanamaskar** 2. Learn and demonstrate the technique of Suryanamaskar.		Dr.Dilip Biswas		
3	**Callisthenics and Aerobic Activities** 3. Development of physical fitness through Callisthenics and Aerobic activities.		Kalpataru Samanta		

Teaching Plan: Department of Physical Education: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B(Management t of physical education and sports)**				
Unit-1	**Introduction** 1.1. Concept and definition of Sports Management. 1.2. Purpose of Sports Management, Importantance of Sports Management, 1.3. Principles of Sports Management. 1.4. Sports Manager and his duties	75	Kalpataru Samanta	01.04.2022 to 09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
Unit-2	**Tournament** 2.1. Tournaments: Meaning and definition, and types of tournaments (Knock-out, League, Combination, Challenge). 2.2. Procedure of drawing fixture.		Dr.Dilip Biswas		

	2.3. Method of organizing Annual Athletic Meet and Play Day. 2.4. Method of organizing of Intramural and Extramural competition.				
Unit-3	**Facilities and equipments** 3.1 Method of calculation of Standard Athletic Track marking. 3.2 Care and maintenance of play ground and gymnasium. 3.3 Importance, care and maintenance of sports equipment. 3.4 Time Table: Meaning, importance and factors affecting school Physical Education Time Table.		Dr.Debabrata Samanta		
Unit-4	**Leadership** 4.1 Meaning and definition of leadership. 4.2 Qualities of good leader in Physical Education.		Kalpataru Samanta		

	4.3 Types of Leadership. 4.4 Principles of leadership activities.				
	Paper:DSC1BP/2BP (Field Practical)				
1	**Track & field** 1. Lay out knowledge and Officiating ability of Track and field events	20	Kalpataru Samanta	01.04.2022 to 09.07.2022	
2	**Officiating ability of games** 2. Lay out knowledge and Officiating ability of Games: Football, Kabaddi, KhoKho,Volleyball, Hand Ball, Net Ball, Throw Ball,		Dr.Debabrata Samanta		
3	**Gymnastic and yoga** 3. Gymnastic and Yoga Scoring		Dr.Dilip Biswas		
Teaching Plan: Department of Physical Education: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C (Anatomy, Physiology and Exercise Physiology)**				**4th week of November,202**

Unit-1	**Introduction** 1.1. Meaning and definition of Human Anatomy, Physiology and Exercise Physiology. 1.2. Importance of Human Anatomy, Physiology and Exercise Physiology in Physical Education. 1.3. Cell- Structure and function. 1.4. Tissue- Types and functions.	75	Kalpataru Samanta	01.10.2021 to 05.02.2022	**1 &1st Week of January,2022**
Unit-2	**Musculo-skeletal system** 2.1. Skeletal System- Structure of Skeletal System. Classification and locations of bones and joints. Anatomical differences between male and female. 2.2. Muscular System- Type, location, function and structure of muscle. 2.3. Types of muscular contraction. 2.4. Effect of exercise and training on muscular system.		Kalpataru Samanta		

Unit-3	**Circulatory system** 3.1 Blood- Composition and function. 3.2 Heart- Structure and functions. Mechanism of blood circulation through heart. 3.3 Blood Pressure, Athletic Heart and Bradycardia 3.4 Effect of exercise and training on circulatory system.		Dr.Dilip Biswas		
Unit-4	**Respiratory system** 4.1 Structure and function of Respiratory organs. 4.2 Mechanism of Respiration. 4.3 Vital Capacity, O2 Debt and Second Wind. 4.4 Effect of exercise and training on respiratory system.		Dr.Debabrata Samanta		
	PAPER: DSC-1C/2C (Practical)				

1	**Assessment of BMI and WHR** 1. Assessment of BMI, and WHR.	20	Dr.Dilip Biswas	01.10.2021 to 05.02.2022	
2	**Measurement Of BP,VC,RR,PEI** 2. Measurement of Blood Pressure, Vital Capacity, Respiratory rate,		Kalpataru Samanta		
3	**Measurement Of HR,LL,PFR** Heart Rate, Limb length, PEI, and Pick flow Rate		Dr.Debabrata Samanta		
UNITS	**Paper: Sec-1 (Indian Games and Racket Sports/Practical)**	50		01.10.2021 to 05.02.2022	
C & D	**Badminton ,** a. Fundamental skills 1. Basic Knowledge: Various parts of the Racket and Grip. 2. Service: Short service, Long service, Long-high service.		Dr.Dilip Biswas		

	3. Shots: Over head shot, Defensive clear shot, Attacking clear shot, Drop shot, Net shot, Smash. 4. Game practice with application of Rules and Regulations. **Table Tennis** a. Fundamental skills 1. Basic Knowledge: Various parts of the Racket and Grip (Shake Hand & Pen Hold Grip). 2. Stance: Alternate & Parallel. 3. Push and Service: Backhand & Forehand. 4. Chop: Backhand & Forehand. 5. Receive: Push and Chop with both Backhand & Forehand. 6. Game practice with application of Rules and Regulations.				
A	**Kabaddi**		Kalpataru Samanta		

	a. Fundamental skills 1. Skills in Raiding: Touching with hands, Use of leg-toe touch, squat leg thrust, side kick, mule kick, arrow fly kick, crossing of baulk line. Crossing of Bonus line. 2. Skills of holding the raider: Various formations, catching from particular position, different catches, catching formation and techniques. 3. Additional skills in raiding: Escaping from various holds, techniques of escaping from chain formation, offense and defence. 4. Game practice with application of Rules and Regulations.				
B	**Kho-kho** a. Fundamental skills 1. Skills in Chasing: Sit on the box (Parallel & Bullet toe method), Get up from the box (Proximal & Distyal foot method), Give Kho		Dr.Debabrata Samanta		

	(Simple, Early, Late & Judgment), Pole Turn, Pole Dive, Tapping, Hammering, Rectification of foul. 2. Skills in running: Chain Play, Ring play and Chain & Ring mixed play. 3. Game practice with application of Rules and Regulations.				

Teaching Plan: Department of Physical Education: SEMESTER-IV(GENERAL)

UNITS	**PAPER: DSC-1D/2D (Health Education, Physical Fitness and Wellness)**				**4th week of April,2022 &3rd week of June,2022**
Unit-1	1.1. Concept, definition and dimension of Health. 1.2. Definition, aims, objectives and principles of Health Education. 1.3. Activities of Health Agencies- World Health Organization (WHO), United Nations Educational Scientific and Cultural Organization (UNESCO) and United Nations International Children's Emergency Fund (UNICEF)	75	Kalpataru Samanta	15.03.2022 to 25.06.2022	

	1.4. School Health Program- Health Service, Health Instruction, Health Supervision, Health appraisal and Health Record, Personal hygiene				
Unit-2	**Health Problems in India prevention and control** 2.1. Communicable Diseases- Malaria, Dengue and Chicken Pox and Diarrhoea. 2.2. Non-Communicable Diseases- Obesity, Diabetes and Asthma. 2.3. Nutrition- Nutritional requirements for daily living. Preparation and Principles of Balance Diet. Health disorders due to deficiencies of Protein, Vitamins and Minerals. 2.4. Postural deformities- Causes and corrective exercises of Kyphosis, Lordosis, Scoliosis, Knock Knee, Flat Foot and Bow Legs		Dr.Debabrata Samanta		
Unit-3	**Physical fitness and wellness** 3.1 Physical Fitness- Meaning, definition and importance of Physical Fitness.		Kalpataru Samanta		

	3.2 Components of Physical Fitness- Health and performance related Physical Fitness. 3.3 Concept of Wellness. Relationship between physical activities and wellness. 3.4 Ageing- Physical activities and its importance.				
Unit-4	**Health and first aid management** 4.1 First aid- Meaning, definition, importance and golden rules of First-aid. 4.2 Concept of sports injuries- Sprain, Strain, Facture, Dislocation and Wound. 4.3 Management of sports injuries through the application of Hydro-therapy and Thermotherapy. 4.4 Physiotherapy: Basic concept, types & principles. Management of sports injuries through the application of exercise and massage therapy.		Dr.Dilip Biswas		

	Paper:DSE1DP/2DP (Practical)				
1	**First aid** 1. First aid - Triangular Bandage: Slings (Arm Sling, Collar & Cuff Sling), Roller Bandages: Simple Spiral, Reverse Spiral, Figure of Eight, Spica	20	Dr.Dilip Biswas	15.03.2022 to 25.06.2022	
2	**Physiotherapy** 2. Practical Knowledge of Hydro-therapy, Thermo-therapy and Cryo-therapy		Dr.Debabrata Samanta		
UNITS	**PAPER: SEC-2 (Ball Games)**				
A	**Football** a. Fundamental Skills 1. Kicking: Kicking the ball with inside of the foot, Kicking the ball with Full Instep of the foot, Kicking the ball with Inner Instep of the foot, Kicking the ball with Outer Instep of the foot and Lofted Kick. 2. Trapping: Trapping- the Rolling ball,	50	Kalpataru Samanta	15.03.2022 to 25.06.2022	

	and the Bouncing ball with sole of the foot. 3. Dribbling: Dribbling the ball with Instep of the foot, Dribbling the ball with Inner and Outer Instep of the foot. 4. Heading: In standing, running and jumping condition. 5. Throw-in: Standing throw-in and Running throw-in. 6. Feinting: With the lower limb and upper part of the body. 7. Tackling: Simple Tackling, Slide Tackling. 8. Goal Keeping: Collection of Ball, Ball clearance- kicking, throwing and deflecting. 9. Game practice with application of Rules and Regulations. **VOLLEYBALL** a. Fundamental skills				

	1. Service: Under arm service, Side arm service, Tennis service, Floating service. 2. Pass: Under arm pass, Over head pass. 3. Spiking and Blocking. 4. Game practice with application of Rules and Regulations.				
B	**Handball** a. Fundamental Skills 1. Catching, Throwing and Ball control, 2. Goal Throws: Jump shot, Center shot, Dive shot, Reverse shot. 3. Dribbling: High and low. 4. Attack and counter attack, simple counter attack, counter attack from two wings and center. 5. Blocking, GoalKeeping and Defensive skills.		Dr.Debabrata Samanta		

	6. Game practice with application of Rules and Regulations.				
C	**Basketball** a. Fundamental Skills 1. Passing: Two hand Chest Pass, Two hands Bounce Pass, One hand Baseball Pass, Side arm Pass, Overhead Pass, Hook Pass. 2. Receiving: Two hand receiving, One hand receiving, Receiving in stationary position, Receiving while Jumping and Receiving while Running. 3. Dribbling: How to start dribble, drop dribble, High Dribble, Low Dribble, Reverse Dribble, Rolling Dribble. 4. Shooting: Lay-up shot and its variations, One hand set shot, Two hands jump shot, Hook shot, Free Throw.		Dr.Dilip Biswas		

	5. Rebounding: Defensive rebound and Offensive rebound. 6. Individual Defence: Guarding the player with the ball and without the ball, Pivoting. 7. Game practice with application of Rules and Regulations.				
D	**Netball** a. Fundamental skills 1. Catching: one handed, two handed, with feet grounded and in flight. 2. Throwing (Different passes and their uses): One hand passes (shoulder, high shoulder, underarm, bounce, lob), two hand passes (Push, overhead and bounce). 3. Footwork: Landing on one foot, landing on two feet, Pivot, Running pass.		Dr.Debabrata Samanta		

	4. Shooting: One hand, forward step shot, and backward step shot. 5. Techniques of free dodge and sprint, sudden sprint, sprint and stop, sprinting with change at speed. 6. Defending: Marking the player, marking the ball, blocking, inside the circle, outside the circle. Defending the circle edge against the passing. 7. Intercepting: Pass and shot. 8. Game practice with application of Rules and Regulations.				
E	**Throw ball** a. Fundamental skills: Overhand service, Side arm service, two hand catching, one hand overhead return, side arm return. b. Rules and their interpretations and duties of official		Kalpataru Samanta		

Teaching Plan: Department of Physical Education: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A (Test, Measurement and Evaluation in Physical Education)**				**1st week of November, 2021 &4th week of December,2021** 1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
Unit-1	**Introduction** 1.1. Concept of test, measurement & evaluation. 1.2. Criteria of good test. 1.3. Principles of evaluation. 1.4. Importance of Test, Measurement and Evaluation in Physical Education and Sports.	75	Kalpataru Samanta	14.09.2021 to 18.01.2022	
Unit-2	**Measurement of body compositions and somatotype assessment** 2.1 Body Mass Index (BMI) - Concept and method of measurement. 2.2. Body Fat - Concept and method of measurement. 2.3. Lean Body Mass (LBM) - Concept and method of measurement.		Dr.Debabrata Samanta		

	2.4. Somatotype- Concept and method of measurement.				
Unit-3	**Fitness test** 3.1 Kraus-Weber Muscular Strength Test 3.2 AAHPER Youth Fitness Test 3.3 Queens College Step Test 3.4 Harvard Step Test		Kalpataru Samanta		
Unit-4	**Sports skill test** 4.1 Lockhart and McPherson Badminton Skill Test 4.2 Johnson Basketball Test Battery 4.3 McDonald Soccer Test 4.4 Brady Volleyball Test		Dr.Dilip Biswas		
	Paper:DSE1AP/2AP (Practical)			2	
1	**Assessment of somatotype and body fat (%)**	20	Dr.Debabrata Samanta		

	1. Assessment of somatotype and Body fat percentage (%)			14.09.2021 to 18.01.2022	
2	**Assessment of AAHPER, HST** 2. Assessment of AAHPER Youth Fitness Test and Harvard Step Test		Dr.Dilip Biswas		
UNITS	**PAPER: SEC-3 (Gymnastics And Yoga/ Practical)**				
1	**Gymnastic** 1. Compulsory 1.1. Forward Roll 1.2. T-Balance 1.3. Forward Roll with Split leg 1.4. Backward Roll 1.5. Cart-Wheel [Note: Perform the above Gymnastic skills continuously in the same sequence] 2. Optional 2.1. Dive and Forward Roll2.2. Hand Spring 2.3. Head Spring 2.4. Neck Spring 2.5. Hand Stand and Forward Roll 2.6. Summersault	50	Dr.Debabrata Samanta	14.09.2021 to 18.01.2022	
2	**Yoga** 3. YOGA		Dr.Dilip Biswas		

	1 Asanas 3.1.1 Ardhachandrasana 3.1.2. Brikshasana 3.1.3. Padahastasana **3.2. Sitting Position** 3.2.1. Ardhakurmasana 3.2.2. Paschimottanasana 3.2.3. Gomukhasana **3.3. Supine Position** 3.3.1. Setubandhasana 3.3.2. Halasana 3.3.3. Matsyasana **3.4 Prone Position** 3.4.1 Bhujangasana 3.4.2 Salvasana 3.4.3 Dhanurasana **3.5 Inverted Position** 3.5.1 Sarbangasana 3.5.2 Shirsasana 3.5.3 Bhagrasana [Note: One Asana is compulsory from each position]				

	4. Pranayama 4.1. Kapalbhati 4.2. Bhramri 4.3. Anulam Vilom.				
UNITS	**PAPER: GE-1(Foundation and history of physical education)**				
Unit-1	**Introduction** 1.1. Meaning, definition and scope of Physical Education. 1.2. Aim and objectives of Physical Education. 1.3. Misconception and Modern concept of Physical Education. 1.4. Need and Importance of Physical Education in modern society	75	Kalpataru Samanta	14.09.2021 to 18.01.2022	
Unit-2	**Biological and sociological foundations of physical education** 2.1. Biological Foundation- Meaning and definition of growth and development. Factors affecting growth and development. Differences		Kalpataru Samanta (Chapter-2.1,2.2)		

	of growth and development. Principles of growth and development. 2.2. Age- Chronological age, anatomical age, physiological age and mental age.				
	2.3. Sociological Foundation- Meaning and definition of Sociology, Society, Socialization in Physical Education and Sports, Sports Ethic. 2.4. Role of games and sports in National and International integration		Dr.Debabrata Samanta (Chapter-2.3,2.4)		
Unit-3	**History of physical education** 3.1 Historical development of Physical Education and Sports in India- Pre-Independence period and Post-Independence period. 3.2 Olympic Movement- Ancient Olympic Games and Modern Olympic Games.		Dr.Debabrata Samanta		

	3.3 Brief historical background of Asian Games and Commonwealth Games. 3.4 National Sports Awards- Arjuna Award, Rajiv Gandhi Khel Ratna Award, Dronacharya Award, Dhyanchand Award				
Unit-4	**Yoga education** 4.1 Meaning and definition of the term Yoga, types, aim, objectives and important of Yoga. 4.2 History of Yoga. 4.3 Astanga Yoga 4.4 Hatha Yoga		Dr.Dilip Biswas		
	Paper:GE-1P (Field Practical)				
1	**Marching** 1. Marching- fall in attention, Stand at ease, stand easy, Eyes right, Eyes front, Right Turn, Left Turn, About Turn, Mark Time Mark, Forward Mark	20	Dr.Debabrata Samanta	14.09.2021 to 18.01.2022	

2	**Suryanamaskar** 2. Learn and demonstrate the technique of Suryanamaskar.		Dr.Dilip Biswas		
3	**Callisthenics and Aerobic Activities** 3. Development of physical fitness through Callisthenics and Aerobic activities.		Kalpataru Samanta		
Teaching Plan: Department of Physical Education: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B (Sports Training)**				**1st week of April,2022 & 1st week of June,2022**
Unit-1	**Introduction** 1.1. Meaning and definition of Sports Training. 1.2. Aim and characteristics of Sports Training. 1.3. Principles of Sports Training. 1.4. Importance of Sports Training.	75	Dr.Debabrata Samanta	21.02.2022 to 10.06.2022	
Unit-2	**Principal of training and conditioning**		Dr.Debabrata Samanta		

	2.1. Warming up and cooling down- Meaning, types and methods. 2.2. Conditioning - Concept of Conditioning and its principles. 2.3. Training Methods- Circuit Training, Interval Training, Weight Training. 2.4. Periodisation- Meaning, types, aim and contents of different periods.				
Unit-3	**Training load and adaption** 3.1 Training Load - Meaning, definition, types and factors of training load. 3.2 Components of training load. 3.3 Over Load - Meaning, causes, symptoms and tackling of over load. 3.4 Adaptation - Meaning and conditions of adaptation.		Dr.Dilip Biswas		
Unit-4	**Training techniques**		Kalpataru Samanta		

	4.1 Strength - Means, types and methods of strength development. 4.2 Speed - Means, types and methods of speed development. 4.3 Endurance - Means, types and methods of endurance development. 4.4 Flexibility - Means, types and methods of flexibility development				
	Paper:DSE1AP/2AP Practical)	20		21.02.2022 to 10.06.2022	
1	**Weight training and circuit training** 1. Practical Experience of Weight Training and Circuit Training.		Kalpataru Samanta		
2	**Measurement of speed, strength and flexibility** 2. Measurement of Speed, Strength (Grip/Leg), Explosive Strength (Leg) and Flexibility.		Dr.Dilip Biswas		
UNITS	**PAPER: SEC-4 (Track and Field) Practical**				

1	**Track events** 1.1. Starting Techniques: Standing start and Crouch start (its variations) use of Block. 1.2. Acceleration with proper running techniques. 1.3. Finishing technique: Run Through, Forward Lunging and Shoulder Shrug. 1.4. Relay Race: Starting, Baton Holding/Carrying, Baton Exchange in between zone, and Finishing.	20	Kalpataru Samanta	21.02.2022 to 10.06.2022	
2	**Field events** 2.1. Long Jump: Approach Run, Take-off, Flight in the air (Hang Style/Hitch Kick) and Landing. 2.2. High jump: Approach Run, Take-off, Bar Clearance (Straddle) and Landing. 2.3. Shot put: Holding the Shot, Placement, Initial Stance, Glide, Delivery Stance and Recovery (Perry O'Brien Technique).		Dr.Debabrata Samanta		

	Field events 2.4. Discus Throw: Holding the Discus, Initial Stance, Primary Swing, Turn, Release and Recovery (Rotation in the circle). 2.5. Javelin Throw: Grip, Carry, Release and Recovery (3/5 Impulse stride).		Dr.Dilip Biswas		
UNITS	**PAPER: GE-2(Anatomy, Physiology and Exercise Physiology)**	75		21.02.2022 to 10.06.2022	
Unit-1	**Introduction** 1.1. Meaning and definition of Human Anatomy, Physiology and Exercise Physiology. 1.2. Importance of Human Anatomy, Physiology and Exercise Physiology in Physical Education. 1.3. Cell- Structure and function. 1.4. Tissue- Types and functions.		Kalpataru Samanta		
Unit-2	**Musculo-skeletal system**		Kalpataru Samanta		

	2.1. Skeletal System- Structure of Skeletal System. Classification and locations of bones and joints. Anatomical differences between male and female. 2.2. Muscular System- Type, location, function and structure of muscle. 2.3. Types of muscular contraction. 2.4. Effect of exercise and training on muscular system.				
Unit-3	**Circulatory system** 3.1 Blood- Composition and function. 3.2 Heart- Structure and functions. Mechanism of blood circulation through heart. 3.3 Blood Pressure, Athletic Heart and Bradycardia. 3.4 Effect of exercise and training on circulatory system.		Dr.Dilip Biswas		

Unit-4	**Respiratory system** 4.1 Structure and function of Respiratory organs. 4.2 Mechanism of Respiration. 4.3 Vital Capacity, O2 Debt and Second Wind. 4.4 Effect of exercise and training on respiratory system.		Dr.Debabrata Samanta		
	PAPER: GE-2P (Practical)	20		21.02.2022 to 10.06.2022	
1	**Assessment of BMI and WHR** 1. Assessment of BMI, and WHR.		Dr.Dilip Biswas		
2	**Measurement Of BP,VC,RR,PEI** 2. Measurement of Blood Pressure, Vital Capacity, Respiratory rate,		Kalpataru Samanta		
3	**Measurement Of HR,LL,PFR** Heart Rate, Limb length, PEI, and Pick flow		Dr.Debabrata Samanta		

Physics

Teaching Plan: Department of Physics: SEMESTER-I(HONOURS)

UNITS	PAPER: CC1 Mathematical Physics-I Credit-6	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
	1. Calculus	Credit-4 40	Biswanath Dolai	**01/10/2021 to 24/02/2022**	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	2. Vector Algebra and Vector Calculus				
	3. Orthogonal Curvilinear Coordinates				
	4. Introduction to probability		Subhasis Jana		
	5.Dirac Delta function and its properties				
	Practical	Credit-2 20	Saurav Samanta, Ismail Sk		
UNITS	**PAPER: CC2 Mechanics Credit-6**				
	1. Fundamentals of Dynamics	Credit-4 40	Saurav Samanta		
	2. Work and Energy				
	3.Collisions, Rotational Dynamics				
	4. Elasticity				

	5. Fluid Motion		
	6. Gravitation and Central Force Motion		Ismail Sk
	7.Oscillation		
	8. Non Inertial Systems		
	9.Special theory of relativity		
	Practical	Credit-2 20	Biswanath Dolai ,Saurav Samanta
UNITS	**PAPER: GE-1 Elements of Modern Physics Credit-6**		
	1. Planck's quantum	Credit-4 40	Swarnakamal Jana
	2. Problems with Rutherford model		
	3. Position measurement		
	4. Two slit interference experiment		Debasis Jana
	5. One Dimensional infinitely Rigid Box		
	6. Size and structure of atomic nucleus and its relation with atomic weight		
	7. Radioactivity		

	8. Fission and fusion				
	Practical	Credit-2 20	Swarnakamal Jana, Debasis Jana		

Teaching Plan: Department of Physics: SEMESTER-II(HONOURS)

UNITS	PAPER: CC3 Electricity and Magnetism Credit-6	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal Examination
	1. Electric field and electric potential	Credit-4 40	Ismail Sk	**01/04/2022 to 09/07/2022**	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
	2. Dielectric properties of matter				
	3. Magnetic field		Saurav Samanta		
	4. Magnetic properties of matter				
	5. Electromagnetic induction				
	6. Electrical circuit, Network theorem				
	Practical	Credit-2 20	Biswanath Dolai ,Saurav Samanta		
UNITS	**PAPER: CC4 Waves and Optics Credit-6**				

	1. Superposition of Collinear Harmonic oscillations	Credit-4 40	Subhasis Jana		
	2. Superposition of two perpendicular Harmonic Oscillations				
	3. Wave motion				
	4. Velocity of waves				
	5. Superposition of Two Harmonic Waves				
	6. Wave optics		Rajkumar Mahesh		
	7. Interference				
	8. Interferometer				
	9. Diffraction and holography				
	Practical	Credit-2 20	Saurav Samanta, Subhasis Jana		
UNITS	**PAPER: GE-2 Thermal Physics and Statistical Mechanics Credit-6**	Credit-4 40	Saurav Samanta		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
	1. Laws of Thermodynamics				
	2. Thermodynamical Potentials				
	3. Kinetic Theory of Gases				

	4. Theory of Radiation		Biswanath Dolai		
	5. Statistical Mechanics				
	Practical	Credit-2 20	Saurav Samanta, Biswanath Dolai		
Teaching Plan: Department of Physics: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC5 Mathematical Physics II Credit-6**			01/10/2021 to 05/02/2022	**4th week of November,2021 &1st Week of January,2022**
	1. Fourier Series	Credit-4 40	Ismail Sk		
	2. Frobenius Method and Special Functions				
	3. Some Special Integrals				
	4. Variational calculus in physics		Subhasis Jana		
	5. Partial Differential Equations				
	Practical	Credit-2 20	Saurav Samanta, Ismail Sk		
UNITS	**PAPER: CC6 Thermal Physics** Biswanath Dolai				
	1.Introduction to Thermodynamics	Credit-4	Saurav Samanta		

	2.Thermodynamic Potentials	40	
	3.Maxwell's Thermodynamic Relations		
	4.Kinetic Theory of Gases		Biswanath Dolai
	Practical	Credit-2 20	Biswanath Dolai Subhasis Jana
UNITS	**PAPER: CC7 Digital Systems and Applications Credit-6**		
	Integrated Circuits	Credit-4 40	Debasis Jana
	Digital Circuits		
	Boolean algebra		
	Data processing circuits		
	Circuits		
	Timers		Subhasis Jana
	Shiftregisters		
	Counters (4 bits)		
	Computer Organization		
	Practical	Credit-2 20	Debasis Jana, Subhasis Jana

UNITS	**PAPER: SEC-1 Electrical Circuits and Network Skills Credit-2**				
	1. Basic Electricity Principles	Credit-2 40	Biswanath Dolai		
	2. Understanding Electrical Circuits				
	3. Electrical Drawing and Symbols				
	4. Generators and Transformers				
	5. Electric Motors				
	6. Solid-State Devices				
	7. Electrical Protection				
	8. Electrical Wiring				
UNITS	**PAPER: GE-3 Solid State Physics** Credit-6				
	1. Crystal Structure	Credit-4 40	Ismail Sk		
	2. Elementary Lattice Dynamics				
	3. Magnetic Properties of Matter				
	4. Dielectric Properties of Materials		Swarnakamal Jana		
	5. Elementary band theory				
	6. Superconductivity				
	Practical	Credit-2	Biswanath Dolai, Saurav Samanta		

		20			
Teaching Plan: Department of Physics: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC8 Mathematical Physics III Credit-6**				**4th week of April,2022 &3rd week of June,2022**
	1. Complex analysis	Credit-4 40	Ismail Sk	15/03/2022 to 25/06/2022	
	2. Integrals transforms				
	3. Matrices		Subhasis Jana		
	4. Eigen values and Eigen vectors				
	Practical	Credit-2 20	Ismail Sk, Saurav Samanta		
UNITS	**PAPER: CC9 Elements of Modern Physics Credit-6**				
	Origin of Quantum Mechanics	Credit-4 40	Biswanath Dolai		
	Probability and amplitude, Superposition principle				
	Solution for simple potentials and elementary nuclear physics		Saurav Samanta		
	Radioactivity, Fission, Fusion, LASER				
	Practical	Credit-2 20	Ismail Sk, Biswanath Dolai		

UNITS	**PAPER: CC10 Analog System and Applications Credit-6**		
	Semiconductor Diodes and application	Credit-4 40	Debasis Jana
	Two terminal devices and their applications		
	Bipolar Junction transistors		Subhasis Jana
	Field Effect transistors		
	Amplifiers		
	Practical	Credit-2 20	Debasis Jana, Subhasis Jana
UNITS	**PAPER: SEC-2 Renewable Energy and Energy Harvesting Credit-2**		
	Fossil fuels and Alternate Sources of energy	Credit-2 40	Biswanath Dolai
	Solar energy		
	Wind Energy harvesting		
	Ocean Energy,Geothermal Energy,Hydro Energy		Debasis Jana
	Piezoelectric and Electromagnetic Energy Harvesting		
UNITS	**PAPER: GE-4 Electricity and Magnetism Credit-6**		
	Vector Analysis	Credit-4	Rajkumar Mahesh

		40			
	Electrostatics				
	Magnetism				
	Electromagnetic Induction		Swarnakamal Jana		
	Maxwell`s equations and Electromagnetic wave propagation				
	Practical	Credit-2 20	Swarnakamal Jana, Rajkumar Mahesh		
Teaching Plan: Department of Physics: SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC11 Quantum Mechanics and Applications Credit-6**				**1st week of November, 2021 &4th week of December,2021**
	Schrodinger equation:	Credit-4 40	Biswanath Dolai	14/09/2021 to 18/01/2022	
	General discussion of bound states in an arbitrary potential				
	Quantum theory of hydrogen-like atoms:				
	Atoms in Electric & Magnetic Fields:		Saurav Samanta		
	Atoms in External Magnetic Fields				

	Many electron atoms		
	Practical	Credit-2 20	Saurav Samanta, Ismail Sk
UNITS	**PAPER: CC12 Solid State Physics Credit-6**		
	Crystal Structure	Credit-4 40	Swarnakamal Jana
	Elementary Lattice Dynamics		
	MagneticPropertiesofMatter		
	Dielectric Properties of Materials		Ismail Sk
	Ferro electric Properties of Materials		
	Elementary band theory		
	Superconductivity		
	Practical	Credit-2 20	Biswanath Dolai, Subhasis Jana
UNITS	**PAPER: DSE-1 Classical Dynamics Credit-6**		
	Classical Mechanics of Point Particles	Credit-6 60	Saurav Samanta
	Small Amplitude Oscillations		
	Special Theory of Relativity		Ismail Sk

	Fluid Dynamics				
UNITS	**PAPER: DSE-2 Nuclear and Particle physics Credit-6**				
	General Properties of Nuclei	Credit-6 60	Biswanath Dolai		
	Nuclear Models				
	Radioactivity decay				
	Nuclear Reactions				
	Interaction of Nuclear Radiation with matter		Subhasis Jana		
	Detector for Nuclear Radiations				
	Particle Accelerators				
	Particle physics				
Teaching Plan: Department of Physics: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13 Electromagnetic Theory Credit-6**				**1st week of April,2022 & 1st week of June,2022**
	Maxwell Equations	Credit-4 40	Ismail Sk	21/02/2022 to 10/06/2022	
	EM Wave Propagation in Unbounded Media				
	EM Wave in Bounded Media				
	Polarization of Electromagnetic Waves		Saurav Samanta		

	Wave guides		
	Optical Fibres		
	Practical	Credit-2 20	Biswanath Dolai, Saurav Samanta
UNITS	**PAPER: CC14 Statistical Mechanics Credit-6**		
	Classical Statistical Mechanics	Credit-4 40	Biswanath Dolai, Debasis Jana
	Classical Theory of Radiation		
	Quantum Theory of Radiation		
	Bose-Einstein Statistics:		
	Fermi-Dirac Statistics		
	Practical	Credit-2 20	Saurav Samanta, Ismail Sk
UNITS	**PAPER: DSE-3 Communication Electronics Credit-6**		
	Electronic communication	Credit-4 40	Debasis Jana
	Analog Modulation		
	Analog Pulse Modulation		
	Digital Pulse Modulation		Subhasis Jana

	Satellite Communication				
	Mobile Telephony System				
	Practical	Credit-2 20	Debasis Jana, Subhasis Jana		
UNITS	**PAPER: DSE-4 Biological Physics Credit-6**				
	Overview	Credit-6 60	Biswanath Dolai		
	Molecules of life				
	The complexity of life		Saurav Samanta		
	Evolution				
Teaching Plan: Department of Physics: SEMESTER-I(GENERAL)					
UNITS	**PAPER: DSC-1A/2A/3A Mechanics Credit-6**				
	Vectors	Credit-4 40	Swarnakamal Jana	01/10/2021 to 24/02/2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	Ordinary Differential Equations				
	Laws of Motion				
	Momentum and Energy				
	Rotational Motion				
	Gravitation		Debasis Jana		
	Oscillations				

	Elasticity				
	Special theory of relativity				
	Practical	Credit-2 20	Swarnakamal Jana, Debasis Jana		
Teaching Plan: Department of Physics: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B/3B Electricity and Magnetism Credit-6**				**2nd week of May,2022 & 2nd week of July, 2022**
	Vector Analysis	Credit-4 40	Rajkumar Mahesh	01/04/2022 to 09/07/2022	
	Electrostatics				
	Magnetism				
	Electromagnetic Induction		Debasis Jana		
	Maxwell`s equations				
	Practical	Credit-2 20	Saurav Samanta, Rajkumar Mahesh		
Teaching Plan: Department of Physics: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C Thermal Physics and Statistical Mechanics Credit-6**				**4th week of November,2021 &1st Week of January,2022**
	Thermodynamic Description of system	Credit-4 40	Debasis Jana	01/10/2021 to 05/02/2022	
	Thermodynamic Potentials				

	Kinetic Theory of Gases		Swarnakamal Jana		
	Theory of Radiation				
	Statistical Mechanics				
	Practical	Credit-2 20	Ismail Sk, Swarnakamal Jana		
UNITS	PAPER: SEC-1 Physics Workshop Skill Credit-2	Credit-2	Biswanath Dolai		
	Introduction	40			
	Mechanical Skill				
	Electrical and Electronic Skill		Rajkumar Mahesh		
	Introduction to prime movers				
Teaching Plan: Department of Physics: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D/3D Waves and Optics Credit-6**				**4th week of April,2022 &3rd week of June,2022**
	Superposition of Two Collinear Harmonic oscillations	Credit-4 40	Subhasis Jana	15/03/2022 to 25/06/2022	
	Superposition of Two Perpendicular Harmonic Oscillations				
	Waves Motion- General				
	Fluids				

	Sound				
	Wave Optics		Rajkumar Mahesh		
	Interference				
	Michelson's Interferometer				
	Diffraction				
	Polarization				
	Practical	Credit-2 20	Saurav Samanta, Rajkumar Mahesh		
UNITS	**PAPER: SEC-2 Electrical Circuits and Network Skills Credit-2**				
	Basic Electricity Principles	Credit-2 40	Biswanath Dolai		
	Understanding Electrical Circuits				
	Electrical Drawing and Symbols				
	Generators and Transformers				
	Electric Motors		Debasis Jana		
	Solid-State Devices				
	Electrical Protection				
	Electrical Protection				

Teaching Plan: Department of Physics: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A/3A Elements of Modern Physics** Credit-6				**1st week of November, 2021 &4th week of December,2021**
	Planck's quantum	Credit-4 40	Swarnakamal Jana	14/09/2021 to 18/01/2022	
	Problems with Rutherford model				
	Position measurement				
	Two slit interference experiment				
	One Dimensional infinitely Rigid Box		Debasis Jana		
	Size and structure of atomic nucleus and its relation with atomic weight				
	Radioactivity				
	Fission and fusion				
	Practical	Credit-2 20	Swarnakamal Jana, Debasis Jana		

UNITS	**PAPER: SEC-3 Renewable Energy and Energy Harvesting Credit-2**				
	Fossil fuels and Alternate Sources of energy	Credit-1 20	Biswanath Dolai		
	Solar energy				
	Wind Energy harvesting				
	Ocean Energy				
	Geothermal Energy		Debasis Jana		
	Hydro Energy				
	Piezoelectric Energy harvesting				
	Electromagnetic Energy Harvesting				
	Practical	Credit-1 20	Biswanath Dolai, Debasis Jana		
Teaching Plan: Department of Physics: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B/3B Solid State Physics** Credit-6				**1st week of April,2022 & 1st week of June,2022**
	Crystal Structure	Credit-4 40	Ismail Sk	21/02/2022 to 10/06/2022	
	Elementary Lattice Dynamics				

	Magnetic Properties of Matter				
	Dielectric Properties of Materials				
	Elementary band theory		Biswanath Dolai		
	Superconductivity				
	Practical	Credit-2 20	Biswanath Dolai, Ismail Sk		
UNITS	**PAPER: SEC-4 Weather Forecasting** Credit-2	Credit-1 20			
	Introduction to atmosphere		Rajkumar Mahesh		
	Measuring the weather				
	Weather systems				
	Climate and Climate Change				
	Basics of weather forecasting				
	Practical	Credit-1	Rajkumar Mahesh		

Physiology

Teaching Plan: Department of Physiology: SEMESTER-I(HONOURS)

UNITS	PAPER: CC1	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal Examination

	Cell biology and structural unit of human system	Th-40, Pr.-20, IA-10, CA-05		01.10.2021 to 24.02.2022	
1.	**C1T1 : Cell biology and structural unit of human system** Cell type, structure and function of plasma membrane, membrane transport.		Mr. Gourchandra Samanta & Miss. Fuldona Pandit		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	EM structure and function of nucleous, mitochondriangolgi body, ER, Cell division, different tissue.		Mrs. Munmun Pradhan		
	Development and Organization of different organs and systems of the human body. Basic principle and use of different microscopes.		Mr. Buddhadev Debnath		
1.	**C1P1: Histology** Study and Identification of Stained Sections of different Mammalian Tissue and Organs.		Dr. SaswatiParua(Mondal)		
UNITS	**PAPER: CC2** **Biological Physics and Enzymes**	Th-40, Pr.-20, IA-10, CA-05			1st internal examination on 4th week of December, 2022

1.	**C2T2 : Biological Physics and Enzymes** Units for measuring concentration of solutes. Bonds and Forces in Bio-molecules. Biophysical and Biochemical Principles. Ph, buffers, thermodynamics.		Mr. Monoj Maiti		and 2nd internal examination on 2nd week of March,2022
	Flow and Pressure and Ultracentrifugation. Basic principle and use of light, phase contrast, election microscopy, atomic force microscopy and fluorescence microscopy. Spectrophotometer. Chromatography, electrophoresis. Nanoparticles and its application in Physiology.		Mr. Debabrata Paria		
	Enzyme: Definition, chemical nature, classification and nomenclature. Mechanism of enzyme action – active site, specificity and enzyme-substrate complex formation. Enzyme kinetics. Allosteric enzyme, Regulation of enzyme activity. Enzymes in clinical diagnosis.		Dr. SaswatiParua(Mondal)		

1.	**C2P2: Biological Physics and Enzymes** Demonstration of oncotic pressure of colloidal solutions by Oncometers; Determination of Systolic, Diastolic, Pulse and Mean Blood Pressure by non-invasive methods (Auscultatory Methods).		Dr. SaswatiParua(Mondal) & Mr. Debabrata Paria		
	Determination of enzyme actions (e.g. CAT, Amylase,)		Miss. Fuldona Pandit		
UNITS	**PAPER: GE-1**	Th-40, Pr.-20, IA-10, CA-05			
1.	**GE1T : Blood and Immune System and Cardiovascular System** Blood and Immune System- Blood – Composition and function, blood cell formation and related disorders. Normal and abnormal hemoglobin. Blood groups, Blood transfusion and its hazards.		Mr. DebabrataParia		1st internal examination on 4th week of December, 2022 and 2nd internal examination on

2.	Immunity-innate and acquired, Antigens, antibody-structure, classification and functions. Autoimmune diseases. Cardiovascular system- Structure of heart and blood vessels, Junctional tissues of the heart, Cardiac cycle and heart sounds, Cardiac output. Heart rate, Blood pressure, ECG, artificial pacemaker.		Mr. BuddhadevDebnath & Mr. MonojMaiti		2nd week of March,2022
	GE1P : Blood and Immune System and Cardiovascular System TC of WBC, DC of WBC (with Leishman stain), Haemoglobin estimation by haematometer, Haemin crystal. BT, CT & Blood group. Measurement of HR,PFI, Step Test. BP: systolic, diastolic, mean arterial blood pressure, pulse pressure by Riva- Royce mercury manometer		Mrs. Munmun Pradhan Mr. GourchandraSamanta,		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022

Teaching Plan: Department of Physiology: SEMESTER-II(HONOURS)

UNITS	PAPER: CC3Physiology of Nerve and Muscle cells	FULL MARKS Th-40, Pr.-20, IA-10, CA-05	NAME OF THE TEACHER	MONTH OF TEACHING 01.04.20222 to 09.07.2022	REMARKS
	C3T: Physiology of Nerve and Muscle cells				

1.	**Excitable Tissue**: Nerve: Nerve Cells Excitation & Conduction Measurement of Electrical Events Ionic Basis of Excitation & Conduction Properties of Mixed Nerves Nerve Fiber Types & Function.		Mrs. Munmun Pradhan		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2.	**Excitable Tissue: Muscle** Skeletal Muscle Cardiac Muscle Smooth Muscle		Mr. MonojMaiti & Mr. BuddhadevDebnath		
3.	**Synaptic & Junctional Transmission** Synaptic Transmission, Functional Anatomy Electrical Events at Synapses. Neuromuscular Transmission Neuromuscular Junction.		Dr.SaswatiParua(Mondal)		
4.	**Initiation of Impulses in Sense Organs** Sense Organs & Receptors The Senses Electrical & Ionic Events in Receptors "Coding" of Sensory Information.		Mr. DebabrataParia		

	C3P: Histological Study, Experiment of Nerve and Muscle Isolation and Staining of nerve fibres with node(s) of Ranvier ($AgNO_3$) and muscle fibres (H and E). Preparation of sciatic nerve innervated gastrocnemius muscle of toad.		Mr. DebabrataParia		
	Kymographic recording of mechanical responses of gastrocnemius muscle to different stimuli and also effect of temperature and load. Calculation of work done by the muscle. Determination of nerve conduction velocity.		Mr. BuddhadevDebnath		
UNITS	**PAPER: CC4**	Th-40, Pr.-20, IA-10, CA-05			
	C4T: Chemistry of Bio-molecules Classification, structure, Properties and Functions of Carbohydrates, Proteins and lipids.		Dr.SaswatiParua(Mondal) & Mr. Gourchandra Samanta,		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
	Structure, types and Function of DNAs and RNAs.		Miss. FuldonaPandit		
	C4T: Biological Chemistry Qualitative tests for the identification of physiologically important substances:		Miss. FuldonaPandit &		

	Hydrochloric acid, lactic Acid, Uric Acid, Glucose, Galactose, Fructose, Sucrose, Lactose, Albumin, Gelatin, Peptone, Starch, Dextrin, Urea, Glycerol, Bile salts.		Mr. DebabrataParia		
UNITS	**PAPER: GE-2**	Th-40, Pr.-20, IA-10, CA-05			
	GE2T: Developmental Biology / Embryology Gametogenesis: Spermatogenesis & Oogenesis. Fertilization: In Sea-urchin and mammals.		Mr. BuddhadevDebnath & Mr. GourchandraSamanta,		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
	Cleavage: Cleavage plane, types, role of yolk in cleavage; cleavage process in mammals. Blastula formation: mammals Morphogenetic movements.		Miss. FuldonaPandit & Mrs. Munmun Pradhan		
	Gastrulation: Mammals Concept of induction, determination, and differentiation. Organogenesis: development of eye as an example of reciprocal and repeated inductive events.		Mr. DebabrataParia		
	GE2P: Developmental Biology / Embryology		Dr.SaswatiParua(Mondal)		

	H & E staining of ovarian tissue sections and identification of Graafian follicle, Corpus Luteum, and demonstration of preserved mammalian embryo.				
Teaching Plan: Department of Physiology: SEMESTER-III(HONOURS)					
UNITS	**PAPER: CC5** **Circulating Body Fluids**	Th-40, Pr.-20, IA-10, CA-05		01.10.2021 to 05.02.2022	**4th week of November,2021 &1st Week of January,2022**
	C5T: Circulating Body Fluids Introduction, Blood ,Bone Marrow,White Blood Cells, Immune Mechanisms, Platelets, Red Blood Cells, Blood Types, Plasma,Hemostasis, Lymph, Clinical implications		Dr.SaswatiParua(Mondal) & Mrs. Munmun Pradhan		
	C5P: Hematological Experiments Preparation and staining of blood film with Leishman's stain, Identification of the blood corpuscles, Differential count of WBC, Total count of RBC and WBC, Bleeding time and clotting time, Hemoglobin estimation,		Dr.SaswatiParua(Mondal)		
	Preparation of haemin crystal, Preparation and staining of bone marrow, Measurement of diameter of megakaryocyte, Reticulocyte staining, Blood group determintation.		Mrs. Munmun Pradhan		

UNITS	PAPER: CC6 Circulation	Th-40, Pr.-20, IA-10, CA-05		
1.	**C6T: Circulation** **Origin of the Heartbeat & the Electrical Activity of the heart** Origin & Spread Of Cardiac Excitation The Electrocardiogram Cardiac Arrhythmias Electrocardiographic Findings in Other Cardiac & Systemic Diseases, hypertrophy and cardiac myopathy		Mr. MonojMaiti	
2.	**The Heart as a Pump** Introduction Mechanical Events of the Cardiac Cycle Cardiac Output.		Mr. MonojMaiti	
3.	**Dynamics of Blood & Lymph Flow** Introduction Anatomic Considerations Biophysical Considerations Arterial & Arteriolar Circulation Capillary Circulation Lymphatic Circulation & Interstitial Fluid Volume		Mr. BuddhadevDebnath	

4.	**Cardiovascular regulatory Mechanisms** Introduction Local Regulatory Mechanisms Substances Secreted by the Endothelium Systemic Regulation by Hormones Systemic Regulation by the Nervous System		Dr.SaswatiParua(Mondal) & Mr. BuddhadevDebnath	
5.	**Circulation Through special Regions** Cerebral Circulation, Anatomic Considerations, Cerebrospinal Fluid The Blood-Brain barrier, Cerebral Blood Flow, Regulation of Cerebral Circulation.		Mr. BuddhadevDebnath	
	Brain Metabolism & Oxygen Requirements, Coronary Circulation Splanchnic Circulation, Circulation of the skin Placental &Fetal Circulation.		Mr. GourchandraSamanta	
6.	**Cardiovascular Homeostasisin Health & Disease** Compensation for Gravitational Effects Exercise Inflammation & Wound Healing Shock Hypertension Heart Failure, stroke.		Dr.SaswatiParua(Mondal)	
	C6P: Cardiovascular Physiology Experimental Preparation of Amphibian Ringer solution. Kymographic recording of the movements of perfused heart of toad.		Mr. BuddhadevDebnath	

	Study of the effects of changes in perfusion fluid pressure, changes in temperature, excess calcium and potassium ion concentration, acetylcholine, adrenaline on the on the movement of heart.		Mr. DebabrataParia	
UNITS	**PAPER: CC7** **Functions of the Nervous System**	Th-40, Pr.-20, IA-10, CA-05		
1.	**C7T: Functions of the Nervous System** **Reflexes-** Monosynaptic Reflexes: The Stretch Reflex, Polysynaptic Reflexes: The Withdrawal Reflex General Properties of Reflexes		Mr. GourchandraSamanta,	
2.	**Cutaneous, Deep & Visceral Sensation** Pathways Touch Proprioception Temperature Pain Other Sensations		Mr. GourchandraSamanta,	
3.	**Arousal Mechanisms, Sleep, & the Electrical Activity of the Brain** The Reticular Formation & the Reticular Activating System, The Thalamus & the Cerebral Cortex Evoked Cortical Potential, The Electroencephalogram Physiological Basis of the EEG, Consciousness, & Sleep Interpretation of abnormal EEG pattern.		Miss. FuldonaPandit	

4.	**Control of Posture & Movement** General Principles Corticospinal & Corticobulbar System, Anatomy & Function Posture and its regulation, Basal Ganglia, Cerebellum, Movement disorders		Miss. FuldonaPandit	
5.	**The Autonomic Nervous System** Anatomic Organization of Autonomic Outflow, Chemical Transmission at autonomic Junctions, Responses of Effector Organs to Autonomic Nerve Impulses, Cholinergic and Adrenergic Discharge.		Mr. Debabrata Paria	
6.	**Central Regulation of Visceral Function** Medulla Oblongata, Hypothalamus, Anatomic Consideration, Hypothalamic Function, Relation to Autonomic Function, Relation to Sleep, Relation to Cyclic Phenomena, Hunger, Thirst Control of Posterior Pituitary Secretion Control of Anterior pituitary Secretion Temperature Regulation, fever.		Dr.SaswatiParua(Mondal)	
7.	**Neural Basis of Instinctual Behavior& Emotions** Anatomic Considerations, Limbic Functions, Sexual Behavior Fear & Rage Motivation.		Mr. MonojMaiti	

8.	**" Higher Functions of the Nervous System": Conditioned Reflexes , Learning, & Related Phenomena** Methods Learning & Memory Functions of the Neocortex Disorders relating learning and memory.		Mr. DebabrataParia	
	C7P: Neurological Experimental Experiments on superficial (plantar) and deep (knee jerk) reflex. Measurement of grip strength. Reaction time by stick drop test Short term memory test (shape, picture word). Two point discrimination test.		Miss. FuldonaPandit & Mr. DebabrataParia	
UNITS	**PAPER: SEC-1** **Clinical Biochemistry**	Th-40, Pr.-20, IA-05, CA-05		
	SEC1T: Clinical Biochemistry Photo -colorimetric estimation of blood constituents. Measurement of blood glucose by NelsonSomogyi method, measurement of blood inorganic phosphate by Fiske - Subbarow method, measurement of serum total protein by Biuret method and determination albumin globulin ratio, determination of serum amylase by iodometric method.		Dr.SaswatiParua(Mondal) & Mr. DebabrataParia	

UNITS	**PAPER: GE-3** **Community and Public Health**	Th-40, Pr.-20, IA-10, CA-05		
	GE3T: Community and Public Health Basic idea about community health and public health issues, Malnutririon in a community, overnutrition, issues of obesity; possible remedial measures. Composition and nutritional value of common Indian foodstuffs. Basic idea on PCM, marasmus, kwashiorkor and their prevention. Iron and iodine deficiency.		Mr. MonojMaiti	
	Sound pollution as a community health issue; definition, concept of noise, source of extraordinary sound, effects of sound pollution on human health, noise index.		Mr. DebabrataParia	
	GE-3P: Community and Public Health Qualitative assessment of noise, survey on the status of dietary intake in the surrounding area through visits, etc.		Mr. MonojMaiti & Mr. DebabrataParia	

Teaching Plan: Department of Physiology: SEMESTER-IV(HONOURS)

UNITS	**PAPER: CC8** **Energy Balance, Metabolism and Nutrition**	Th-40, Pr.-20, IA-10, CA-05		15.03.2022 to 25.06.2022	**4th week of April,2022 &3rd week of June,2022**
	C8T: Energy Balance, Metabolism and Nutrition Energy metabolism, Carbohydrate metabolism, Biological oxidation, Protein metabolism,		Dr.SaswatiParua(Mondal)		
	Fat and cholesterol metabolism, Integration of carbohydrate, fat and protein metabolism, Reactive Oxygen Species,		Mr. MonojMaiti		
	Nutrition – Basic concepts of nutrients, nutraceutical, cosmoceutical, neutrigenomics.		Miss. FuldonaPandit		
	Nutrition – BMR, RQ, RDA, SDA, NPU, Biological value of proteins, vitamins and minerals. Energy in Human nutrition.		Mrs. Munmun Pradhan		
	C8P: Biochemical Estimation		Dr.SaswatiParua(Mondal)		

	a. Quantitative estimation of glucose and sucrose by Benedict's method. b. Quantitative estimation of amino nitrogen [Sorensen's formol titration method (percentage as well as total quantity to be done)]. c. Estimation of percentage quantity of lactose in milk by Benedict's method.			
UNITS	**PAPER: CC9** **Gastrointestinal Function**	Th-40, Pr.-20, IA-10, CA-05		
1.	**C9T: Gastrointestinal Function** Digestion & Absorption- Carbohydrates, Proteins & Nucleic Acids, Lipids, Absorption of Water & Electrolytes Absorption of Vitamins & Minerals.		Mr. GourchandraSamanta	
2.	Regulation of Gastrointestinal Function- General Considerations Gastrointestinal hormones Mouth &Esophagus, Stomach, Exocrine Portion of the Pancreas, Liver & Biliary System, Small Intestine, Colon Mechanism,		Mr. BuddhadevDebnath	

	function and regulation of mastication, deglutition, movements of alimentary canal.			
	C9P: Gastrointestinal Function **Dale's Experimental** 1. Kymographic recording of normal movements of rat's intestine in Dale's apparatus. 2. Effects of hypoxia, acetylcholine and adrenaline on normal intestinal movements.		Mr. BuddhadevDebnath & Mr. DebabrataParia	
UNITS	**PAPER: CC10** **Respiratory Physiology**	Th-40, Pr.-20, IA-10, CA-05		
1.	**CC10T: Respiratory Physiology** **Pulmonary Function** Properties of gases. Anatomy of the lungs. Mechanics of breathing. Gas exchange in the lungs. Pulmonary circulation. Other functions of the Respiratory System.		Mr. DebabrataParia	
2.	**Gas transport between the Lungs & the tissues** Oxygen transport. Carbon Dioxide transport. Respiratory acidosis and alkalosis		Mr. MonojMaiti	

3.	**Regulation of Respiration**. Neural control of Breathing. Chemical Control of Breathing. Nonchemical influences on Respiration		Dr.SaswatiParua(Mondal)	
4.	**Respiratory adjustments in Health & Disease**. Effects of exercise. Other forms of Hypoxia. Oxygen treatment, O2 toxicity. Hypercapnia &Hypocapnia. Other respiratory abnormalities. Sleep and Respiration. Effects of increased Barometric Pressure. Artificial respiration. Respiratory failure. High altitude sickness. Lung Function Tests		Dr.SaswatiParua(Mondal) Miss. FuldonaPandit	
	C10P: Respiratory Physiology Measurement of peak expiratory flow rate, Measurement of oxygen saturation by pulse oxymeter before and after exercise, Measurement of forced expiratory volume (FEV) in first second.		Dr.Saswati Parua(Mondal)	
UNITS	**PAPER: SEC-2** **Physiological Techniques and Public Health Assessments**	Th-40, Pr.-20, IA-05, CA-05		
	SEC2T: Physiological Techniques and Public Health Assessments			
1.	**Physiological Techniques:**		Mr. DebabrataParia	

	Audiometry, Perimetry, Visual Acuity, Colour Blindness, EMG, EEG ,ECG, Nerve Conduction velocity, Autonomic Status assessment(Valsalva maneuver), Deep breathing test, Reaction time (Choice), Stereotactic techniques.			
2.	**Public Health assessment:** Nutritional status of children and adults: Growth curves for detection of stunting, under weight, wasting, thinness, overweight and obesity. Somatotype for adult. Socioeconomic status assessment.		Dr.SaswatiParua(Mondal)	
	SEC2P: Growth charts – plotting growth charts for growth monitoring. Calculation of BMI of an individual and interpretation of results. Prepare growth curves for stunting, under weight, wasting and obese person. Perimetry. Mapping of physiological blind spot and calculation of optic disc size. Determination of visual acuity by Snellen's chart. Determination of colour blindness by Ishihara Charts. Recording of auditory and visual reaction time. Somatotyping of Human subjects. Survey of dietary status of people in the nearby area by students, analysis of survey results and formulation of diet charts. Submit a		Dr.SaswatiParua(Mondal)	

	socioeconomic status assessment report. To study the phenomenon of fatigue by Mosso'sergograph.			
UNITS	**PAPER: GE-4** **Excretory System & Body Temperature Regulation**	Th-40, Pr.-20, IA-10, CA-05		
	GE4T: Excretory System & Body Temperature Regulation **Renal Function & Micturition:**Juxta Glomerular Apparatus, Function of Malpighian corpuscles and renal tubule, counter-current mechanism, Water Excretion, Acidification of the Urine & Bicarbonate Excretion, Regulation of Na+ & Cl- Excretion, Renal Circulation, Disorders of Renal Functions, Filling of the Bladder, Emptying of the Bladder, Non-excretory function of kidney. Diuretics.		Mr. MonojMaiti & Mrs. Munmun Pradhan	
	Skin and Body temperature regulation: Histological structure of skin. Colour of the skin. Organization of sweat gland. Composition and function of the sweat. Regulation of sweat secretion. Insensible and sensible perspiration.		Miss. FuldonaPandit	

	Composition and function of sebum. Triple response. Normal body temperature. Channels of heat loss and heat gain process. Regulation of body temperature: Higher centre and mechanism of regulation. Hypothermia and Hyperthermia. Physiological basis of fever. Cold sress. Insulating effects. Acclimatization to colds.		Mr. BuddhadevDebnath Mr. DebabrataParia		
	GE4P:Excretory System & Body temperature regulation. Identification of normal constituents of urine. Identification of abnormal constituents of urine. Tests for Urinary deposits. Estimation of albumin in urine. Detection of specific gravity of urine. Quantitative estimation of Urea in Urine. Recording of Body Temperature. To study the response of the skin to blunt injury (triple response).		Mr. MonojMaiti		

Teaching Plan: Department of Physiology: SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC11** **Sensory Physiology**	Th-40, Pr.-20, IA-10, CA-05		14.09.2021 to 18.01.2022	**1st week of November, 2021 &4th week of December,2021**
	C11T: Sensory Physiology				
	General Sense: Classification, distribution, function and neural pathway of touch, pressure, pain, thermal and kinesthetic sensation.		Mrs. Munmun Pradhan		
	Vision: Anatomic considerations. The structures of lens. Errors of refraction and their corrections. Contact Lens. Pupillary reflexes, light reflex, near response. Argyll Robertson pupil. Histological details of retina. Colour visions and its modem concept. Visual field, Perimetry.		Mr. GourchandraSamanta		
	Hearing & Equilibrium: Sound waves, decibel, Anatomic considerations, structure and functional significance of auditory apparatus – external, middle and internal ears. Structure of Organ of Corti. Hair cells. Auditory pathway and centers. Mechanism of hearing and its modern theories. Deafness & tests of deafness. Audiometry.		Dr.SaswatiParua(Mondal) Mr. DebabrataParia		
	Smell & Taste: Smell- Receptors & Pathways - Structure and function of the receptor organs,		Miss. FuldonaPandit		

	nerve pathways, centers. Physiology of Olfaction. Olfactometer. Taste- Receptor Organs & Pathways- Structure and functions of the receptor organs, nerve pathways, centers. Physiology of Taste. Features of Taste sensation.			
	C11P:Histological and Human Experiments Principles of fixation and staining, staining and identification of fixed nervous tissue. Silver nitrate preparation of corneal cell space. Determination of visual acuity by Snellen's chart.Determination of colour blindness by Ishihara chart. To map the peripheral field of v ision with perimeter(Perimetry).		Dr.SaswatiParua(Mondal)	
	Mapping of physiological blind spot and calculation of optic disc size. Recording of auditory and visual reaction time. Exploration of conductive and perceptive deafness by tuning fork method.		Mr. DebabrataParia & Miss. FuldonaPandit	
UNITS	**PAPER: CC12** **Endocrinology**	Th-40, Pr.-20, IA-10, CA-05		
	C12T: Endocrinology General Consideration: Concept of endocrine systems, glands and hormones. Types of		Mr. MonojMaiti	

	endocrine glands. Experimental and clinical methods of study of endocrine glands. General classification of hormones on chemical basis. Concepts of hormone receptors and cell signalling. Mechanisms and Modern Concept of hormone actions. Hypothalamus as a neuroendocrine organ, Releasing Factors, Tropic hormones of hypothalamus. Vascular and neural connections between the hypothalamus and the pituitary, role of median eminence.			
	The Pituitary Gland: Introduction. Morphology. Histological structures, functions, and regulation of anterior, middle and posterior lobes of pituitary. Posterior pituitary hormones. Growth Hormone: Chemistry, modes of action and functions of growth hormone. TSH, ACTH, FSH, LH, Prolactin, MSH, Vasopressin and Oxytocin and their different diseases condition.		Mr. MonojMaiti	
	Thyroid Gland: Introduction. Anatomical considerations. Electron microscopic structure of thyroid gland. Thyroid hormone: Chemistry, Biosynthesis, Storage and Transport of thyroid hormones. Effects of thyroid hormones. Clinical feature of Cretinism. Myxedema, Grave's disease. Hashimoto's disease, iodine deficiency goiter.		Mr. MonojMaiti	
	Hormonal Control of Calcium Metabolism & the Physiology of Bone : Calcium & Phosphate		Mr. MonojMaiti	

	Metabolism, Bone Physiology, Vitamin D & the Hydroxycholecalciferols. Parathyroid Gland: Histological Structure, Parathyroid hormone: Role in calcium metabolism. Relation of parathyroid hormone with bone formation and bone resorption, fragile bone and aging process, Concept of Vitamin D3 treatment. Calcitonin:			
	Endocrine Functions of the Pancreas & the Regulation of Carbohydrate Metabolism: Pancreas: Histological structure of pancreatic islets Cell. Structure, Biosynthesis & secretion of Insulin. Sources, modes of action and functions of insulin. Insulin Excess. Regulation of Insulin Secretion. Glucagon. Other Islets Cell Hormones. Hypoglycemia& Diabetes Mellitus in Humans.		Mrs. Munmun Pradhan	
	The Adrenal Medulla & Adrenal Cortex: Adrenal Cortex: histological structure. Structure & Biosynthesis of Adrenocortical Hormones. Regulation different types of hormones and functions of adrenal cortex, Effects of Adrenal androgens &estrogens. Physiologic effects of glucocorticoids, Mineralocorticoids, aldosterone. Actions of adrenaline and nor-adrenaline on different organs and their effect.		Mrs. Munmun Pradhan	

	Endocrine Functions of the Kidneys, Heart, & Pineal Gland The Renin- Angiotensin System. Erythropoietin. The Endocrine Function of the Heart: Atrial Natriuretic Peptide. Pineal Gland - Histological structure. Chemical nature, biosynthesis, molecular mechanism of action, functions and regulation of secretion of melatonin.		Dr.SaswatiParua(Mondal)	
	C12P: Endocrinology Fixation, staining and identification of endocrine glands. Study of the effects of oxytocin on uterine contraction of albino rat. Study of the effects of adrenaline on uterine movements of albino rat. Estimation of estrogen by spectrophotometric method. Estimation of plasma level of any hormone using ELISA (Demonstration).		Dr.SaswatiParua(Mondal) & Mr. BuddhadevDebnath	
UNITS	**PAPER: DSE-1** **Biostatistics**	Th-40, Pr.-20, IA-10, CA-05		

	DSE1T: Biostatistics Scope of statistics– utility and misuse. Principles of statistical analysis of biological data. Basic concepts – variable. Population and sampling -- parameter, statistic. Presentation of data, frequency distribution, frequency polygon, histogram, bar diagram and pie diagram.		Mr. DebabrataParia	
	Different classes of statistics - mean, median, mode, mean deviation, variance, standard deviation, standard error of the mean, standard score. Degrees of freedom, probability. Normal distribution. Student's t- distribution. Testing of hypothesis - Null hypothesis, errors of inference, levels of significance, t- test and z score for significance of difference. Distribution-free test - Chi-square test. Linear correlation and linear regression.		Miss. FuldonaPandit	
	DSE1P: Biostatistics Computation of mean, median, mode, standard deviation and standard error of the mean with physiological data, Graphical representation of data in frequency polygon and histogram.		Mr. DebabrataParia	

	Student's t test for significance of difference between means. Demonstration: Statistical analysis and graphical representation of biological data with computer application program one way ANOVA .		Miss. FuldonaPandit	
UNITS	**PAPER: DSE-2** **Sports Physiology, Work Physiology and Ergonomics**	Th-40, Pr.-20, IA-10, CA-05		
	DSE -2T: Sports Physiology, Work Physiology and Ergonomics **Sports & work Physiology:** Concepts of physical work and physiological work. Physical work. Cardiovascular and respiratory changes during graded exercise. Aerobic and anaerobic capacity. Maximum aerobic power. Exercise Physiology. Exercise & Performance.		Dr.SaswatiParua(Mondal)	
	Maximal oxygen consumption and post exercise oxygen consumption. Tests for Physical work capacity – measurement with different instrument. Physical Training: General principles and different methods. Nutrition in sports. Sports injury and its management. Sports Biochemistry.		Mr. BuddhadevDebnath	

	Ergogenic aids. Ergogenic aids & Dietary supplement.				
	Ergonomics – Basic concepts and its application in industry to improve efficiency. Ergonomicsimportance of ergonomics in occupational health and well beings. Physical work environment. Occupational hazards- Physical, biochemical hazards. Occupational diseases – Silicosis, Asbestosis, Farmer's Lung. Industrial safety.		Mr. BuddhadevDebnath		
	Anthropometry : Anthropometry and its implication in general. Different body dimension measures in anthropometry and their significances. Sports Anthropometry.		Mr. BuddhadevDebnath		
	DSE2P: Measurements of resting and working heart rate using thirty beats and ten beats methods respectively. Measurement of blood pressure before and after different graded exercise. Determination of Physical Fitness Index (PFI) of an individual and recording of recovery heart rate after standard exercise. Determination of cardiac cost of specific work. Determination of VO2 max		Dr.SaswatiParua(Mondal) & Mr. BuddhadevDebnath		

	by Queens College step test. Determination of endurance time by hand gripdynamometer. Six minutes walk tests. Measurement of some common anthropometric parameters.				
Teaching Plan: Department of Physiology: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13** **Reproductive Physiology, Embryology and Chronobiology**	Th-40, Pr.-20, IA-10, CA-05		21.02.2022 to 10.06.2022	**1st week of April,2022 & 1st week of June,2022**
	C13T: Reproductive Physiology, Embryology and Chronobiology **Reproductive Physiology:** Sex Differentiation &Developmen, The Male Reproductive System, The Female Reproductive system, Pregnancy, Lactation and Mammary gland, Reproductive Health, Assisted Reproductive Technology (ART): sex selection, sperm banks, frozen embryos, in vitro fertilization.		Mr. GourchandraSamanta		
	Exfoliative cytology on gynaecological. Reproductive Genetics, Human Genetics and Human Reproductive Disorders: Reproductive Genetics, Human Genetics: Principle of molecular		Mr. MonojMaiti		

	genetics: Gene expression, Gene Structures. Medical genetics. Human reproductive disorders: Abnormalities of male and female sexual differentiation and development. Puberty.			
	Embryology: Cleavage: cleavage plane, types, role of yolk in cleavage; cleavage process in mammals. Embryogenesis, morula, blastula, gastrula and blastocyst. Formation of trilaminar germ disc. Gastrulation, organogenesis. Development of alimentary system, heart and urogenital system. Development of eye as an example of reciprocal and repeated inductive events. Foetal circulation and its changes after birth.		Mr. BuddhadevDebnath	
	Chronobiology: Historical developments in chronobiology; Biological oscillation: the concept of average, amplitude, phase and period. Biological Rhythm – Definition, terminology of biorhythm, significance. Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms. Concept of synchronization and masking. Biorhythms of different hormone. Biological clock, physiological clock.		Dr.SaswatiParua(Mondal)	

	C13P: Reproductive Physiology, Embryology and Chronobiology Study of estrous cycle. Tissue fixation, embedding in paraffin, microtomy, slide preparation and identification of uterus, testis, ovary. Examination of histological sections of permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive system; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.		Dr.SaswatiParua(Mondal)	
	Pregnancy test from human urine by kit method. Sperm count, sperm motility test in rat. Sperm viability test by using eosin - Y. Determination of diurnal and /or circalunar rhythm of body temperature of college going students. Study of circadian functions in humans. Project work on assessment of individual differences in human circadian rhythms (chronotype in human population) by questionnaire method among school children and college students.		Mr. DebabrataParia	

UNITS	**PAPER: CC14** **Renal Physiology, Skin and Body Temperature Regulation, Biomedical Instrumentation**	Th-40, Pr.-20, IA-10, CA-05		
	C14T: Renal Physiology, Skin and Body Temperature Regulation, Biomedical Instrumentation **Renal Physiology**. Gross structure of kidney. Microanatomy (including electron microscopy) of a nephron and structural differences between cortical and juxtamedullary nephrons. Juxtaglomerular apparatus. Function of Malpighian corpuscle and renal tubule. Renal circulation peculiarities and autoregulation. Mechanism of urine formation. Constituents of urine.		Mrs. Munmun Pradhan	
	Skin and Body Temperature Regulation. Histological structure of skin. Colour of the skin. Organization of sweat gland. Composition and functions of sweat. Regulation of sweat secretion. Regulation of body temperature in homeotherms. roles of neural and hormonal processes, higher centers and mechanism of regulation.		Dr.SaswatiParua(Mondal)	
	Biomedical Instrumentation and Techniques:		Mr. DebabrataParia	

	Biomedical basis of Diseases: Basic concepts, pathogenesis to symptoms and diagnosis of infectious diseases, inherited/genetic diseases; immunological diseases, cancer. Basics of Biomedical Instrumentation: Development of biomedical instrumentation, components of man-instrument system. Principles of microscopy. Medical diagnostic techniques related equipment. Electrophoresis, Karyotyping, Centrifugation, Chromatography. Biomedical instruments – Biomedical instruments and cardiovascular monitoring systems: Basic concepts, instrumentation of Cardiac monitor, ECG, Blood flow meters, Oximeter, equipments for blood pressure, cardiac output and heart sounds. Methods of monitoring fatal heart rate. Cardiac pacemakers, Mammography, X-ray, Optics, Fiber Optics, Diathermy equipment, Audiometer, Application of computer in Biomedical field, Biotelemetry, Physiological modelling.			

	C14P: Renal Physiology, Skin and Body Temperature Regulation, Biomedical Instrumentation Tissue fixation, embedding in paraffin, microtomy, slide preparation and identification of kidney and ureter. Identification for normal constituents of urine. Identification for abnormal or pathological constituents of urine. Tests for urinary deposits. Detection of specific gravity of urine. Estimation of albumin in urine. Estimation of urea in urine. Estimation of total phosphates in urine. Routine clinical tests of urine. Recording of body temperature. Study the skin to blunt injury (triple response). Measurement of heart sound using electronic stethoscope.		Dr.SaswatiParua(Mondal)	
	SDS – PAGE electrophoresis for protein (Demonstration), Physiological data acquisition by ECG, EEG (Demonstration). Study of X ray/CT machine (through demonstration). Study of mammograms and CT scan images (Demonstration). Estimation of sodium and potassium in blood serum or urine sample by using auto analyzer (Demonstration). Determination pulmonary function using spirometer (using mechanical system) (Demonstration).		Mr. DebabrataParia	

UNITS	**PAPER: DSE-3** **Microbiology and Biotechnology**	Th-40, Pr.-20, IA-10, CA-05		
	DSE3T: Microbiology and Biotechnology **Microbiology:** Viruses: structure, types. Lytic and lysogenic cycle. DNA & RNA Viruses. Viroids and Prions. Bacteriophages – structure & morphological classification. Bacteria: structure, classification. Staining, Basic idea about medical bacteriology, virology and mycology.Food microbiology, Industrial Microbiology: Elementary knowledge for production of fermented products. Environmental Microbiology.		Mr. DebabrataParia	
	Biotechnology: History and importance. DNA and RNA. Recombinant DNA technology. DNA manipulation. Cloning. DNA sequencing. Hybridoma techniques, blot techniques, DNA technology and gene therapy. Fermentation technology. Genomics and Proteomics. Bio-safety and ethical issues in biotechnology.		Miss. FuldonaPandit	
	DSE3P: Microbiology and Biotechnology Study of disinfection and sterilization techniques. Culture procedure and isolation of bacteria. Biochemical characterization of microorganisms,		Mr. DebabrataParia & Miss. FuldonaPandit	

	different Biochemical tests. Negative staining. Gram staining techniques of bacteria. Acid-fast staining of bacteria. Bacterial spore staining. Isolation of DNA from blood and microbial culture. Separation of DNA by agarose gel electrophoresis. Extraction of DNA from agarose gel. Quantification of DNA. Prepare SDS-PAGE for protein. Gel electrophoresis of protein. Quantification of protein. Perform immunodiffusion by Ouchterlonymethods (Demonstration). Analysis of DNA sequences (Demonstration). Application of PCR (Demonstration). Prepare ELISA (Demonstration). Perform Immunoprecipitation (Demonstration).			
UNITS	**PAPER: DSE-4** **Patho-physiological Basis of Diseases**	Th-40, Pr.-20, IA-10, CA-05		
1.	**DSE4T: Patho-physiological Basis of Diseases** History of pathology, Basic definitions and common terms used in pathology, Survival mechanism and disease, microscopic and cellular pathology, scope and techniques used.		Mr. Monoj Maiti	
	Cell Injury and responses of cells: Cellular Adaptations and Cell Death - An overview of		Mr. Monoj Maiti	

2.	cellular adaptation: Hyperplasia, Hypertrophy, Atrophy, Metaplasia; Causes and mechanisms of cell injury, reversible and irreversible injury, Necrosis, Apoptosis, Types of apoptosis, Intracellular accumulations, Cellular ageing.			
3.	Role of inflammation in disease (with suitable examples) - Basic concepts with suitable examples of general features of acute and chronic inflammation: vascular changes, cellular events, important chemical mediators of inflammation, Morphological effects inflammation response, granulomatus inflammation.		Mrs. Munmun Pradhan	
4.	Role of tissue repair healing and fibrosis (with suitable examples) - Basic mechanism of tissue regeneration, and repair by healing, scar formation and fibrosis.		Mrs. Munmun Pradhan	
5.	Common Hemodynamic Disorders in diseases (with suitable examples) - An overview of edema, hyperemia, congestion, hemorrhage, hemostasis and thrombosis, Embolism, Infarction and shock with suitable examples.		Dr.SaswatiParua(Mondal)	
6.	Nutritional diseases - Protein energy malnutrition, deficiency diseases of vitamins,		Dr.SaswatiParua(Mondal)	

	minerals, nutritional excess and imbalances. Roles and effects of metals.				
7.	Cancer - Definitions, Nomenclature, characteristics of benign and malignant neoplasms, grading and staging of cancer, biology of tumor growth, invasion and metastasis, carcinogens and cancer, concept of oncogenes, tumor suppressor genes, DNA repair genes and cancer stem cells.		Mr. BuddhadevDebnath		
8.	Infectious diseases epidemiology- Modes of infections with suitable examples. Overview of cause, extent, prevention, treatment and control of the diseases: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonosis and Surface infections.		Mr. BuddhadevDebnath		
	DSE4P: Patho-physiological Basis of Diseases Urine analysis: Gross examination of urine for colour, odour, etc. Abnormal constituents like protein, ketone bodies, glucose, blood, and urea. Measuring Erythrocyte Sedimentation Rate (ESR). Tissue Processing, embedding and sectioning. Staining and preparation of permanent histological slide. Study of histological slides showing hypertrophy, hyperplasia, dysplasia, leukemia, cirrhosis and any common cancer. Diagnostic tests for detection of various diseases		Dr.SaswatiParua(Mondal) & Mr. MonojMaiti		

	– CRP, VDRL, RA, Pregnancy, Dengue (any three), PCR based diagnostics . Physiological data acquisition like temperature, EEG, ECG.				
Teaching Plan: Department of Physiology: SEMESTER-I(GENERAL)					
UNITS	**PAPER: DSC-1A/2A/3A** **Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism**	**Th-40, Pr.-20, IA-10, CA-05**		01.10.2021 to 24.02.2022	Internal examination
	C1T : Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism **Cellular Physiology and Biophysical Principles:** Membrane physiology: structure and functions of cell. Physicocemical principles and Physiological importance of: Diffusion, Osmosis, Dialysis, Ultrafiltration, Surface tension, Adsorption, Absorption, pH and buffers, Colloids.		Mr. Monoj Maiti		1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	Enzymes - classification, coenzymes, factors affecting enzyme action, regulation of enzymes-feedback, covalent and allosteric. Isozymes and non-protein enzymes		Mr. Debabrata Paria		

	Biochemistry and Metabolism: classification , structure and properties of Carbohydrates, Lipids, Proteins, Nucleic acid – structure of DNA and RNA. Vitamins, Metabolism – Glycolysis, TCA cycle,		Miss. FuldonaPandit		
	Glycogenesis, Glycogenolysis. Gluconeogenesis, Beta oxidation of saturated fatty acid, Ketone bodies – formation and significance. Deamination, Transamination. Amino acid pool, Urea cycle, vitamins in metabolism.		Mrs. Munmun Pradhan		
	Digestive System Alimentary cana1 and digestive glands – Structure in relation to functions. Composition, functions and regulation of secretion of digestive juices including bile. Digestion and absorption of carbohydrate, protein and lipid. Movements of the stomach and small intestine.		Mr. MonojMaiti & Mr. Buddhadev Debnath		
	C1P : Fresh tissue experiments & Identification of permanent slides **Fresh tissue experiments**: Examination & staining of fresh tissue: squamous, ciliated & columnar epithelium, skeletal muscle fibre (Rat/ Goat) by Methylene blue stain. Transitional epithelium, mesentery (Rat/ Goat) (counter stain by		Mr. Buddhadev Debnath		

	Methylene blue). Staining of adipose tissue by Sudan III or IV. **Identification of permanent slides:** Bone, cartilage, lung, trachea, spleen, lymph gland, liver, salivary glands, pancreas, esophagus, stomach, small intestine, large intestine, ovary, adrenal, testis, thyroid, spinal cord, cerebellum, cerebral cortex, kidney, skin, tongue.				
Teaching Plan: Department of Physiology: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B/3B** **Blood, body fluid and immune System, Cardiovascular System and Respiratory System**	**Th-40, Pr.-20, IA-10, CA-05**		01.04.2022 to 09.07.2022	
1.	**DSC-1B: Blood, body fluid and immune System, Cardiovascular System and Respiratory System** **Blood:** Properties of blood, Composition, character, properties and function of blood. Plasma proteins: origin, separation and functions. Plasmapheresis. Bone marrow. Formed elements of blood. Erythrocytes :Morphology, fate and functions. Fragility of RBC. Erythropoiesis: Definition, steps of erythropoesis, role of different factors on erythropoesis. Haemoglobin. Anaemia: different types, Clinical significances. Bleeding		Mrs. Munmun Pradhan		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022

	disorders. Blood groups. Determination of blood volume. Blood transfusion. Body fluids: Intracellular and extra cellular compartment of body fluids. Lymph and tissue fluids.				
2.	**Immune system:** Overview, properties of immune system, types of immunity : innate immunity, acquired immunity, active and passive immunity. First and second line defence. Humoral and Cell mediated immunity. Complement system. Antigen and Antibody : Properties of immunogen, antigens and haptens. Histocompatibility Complex.. Brief idea of auto immunity. Vaccination.		Miss. Fuldona Pandit		
3.	**Cardiovascular system:** Anatomy and histology of the heart. Properties of cardiac muscle. Origin and propagation of cardiac impulse. Heart sounds. Cardiac cycle. Structure of arteries, arterioles, capillaries. Venules and veins.Blood pressure and its regulation and factors controlling.Peculiarities of regional circulations.		Mr. Monoj Maiti		
	Respiratory System: Anatomy and histology of the respiratory passage and organs.Lung surfactant. Exchange of respiratory gases. Transport of oxygen and carbon dioxide in blood. Regulation of		Mr. Debabrata Paria		

	respiration. Role of respiratory centre and different diseases.			
	DSC1BP: **Haematology:** Study of the compound microscope. Preparation of blood film of your own blood. Staining of the blood film with Leishman's stain. Identification of different types of blood corpuscles.		Mr. Monoj Maiti	
	Determination of TC of RBC and WBC by haemocytometer. 4. Differential count of WBC. Determination of ESR of human blood. Estimation of haemoglobin by haemoglobinometer.		Mr. BuddhadevDebnath	
	Preparation of haemin crystals. Determination of Blood groups. 9. Determination of clotting time, bleeding time, prothrombin time. Determination of osmotic fragility of Red Blood Corpuscle. Preparation and staining of bone marrow. Measurement of diameter of megakaryocyte. Reticulocyte staining. **Human Experiment:** Measurement of arterial blood pressure by Sphygmomanometer at rest		Mr. Debabrata Paria	

	and after exercise, Calculate the mean arterial blood pressure (MABP), Measurement of heart rate and pulse rate (30 beats methods) during rest and exercise and graphical plotting. Modified Harvard step test and determination of physical fitness.Pneumographic recording of respiratory movements along with the effect of drinking of water, talking, laughing, coughing, exercise, hyperventilation and breathe holding. **Demonstration:** Measurement of oxygen saturation by pulse oxymeter before and after exercise. Measurement of Peak Expiratory Flow Rate. Measurement of forced expiratory volume (FEV) in first second.		Miss. Fuldona Pandit		
			Mrs. Munmun Pradhan		
Teaching Plan: Department of Physiology: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C** **DSC1CT: Nerve –Muscle Physiology, Nervous system, Skin and Body Temperature Regulation**	**Th-40, Pr.-20, IA-10, CA-05**		01.10.2021 to 05.02.2022	**4th week of November,2021 &1st Week of January,2022**
1.	**DSC1CT: Nerve –Muscle Physiology, Nervous system, Skin and Body Temperature Regulation** **Nerve-muscle Physiology:** Different types of muscle and their structures. Sarcotubular system. Red and white muscles. Properties of muscle.		Mr. Monoj Maiti		

	Smooth Muscle, Cardiac Muscle, skeletal muscle. Mechanism of muscular contraction. Structural, chemical and mechanical changes in skeletal muscle during contraction and relaxation.Structure and classification of nerves. Nerve cells. Excitation & Conduction. Measurment of electrical events.Synapse: structure , functional anatomy, classification, mechanism of synaptic transmission. Electrical Events at Synapses, Inhibition & Facilitation at Synapses. Motor unit, motor point. EPSP,IPSP.Neuromuscular junction: structure, mechanism of impulse transmission.			
2.	**Nervous System:** A brief outline of organization and basic functions of the nervous system - central and peripheral nervous system.		Mr. Gourchandra Samanta	
	Structural organization of the different parts of the brain and spinal cord.Ascending and Descending tracts. Arousal Mechanisms, Sleep, & the Electrical Activity of the Brain. ECG.		Mr. Buddhadev Debnath	
	Control of Posture & Movement. The Autonomic Nervous System. Central Regulation of Visceral Function. Neural Basis of instinctual Behavior& Emotions. CSF.		Miss. Fuldona Pandit & Mrs. Munmun Pradhan	

3.	**Skin and Body temperature regulation:** Histological structure of skin, Regulation of sweat secretion. Insensible and sensible perspiration. Composition and function of sebum.Higher centre and mechanism of regulation.Physiological basis of fever.		Mr. Debabrata Paria	
	DSC1CP: Isolation and Staining of nerve fibers with node(s) of Ranvier ($AgNO_3$). Staining of skeletal and cardiac muscles by Methylene Blue stain. Measurement of grip strength. Recording of body temperature. To study the response of the skin to blunt injury (triple response) (Demonstration). Experiments on superficial (plantar) and deep (knee jerk) reflex. Reaction time by stick drop test. Short term memory test (shape, picture word). Two point discrimination test. Study of Kymograph, Induction coil, Key and other instruments used to study mechanical responses of skeletal muscle. Kymographic recording of mechanical responses of gastrocnemius muscle to a single stimulus and two successive stimuli. Kymographic recording of the effects of variations of temperature and load (afterload) on single muscle twitch. Calculation		Mr. Debabrata Paria	

	of work done by the muscle. Determination of nerve conduction velocity.			
UNITS	**PAPER: SEC-1** **Environmental Epidemiology**	**Th-40, IA-05, CA-05**		
1.	**SEC1T: Environmental Epidemiology** Man - environment relation, terms, Historical Background- brief history of social reforms. Branches – Descriptive, research, bio- statistical, economic, Methodological and Administrative.		Mr. Buddhadev Debnath	
2.	Principles- an epidemic and ingredients - and types of studies – Descriptive, analytical- cohort, case- control and cross sectional an biological studies		Mr. Debabrata Paria	
3.	Causes – Koch postulates. Immunological proof-cancers and slow viruses- Hills criteriaemergence of new diseases-and effect modifications. Diseases of plants and animals - extinct and endangered animals. Mortality rate- Mean and standard error–risk ratio, attributable ratio - simple problems.		Mr. Buddhadev Debnath	
4.	Types of sampling - simple random sampling; stratified sampling; systematic sampling; multi stage sampling; cluster sampling. Methods in		Miss. Fuldona Pandit	

	Field study – questionnaire preparation; Data analysis; Report writing.				
5.	Environmental hazards and Public health management: Sources of Environmental hazards, hazard identification. Pollution: Air, water, noise pollution sources and effects. Waste management and hazards: Types and characteristics of wastes, biomedical waste handling and disposal, nuclear waste handling and disposal, Waste from thermal power plants.Diseases: Social and economic factors of disease including role of health services and other organizations: Infectious (Bacterial-Tuberculosis, Typhoid; Viral - AIDS, Poliomyelitis, Hepatitis; Protozoan- Leishmaniasis, Malaria); Lifestyle and Inherited/genetic diseases, Immunological diseases; Cancer.		Mr. Buddhadev Debnath		
Teaching Plan: Department of Physiology: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D/3D** **Sensory Physiology, Endocrine and Reproductive System, Renal Physiology**	**Th-40, Pr.-20, IA-10, CA-05**		15.03.2022 to 25.06.2022	**4th week of April,2022 &3rd week of June,2022**
1.	**DSC1DT: Sensory Physiology, Endocrine and Reproductive System, Renal Physiology**		Mr. Debabrata Paria & Mr. Gourchandra Samanta		

	Sensory Physiology: Classification of general and special senses and their receptors. Olfaction and Gustation, Audition & Equilibrium, Vision.			
2.	**Endocrinology:** Anatomy of endocrine system. Hormones - classification.Hypothalamo - Hypophysial axis, Pituitary gland, Thyroid gland, Parathyroid gland, Adrenal Cortex, Adrenal Medulla, Pancreas. Brief idea of the origin and functions of renin- angiotensin, prostaglandins. Erythropoietin and melatonin. Gastrointestinal hormones.		Miss. Fuldona Pandit & Mrs. Munmun Pradhan	
3.	**Reproductive Physiology:**Primary and secondary sex organs: Anatomy and Physiology. Brief idea about Testis and ovary. Oestrus and menstrual cycles and their hormonal control. Fertilization, implantation and structure and functions of placenta. Placental hormone. Pregnancy.		Mr. Monoj Maiti	
4.	**Renal Physiology:** Structure and functions of kidney. Juxtaglomerular apparatous.Mechanism of formation of urine. Counter current system. Physiology of urine storage and micturation.Non excretory function of kidney. Disorders of Renal Functions. Renal stone formation. Renal function tests. Dialysis and Artificial kidney.		Mr. Buddhadev Debnath	

	DSC1DP: Staining and identification of kidney and ureters. Silver nitrate preparation of corneal cell space. Study of estrous cycle. Identification of normal and abnormal constituents of urine. Tests for Urinary deposits.		Mr. Monoj Maiti & Mr. Buddhadev Debnath	
	Estimation of albumin in urine. Detection of specific gravity of urine. Determination of visual acuity by Snellen's chart. Determination of colour blindness by Ishihara chart. Exploration of conductive and perceptive deafness by tuning fork method.		Mr. Debabrata Paria Miss. Fuldona Pandit	
	Sperm count and sperm motility in rat. Study of the effects of oxytocin on uterine contraction. Study of the effects of adrenaline on intestinal / uterine movements.		Mrs. Munmun Pradhan	
	Estimation of estrogen by Spectrophotometric method. Pregnancy test from human urine by kit method. Quantitative estimation of Urea in Urine.		Mr. Gourchandra Samanta	

UNITS	**PAPER: SEC-2** **SEC2: Medical Diagnostics**	**Th-40, IA-05, CA-05**			
1.	**SEC2T: Medical Diagnostics:** **Biomedical basis of Diseases:** Infectious diseases, nherited/genetic diseases (Diabetes, Hypertension); Immunological diseases, Cancer.		Mr. Debabrata Paria		
2.	**Analytical Technology**: Brief and relevant description of the following Wet techniques: UV Chromatography MethodsLC, HPLC and GC-MS Nuclear Magnetic Resonance Spectroscopy (NMR) Atomic Force and Scanning Electron Microscopy (AFM and SEM) Electrochemistry Molecular Modeling and Chemical Databases		Mr. Buddhadev Debnath		
3.	**Diagnostic Methods**: Outline methods used in hospital histopathology, biochemistry, hematology and microbiology laboratories. Theoretical knowledge - ECG, Echo, X-ray, CT, MRI, PET, Ultrasonography.		Miss. Fuldona Pandit		
Teaching Plan: Department of Physiology: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A/3A** **Sports Physiology, Work Physiology and Ergonomics**	**Th-40, Pr.-20, IA-10, CA-05**		14.09.2021 to 18.01.2022	**1st week of November, 2021 &4th**

	DSE1AT: Sports Physiology, Work Physiology and Ergonomics **Sports & work Physiology**: Concepts of physical work and physiological work. Physical work. Cardiovascular and respiratory changes during graded exercise. Aerobic and anaerobic capacity. Maximum aerobic power. Exercise Physiology. Exercise & Performance. Maximal oxygen consumption and post exercise oxygen consumption.		Mr. Buddhadev Debnath		**week of December,2021**
	Tests for Physical work capacity – measurement with different instrument. Physical Training: General principles and different methods. Nutrition in sports. Sports injury and its management. Sports Biochemistry. Ergogenic aids. Ergogenic aids & Dietary supplement. **Ergonomics** – Basic concepts and its application in industry to improve efficiency. Ergonomicsimportance of ergonomics in occupational health and well beings. Physicalwork environment. Occupational hazards- Physical, biochemical hazards. Occupational diseases – Silicosis, Asbestosis, Farmer's Lung. Industrial safety.		Miss. Fuldona Pandit		

	Anthropometry : Anthropometry and its implication in general. Different body dimension measures in anthropometry and their			
	significances. Sports Anthropometry.			
	DSE1AP: Sports Physiology, Work Physiology and Ergonomics: Measurements of resting and working heart rate using thirty beats and ten beats methods respectively. Measurement of blood pressure before and after different graded exercise. Determination of Physical Fitness Index (PFI) of an individual and recording of recovery heart rate after standard exercise. Determination of cardiac cost of specific work.		Mr. Buddhadev Debnath	

	Determination of VO2 max by Queens College step test. Determination of endurance time by hand gripdynamometer. Six minutes walk tests. Measurement of some common anthropometric parameters.Determination of body surface area (using a nomogram) and Body Mass Index (BMI) for an anthropometric measurement. Measurement of body fat percentage.		Mr. Debabrata Paria	
UNITS	**PAPER: SEC-3** **Maternal and Child Nutrition**	**Th-40, IA-05, CA-05**		
1.	**SEC3T: Maternal and Child Nutrition** Nutritional needs during pregnancy, common disorders of pregnancy, relationship between maternal diet and birth outcome. Maternal health and nutritional status, maternal mortality and issues relating to maternal health.		Mr. Monoj Maiti	
2.	Infant and young child feeding and care - Current feeding practices and nutritional concerns, guidelines for infant and young child feeding. Child health and morbidity, neonatal, infant and		Mr. Debabrata Paria	

	child mortality, IMR, U5MR and MMR; link between mortality and malnutrition.				
3.	Overview of maternal and child nutrition policies and programmes.		Mr. Buddhadev Debnath		
Teaching Plan: Department of Physiology: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B/3B** **Clinical Hematology**	**Th-40, Pr.-20, IA-10, CA-05**		21.02.2022 to 10.06.2022	**1st week of April,2022 & 1st week of June,2022**
	DSE1BT: Clinical Hematology Anemia and its classification, management of anemia. Reticulocytes. Aplastic anemia-laboratory diagnosis. Bone marrow examination. Aspiration techniques.Hemoglobin-abnormal hemoglobin.Sickle cell anemia , Thalassemia.		Mr. Debabrata Paria		
	Blast cell. Causes and significances of leucocytosis,leucopenia,neutrophilia,eosinophilia ,basophilia,monocytosis, lymphocytosis, neutropenia, lymphopenia, HIV. Leukemia and its classification. Hemostasis and Coagulation. Bleeding and coagulation disorders. Blood groups: Immunological basis of identification of ABO and RH blood groups.Definition determination and significance of TC, DC ,ESR, Arnth count, PCV,		Miss. Fuldona Pandit & Mr. Monoj Maiti		

	MCV, MHC, MCHC. bleeding time, clotting time, prothrombin time.			
	DSE1BP: Clinical Hematology . General blood picture. Differential Leucocute Count. Absolute leucocyte count, Determination of haemoglobin by various methods. Determination of total RBC count and WBC count. Determination of PCV, Determination of red cell indices, Determination of ESR.		Mr. Debabrata Paria & Miss. Fuldona Pandit	
	Determination of reticulocyte count. Staining of bone marrow. Determination of blood groups.Determination of toxic granulation of neutrophil. Determination of total platelet. Demonstration of thrombin time, Demonstrate malarial slide.		Mr. Monoj Maiti & Mrs. Munmun Pradhan	
UNITS	**PAPER: SEC-4** **Health Psychology, Physiology of stress and Stress Management.**	**Th-40, IA-05, CA-05**		
	SEC4T: Health Psychology, Physiology of stress and Stress Management. **Health Psychology:** Introduction: Definition, Mind-body relationship, Bio-psychosocial model		Miss. Fuldona Pandit	

1.	of Health, Life styles and disease patterns. Behaviour and Health: Characteristics of health behaviour; Barriers to health behaviour; Theories of health behaviour and their implications. Health Enhancing Behaviour: Exercise, nutrition, accident prevention, pain and stress management.			
2.	**Physiology of Stress:** Stress, Nature of stress, symptoms of stress. Physical and Emotional Stressors. General Adaptation Syndrome. Role of Hypothalamic - Pituitary- Adrenal Axis and Sympatho-adrenal Medullary Axis in coping stress. Effects of chronic stress: Immunological, Cardiovascular, Emotional problem.		Miss. Fuldona Pandit	
3.	**Stress Management** Various sources of stress: environmental, social, physiological and psychological. Stress and health: effects of stress on health, eustress, distress. Managing stress: Methods - yoga, meditation.		Mr. Buddhadev Debnath	

Political Science

Teaching Plan: Department of Political Science: SEMESTER-I(HONOURS)

UNITS	PAPER: CC1 (Understanding Political Theory)	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal Examination
I	**Introducing Political Theory:**	CA- 15 ESE- 60 TOTAL- 75	Dr. Sujit Ghosh	01.10.2021 TO 24.02.2022	1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
	1. What is Politics: Theorizing the 'Political' 2. Traditions of Political Theory: Liberal, Marxist, Anarchist and Conservative				
	3. Approaches to Political Theory: Normative, Historical and Empirical 4. Critical and Contemporary Perspectives in Political Theory: Feminist and Postmodern		Subhra Debnath		
II	**Political Theory and Practice:**				
	1. Democracy: The history of an idea 2. Procedural Democracy and its critique				
	3. Deliberative Democracy 4. Participation and Representation		Dr. Sujit Ghosh		
		FULL MARKS	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	

UNITS	PAPER: CC2 (Constitutional Govt. and Democracy in India)				
I	**The Constituent Assembly and the Constitution**	**CA- 15** **ESE- 60** **TOTAL- 75**	Sunam Thapa	**01.10.2021 TO 24.02.2022**	
	a. Philosophy of the Constitution, the Preamble, and Features of the Constitution b. Fundamental Rights and Directive Principles				
II	**Organs of Government**		Nilmony Sasmal		
	a. The Legislature: Parliament b. The Executive: President and Prime Minister				

	c. The Judiciary: Supreme Court				
III	**Federalism and Decentralization**				
	a. Federalism: Division of Powers, Emergency Provisions, Fifth and Sixth Schedules b. Panchayati Raj and Municipalities		Sunam Thapa		
UNITS	**PAPER: GE-1 (Nationalism in India)**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Approaches to the Study of Nationalism in India:**	**CA- 15** **ESE- 60**	Sonam Maiti	**01.10.2021 TO 24.02.2022**	
	Nationalist, Imperialist, Marxist, and Subaltern Interpretations				
II	**Reformism and Anti-Reformism in the Nineteenth Century:**				
	Major Social and Religious Movements in 19th century				
III	**Nationalist Politics and Expansion of its Social Base:**				

	a. Phases of Nationalist Movement: Liberal Constitutionalists, Swadeshi and the Radicals; Beginning of Constitutionalism in India b. Gandhi and Mass Mobilisation: Non-Cooperation Movement, Civil Disobedience Movement, and Quit India Movement c. Socialist Alternatives: Congress Socialists, Communists	**TOTAL- 75**	Nilmony Sasmal		
IV	**Social Movements:**		Sonam Maiti		
	a. The Women's Question: Participation in the National Movement and its Impact b. The Caste Question: Anti-Brahminical Politics				
	c. Peasant, Tribals and Workers Movements				
V	**Partition and Independence:**		Nilmony Sasmal		
	a. Communalism in Indian Politics b. The Two-Nation Theory, Negotiations over Partition				

Teaching Plan: Department of Political Science: SEMESTER-II(HONOURS)					
UNITS	**PAPER: CC3 -Political Theory-Concepts and Debates**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**REMARKS**
I	**Importance of Freedom:**	**CA- 15** **ESE- 60** **TOTAL- 75**	Subhra Debnath	**01.04.2022 TO 09.07.2022**	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
	a. Negative Freedom: Liberty b. Positive Freedom: Freedom as Emancipation and Development				
II	**Significance of Equality:**				
	a. Formal Equality: Equality of opportunity b. Political equality c. Egalitarianism: Background inequalities and differential treatment				
III	**Indispensability of Justice:**				

	a. Procedural Justice b. Distributive Justice c. Global Justice		Dr. Sujit Ghosh		
IV	**The Universality of Rights:**				
	a. Natural Rights b. Moral and Legal Rights c. Three Generations of Rights d. Rights and Obligations				
UNITS	**PAPER: CC4- Political Process in India**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**REMARKS**
I	**Political Parties and the Party System:**		Nilmony Sasmal		1st internal examination on 2nd week of May, 2022 and 2nd internal examination on
	Trends in the Party System; From the Congress System to Multi-Party Coalitions				
II	**Determinants of Voting Behaviour:**		Sunam Thapa		

	Caste, Class, Gender and Religion				2nd week of July,2022
III	**Regional Aspirations:**	**CA- 15**	Nilmony Sasmal		
	The Politics of Secession and Accommodation	**ESE- 60**			
IV	**Religion and Politics:** Debates on Secularism; Minority and Majority Communalism	**TOTAL- 75**	Sunam Thapa	**01.04.2022 TO 09.07.2022**	
V	**Caste and Politics:**		Nilmony Sasmal		
	Caste in Politics and the Politicization of Caste				
VI	**Affirmative Action Policies:**		Sunam Thapa		
	Women, Caste and Class				
VII	**The Changing Nature of the Indian State:**		Nilmony Sasmal		
	Developmental, Welfare and Coercive Dimensions				

UNITS	PAPER: GE-2 - Governance: Issues and Challenges	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Intenal examination
I	**Government and Governance: Concepts**				
	Role of State in the Era of Globalisation State, Market and Civil Society		Subhra Debnath		
II	**Governance and Development:**				
	Changing Dimensions of Development Strengthening Democracy through Good Governance		Nilmony Sasmal		
III	**Environmental Governance:**	**CA- 15** **ESE- 60** **TOTAL- 75**		**01.04.2022 TO 09.07.2022**	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
	Human-Environment Interaction Green Governance: Sustainable Human Development		Sunam Thapa		
IV	**Local Governance:**				
	Democratic decentralisation People's Participation in Governance				
V	**Good Governance Initiatives in India: Best Practices:**				

	▪ Public Service Guarantee Acts ▪ Electronic Governance ▪ Citizens Charter & Right to Information ▪ Corporate Social Responsibility		Dr. Sujit Ghosh		

Teaching Plan: Department of Political Science: SEMESTER-III(HONOURS)

UNITS	PAPER: CC5 - Introduction to Comparative Government and Politics	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal examination
I	**Understanding Comparative Politics:**	CA- 15 ESE- 60 TOTAL- 75	Sunam Thapa		4th week of November,2021 &1st Week of January,2022
	a. Nature and scope b. Going beyond Eurocentrism				
II	**Historical context of modern government:**				
	a. Capitalism: meaning and development: globalization b. Socialism: meaning, growth and development				REMARKS REMARKS

	c. Colonialism and decolonization: meaning, context, forms of colonialism; anti- colonialism struggles and process of decolonization.		Nilmony Sasmal	**01.10.2021 TO 05.02.2022**	**REMARKS**
III	**Themes for comparative analysis:**				**REMARKS**
	A comparative study of constitutional developments and political economy in the following countries: a. Britain. b. Nigeria.		Sunam Thapa		
	c. Brazil. d. China.		Nilmony Sasmal		
UNITS	**PAPER: CC6- Perspectives on Public Administration**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Public administration as a discipline:**				

I	✓ Meaning, Dimensions and Significance of the Discipline ✓ Public and Private Administration ✓ Evolution of Public Administration				
II	**Theoretical perspectives:**				
	Classical theories: ✓ Scientific management (F.W.Taylor) ✓ Administrative Management (Gullick, Urwick and Fayol) ✓ Ideal-type bureaucracy (Max Weber)	**CA- 15** **ESE- 60** **TOTAL- 75**	Dr. Sujit Ghosh	**01.10.2021 TO 05.02.2022**	
	Neo-classical theories: ✓ Human relations theory (Elton Mayo) ✓ Rational decision-making (Herbert Simon)				
	Contemporary theories ✓ Ecological approach (Fred Riggs) ✓ Innovation and Entrepreneurship (Peter Drucker)				
III	**Public policy:**				
	✓ Concept, relevance and approaches ✓ Formulation, implementation and evaluation				
IV	**Major approaches in public administration:**				

	✓ New Public Administration ✓ New Public Management ✓ New Public Service Approach ✓ Good Governance ✓ Feminist Perspectives				
UNITS	**PAPER: CC7- Perspectives on International Relations and World History**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
A	**Studying International Relations:**				
	i. How do you understand International Relations: Levels of Analysis ii. History and IR: Emergence of the International State System iii. Pre-Westphalia and Westphalia iv. Post-Westphalia				
B	**Theoretical Perspectives:**				
	i. Classical Realism & Neo-Realism ii. Liberalism & Neoliberalism iii. Marxist Approaches iv. Feminist Perspectives v. Eurocentricism and Perspectives from the Global South	**CA- 15** **ESE- 60** **TOTAL- 75**			
C	**An Overview of Twentieth Century IR History:**				

	i. World War I: Causes and Consequences ii. Significance of the Bolshevik Revolution iii. Rise of Fascism / Nazism iv. World War II: Causes and Consequences v. Cold War: Different Phases vi. Emergence of the Third World vii. Collapse of the USSR and the End of the Cold War viii. Post-Cold War Developments and Emergence of Other Power Centres of Power		Subhra Debnath	**01.10.2021 TO 05.02.2022**	
UNITS	**PAPER: SEC-1- Public Opinion and Survey Research**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Introduction to the course:**				
	Definition and characteristics of public opinion, conceptions and characteristics, debates about its role in a democratic political system, uses for opinion poll				
II	**Measuring Public Opinion with Surveys: Representation and sampling**				

	1. What is sampling? Why do we need to sample? Sample design. 2. Sampling error and non-response 3. Types of sampling: Non random sampling (quota, purposive and snowball sampling); random sampling: simple and stratified	**CA- 15** **ESE- 60** **TOTAL- 75**	Padmabati Chowdhury		
III	**Survey Research:**				
	1. Interviewing: Interview techniques pitfalls, different types of and forms of interview 2. Questionnaire: Question wording; fairness and clarity.				
IV	**Quantitative Data Analysis:**		Sunam Thapa	**01.10.2021 TO 05.02.2022**	
	1. Introduction to quantitative data analysis **2.** Basic concepts: correlational research, causation and prediction, descriptive and inferential Statistics				
V	**Interpreting polls:**				
	Prediction in polling research: possibilities and pitfalls Politics of interpreting polling				
UNITS	**PAPER: GE-3- Gandhi and the Contemporary World**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Gandhi on Modern Civilization and Ethics of Development:**				

	1. Conception of Modern Civilisation and Alternative Modernity **2.** Critique of Development: Narmada Bachao Andolan	**CA- 15** **ESE- 60** **TOTAL- 75**	Nilmony Sasmal	**01.10.2021 TO 05.02.2022**	
II	**Gandhian Thought: Theory and Action**				
	1. Theory of Satyagraha 2. Satyagraha in Action i. Peasant Satyagraha: Kheda and the Idea of Trusteeship **ii.** Temple Entry and Critique of Caste		Padmabati Chowdhury		
	iii. Social Harmony: 1947and Communal Unity		Dr. Sujit Ghosh		
III	**Gandhi's Legacy:**		Nilmony Sasmal		
	1. Tolerance: Anti – Racism Movements (Anti – Apartheid and Martin Luther King) **2.** The Pacifist Movement				
	3. Women's Movements 4. *Gandhigiri*: Perceptions in Popular Culture		Sunam Thapa		
IV	**Gandhi and the Idea of Political:**				
	1. Swaraj 2. Swadeshi		Sonam Maiti		

Teaching Plan: Department of Political Science: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC8- Political Processes and Institutions in Comparative Perspective**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal Examination**
I	**Approaches to Studying Comparative Politics:**	**CA- 15** **ESE- 60** **TOTAL- 75**	Sunam Thapa	**15.03.2022 To** **25.06.2022**	**4th week of April,2022 &3rd week of June,2022** **REMARKS** **REMARKS** **REMARKS** **REMARKS**
	a. Political Culture b. New Institutionalism				
II	**Electoral System:**		Nilmony Sasmal		
	Definition and procedures: Types of election system (First Past the Post, Proportional Representation, Mixed Representation)				
III	**Party System:**				
	Historical contexts of emergence of the party system and types of parties				
IV	**Nation-state:**				
	What is nation–state? Historical evolution in Western Europe and postcolonial contexts 'Nation' and 'State': debates				
V	**Democratization:**				

	Process of democratization in postcolonial, post-authoritarian and post-communist countries		Sunam Thapa		
VI	**Federalism:**				
	Historical context Federation and Confederation: debates around territorial division of power.				
UNITS	**PAPER: CC9- Public Policy and Administration in India**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Public Policy:**	**CA- 15** **ESE- 60** **TOTAL- 75**		**15.03.2022 To**	
	a. Definition, characteristics and models b. Public Policy Process in India				
II	**Decentralization:**				
	a. Meaning, significance and approaches and types b. Local Self Governance: Rural and Urban				
III	**Budget:**				

	a. Concept and Significance of Budget b. Budget Cycle in India c. Various Approaches and Types of Budgeting		Dr. Sujit Ghosh	**25.06.2022**	
IV	**Citizen and Administration Interface:**				
	a. Public Service Delivery b. Redressal of Public Grievances: RTI, Lokpal, Citizens' Charter and E- Governance				
V	**Social Welfare Administration:**				
	a. Concept and Approaches of Social Welfare b. Social Welfare Policies: • Education: Right to Education, • Health: National Health Mission, • Food: Right to Food Security • Employment: MNREGA				
UNITS	**PAPER: CC10- Global Politics**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	

I	**Globalization: Conceptions and Perspectives**				
	a. Understanding Globalization and its Alternative Perspectives b. Political: Debates on Sovereignty and Territoriality c. Global Economy: Its Significance and Anchors of Global Political Economy: IMF, d. World Bank, WTO, TNCs e. Cultural and Technological Dimension f. Global Resistances (Global Social Movements and NGOs)	**CA- 15** **ESE- 60** **TOTAL- 75**	Subhra Debnath	**15.03.2022 To** **25.06.2022**	
II	**Contemporary Global Issues:**				

	I. Ecological Issues: Historical Overview of International Environmental Agreements, Climate Change, Global Commons Debate II. Proliferation of nuclear weapons III. International Terrorism: Non-State Actors and State Terrorism; Post 9/11 developments IV. Migration V. Human Security				
III	**Global Shifts: Power and Governance**				
UNITS	**PAPER: SEC-2- Legislative Practices and Procedures**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Powers and functions of people's representative at different tiers of governance:**				

	Members of Parliament, State legislative assemblies, functionaries of rural and urban local self – government from Zila Parishad, Municipal Corporation to Panchayat/ward.		Padmabati Chowdhury		
II	**Supporting the legislative process:**				
	How a bill becomes law, role of the Standing committee in reviewing a bill, legislative consultants, the framing of rules and regulations.		Sonam Maiti		
III	**Supporting the Legislative Committees:**	**CA- 10** **ESE- 40** **TOTAL- 50**		**15.03.2022 To** **25.06.2022**	
	Types of committees, role of committees in reviewing government finances, policy, programmes, and legislation.				
IV	**Reading the Budget Document:**				
	Overview of Budget Process, Role of Parliament in reviewing the Union Budget, Railway Budget, Examination of Demands for Grants of Ministries, Working of Ministries.		Padmabati Chowdhury		
V	**Support in media monitoring and communication:**				
	Types of media and their significance for legislators; Basics of communication in print and electronic media.		Sunam Thapa		

UNITS	PAPER: GE-4- United Nations and Global Conflicts	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	
I	**The United Nations:**				
	(a) An Historical Overview of the United Nations (b) Principles and Objectives (c) Structures and Functions: General Assembly; Security Council, and Economic and Social Council; the International Court of Justice and the specialised agencies (International Labour Organisation [ILO], United Nations Educational, Scientific and Cultural Organisation [UNESCO], World Health Organisation [WHO], and UN programmes and funds: United Nations Children's Fund [UNICEF], United Nations Development Programme [UNDP], United Nations Environment Programme [UNEP], United Nations High Commissioner for Refugees [UNHCR]) (d) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect (e) Millennium Development Goals	**CA- 15** **ESE- 60** **TOTAL- 75**	Sonam Maiti	**15.03.2022 To** **25.06.2022**	

II	**Major Global Conflicts since the Second World War:**				
	(a) Korean War (b) Vietnam War (c) Afghanistan Wars (d) Balkans: Serbia and Bosnia		Nilmony Sasmal		
III	**Assessment of the United Nations as an International Organisation: Imperatives of Reforms and the Process of Reforms**				

Teaching Plan: Department of Political Science: SEMESTER-V(HONOURS)

UNITS	**PAPER: CC11- Classical Political Philosophy**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal Examination**
I	**Text and Interpretation**				**1st week of November, 2021 &4th week of**
II	**Antiquity:**				
	Plato: Philosophy and Politics, Theory of Forms, Justice, Philosopher King/Queen, Communism Presentation				

	theme: Critique of Democracy; Women and Guardianship, Censorship		Subhra Debnath		**December,2021**
	Aristotle: Forms, Virtue, Citizenship, Justice, State and Household Presentation themes: Classification of governments; man as zoon politikon	**CA- 15** **ESE- 60** **TOTAL- 75**			**REMARKS** **REMARKS** **REMARKS**
III	**Interlude:**			**14.09.2021 TO** **18.01.2022**	
	Machiavelli Virtu, Religion, Republicanism Presentation themes: morality and statecraft; vice and virtue		Sunam Thapa		
IV	**Possessive Individualism:**				
	Hobbes: Human nature, State of Nature, Social Contract, State Presentation themes: State of nature; social contract; Leviathan; atomistic individuals.				

	Locke: Laws of Nature, Natural Rights, Property, Presentation themes: Natural rights; right to dissent; justification of property				
UNITS	**PAPER: CC12- Indian Political Thought-I**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Traditions of Pre-colonial Indian Political Thought:**	**CA- 15** **ESE- 60** **TOTAL- 75**	Dr. Sujit Ghosh	**14.09.2021 TO** **18.01.2022**	
	a. Brahmanic and Shramanic b. Islamic and Syncretic.				
II	Ved Vyasa (Shantiparva): Rajadharma				
III	Manu: Social Laws				
IV	Kautilya: Theory of State				
V	Aggannasutta (Digha Nikaya): Theory of kingship				
VI	Barani: Ideal Polity				
VII	Abul Fazal: Monarchy				

VIII	Kabir: Syncretism				
UNITS	**PAPER: DSE-1- India's Foreign Policy in a Globalizing World**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	India's Foreign Policy: From a Postcolonial State to an Aspiring Global Power	**CA- 15** **ESE- 60** **TOTAL- 75**	Subhra Debnath	**14.09.2021 TO** **18.01.2022**	
II	India's Relations with the USA and USSR/Russia				
III	India's Engagements with China				
IV	India in South Asia: Debating Regional Strategies				
V	India's Negotiating Style and Strategies: Trade, Environment and Security Regimes.		Sunam Thapa		
VI	India in the Contemporary Multipolar World				
UNITS	**PAPER: DSE-2- United Nations and Global Conflicts**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**The United Nations:**				

	(a) An Historical Overview of the United Nations (b) Principles and Objectives (c) Structures and Functions: General Assembly; Security Council, and Economic and Social Council; the International Court of Justice and the specialised agencies (International Labour Organisation [ILO], United Nations Educational, Scientific and Cultural Organisation [UNESCO], World Health Organisation [WHO], and UN programmes and funds: United Nations Children's Fund [UNICEF], United Nations Development Programme [UNDP], United Nations Environment Programme [UNEP], United Nations High Commissioner for Refugees [UNHCR]) (d) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect (e) Millennium Development Goals	**CA- 15** **ESE- 60** **TOTAL- 75**	Sonam Maiti	**14.09.2021 TO** **18.01.2022**	
II	**Major Global Conflicts since the Second World War:**				
	(a) Korean War (b) Vietnam War (c) Afghanistan Wars		Nilmony Sasmal		

	(d) Balkans: Serbia and Bosnia				
III	**Assessment of the United Nations as an International Organisation: Imperatives of Reforms and the Process of Reforms**				

Teaching Plan: Department of Political Science: SEMESTER-VI(HONOURS)

UNITS	**PAPER: CC13- Modern Political Philosophy**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal Examination**
I	**Modernity and its discourses:**		Sunam Thapa		**1st week of April,2022 & 1st week of June,2022**
	This section will introduce students to the idea of modernity and the discourses around modernity**.**				
II	**Romantics:**		Nilmony Sasmal		**REMARKS**
	a) Jean Jacques Rousseau: Presentation themes: General Will; local or direct democracy; self- government; origin of inequality.				**REMARKS**

	b) Mary Wollstonecraft: Presentation themes: Women and paternalism; critique of Rousseau's idea of education; legal rights.		Sunam Thapa		**REMARKS**
III	**Liberal socialist:**	**CA- 15** **ESE- 60** **TOTAL- 75**	Nilmony Sasmal	**21.02.2022 TO** **10.06.2022**	
	John Stuart Mill: Presentation themes: Liberty, suffrage and subjection of women, right of minorities; utility principle.				
IV	**Radicals:**		Sunam Thapa		
	a) Karl Marx Presentation themes: Alienation; difference with other kinds of materialism; class struggle				
	b) Alexandra Kollontai Presentation themes: Winged and wingless Eros; proletarian woman; socialization of housework; disagreement with Lenin.				
UNITS	**PAPER: CC14- Indian Political Thought-II**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	

I	Introduction to Modern Indian Political Thought				
II	Rammohan Roy: Rights				
III	Pandita Ramabai: Gender				
IV	Vivekananda: Ideal Society		Dr. Sujit Ghosh	**21.02.2022 TO**	
V	Gandhi: Swaraj	**CA- 15**			
VI	Ambedkar: Social Justice	**ESE- 60**		**10.06.2022**	
VII	Tagore: Critique of Nationalism	**TOTAL- 75**			
VIII	Iqbal: Community				

IX	Savarkar: Hindutva				
X	Nehru: Secularism				
XI	Lohia: Socialism				
UNITS	**PAPER: DSE-3- Women, Power and Politics**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Groundings:**	**CA- 15**			

	1.Patriarchy a. Sex-Gender Debates b. Public and Private c. Power 2. Feminism 3. Family, Community, State a. Family b. Community c. State	**ESE- 60** **TOTAL- 75**	Subhra Debnath	**21.02.2022 TO** **10.06.2022**	
II	**Movements and Issues:**				
	1. History of the Women's Movement in India 2. Violence against women				

	3. Work and Labour a. Visible and Invisible work b. Reproductive and care work **c.** Sex work				
UNITS	**PAPER: DSE-4- Human Rights in a Comparative Perspective**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Human Rights: Theory and Institutionalization:**				
	a. Understanding Human Rights: Three Generations of Rights b. Institutionalization: Universal Declaration of Human Rights c. Rights in National Constitutions: South Africa and India	**CA- 15** **ESE- 60**	Padmabati Chowdhury	**21.02.2022 TO** **10.06.2022**	
II	**Issues:**				

	a. Torture: USA and India b. Surveillance and Censorship: China and India c. Terrorism and Insecurity of Minorities: USA and India	**TOTAL- 75**	Sonam Maiti		
III	**Structural Violence:**				
	a. Caste and Race: South Africa and India b. Gender and Violence: India and Pakistan c. Adivasis/Aboriginals and the Land Question: Australia and India		Subhra Debnath		

Teaching Plan: Department of Political Science: SEMESTER-I(GENERAL)

UNITS	**PAPER: DSC-1A/2A- Introduction to Political Theory**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal Examination**
1	a. What is Politics?				1st internal examination on

	b. What is Political Theory and what is its relevance?	**CA- 15** **ESE- 60** **TOTAL-** **75**	Dr. Sujit Ghosh	**01.10.2021 TO 24.02.2022**	4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
2	**Concepts:**				
	Democracy, Liberty, Equality, Justice, Rights,				
	Gender, Citizenship, Civil Society and State.		Subhra Debnath		
3	**Debates in Political Theory:**				
	a. Is democracy compatible with economic growth? b. On what ground is censorship justified and what are is limits?		Dr. Sujit Ghosh		

	c. Does protective discrimination violate principles of fairness? d. Should the State intervene in the institution of the family?		Subhra Debnath		

Teaching Plan: Department of Political Science: SEMESTER-II(GENERAL)

UNITS	PAPER: DSC-1B/2B- Indian Government and Politics	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	REMARKS
1	Approaches to the study of Indian politics and Nature of the State in India: Liberal, Marxist and Gandhian	CA- 15 ESE- 60 TOTAL- 75	Sunam Thapa	01.04.2022 TO 09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
2	Indian Constitution: basic features, debates on Fundamental Rights and Directive Principles.		Subhra Debnath		
3			Dr. Sujit Ghosh		

	Institutional Functioning: Prime Minister, President and Judiciary.				
4	Power Structure in India: Caste, Class and Patriarchy.		Subhra Debnath		
5	Religion and Politics: debates on secularism and communalism.				
6	Parties and Party System in India.				
7	Social Movements; Workers, Peasants, Environmental and Women's Movement.				
8	Strategies of Development in India since Independence: Planned Economy and Neo-Liberalism.		Dr. Sujit Ghosh		

Teaching Plan: Department of Political Science: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C- Comparative Government and Politics**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal Examination**
1	The nature, scope and methods of comparative political analysis.	**CA- 15** **ESE- 60** **TOTAL- 75**	Nilmony Sasmal	**01.10.2021 TO 05.02.2022**	**4th week of April,2022 &3rd week of June,2022** **REMARKS**
2	Comparing Regimes: Authoritarian and Democratic.		Sonam Maiti		
3	Classifications of political systems: a. Parliamentary and Presidential- UK and USA.				
	b. Federal and Unitary: Canada and China.				
4	Electoral Systems: First past the post, proportional representation and mixed systems.		Nilmony Sasmal		

5	Party Systems: One-party, two-party and multi-party systems.				
6	Contemporary debates on the nature of state: From state centric security to human centric security and the changing nature of nation-state in the context of globalization.		Sonam Maiti		
UNITS	**PAPER: SEC-1- Legislative Support**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
1	**Powers and functions of people's representative at different tiers of governance:**	**CA- 10** **ESE- 40**			
	Members of Parliament, State legislative assemblies, functionaries of rural and urban local self – government from Zila Parishad, Municipal Corporation to Panchayat/ward.				

		TOTAL- 50	Padmabati Chowdhury	**01.10.2021 TO 05.02.2022**	
2	**Supporting the legislative process:**				
	How a bill becomes law, role of the Standing committee in reviewing a bill, legislative consultations, amendment to a bill, the framing of rules and regulations.				
3	**Supporting the Legislative Committees:**				
	Types of committees, role of committees in reviewing government finances, policy, programmes, and legislation.				
4	**Reading the Budget Document:**				
	Overview of Budget Process, Role of Parliament in reviewing the Union Budget, Railway Budget, Examination of Demands for Grants of Ministries, Working of Ministries.				

5	**Support in media monitoring and communication:**				
	Types of media and their significance for legislators; Basics of communication in print and electronic media.				
Teaching Plan: Department of Political Science: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D- Introduction to International Relations**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal Examination**
1	**Approaches to International Relations:**	**CA- 15**			**4th week of April,2022 &3rd week of June,2022**
	a. Classical realism (Hans Morgenthau) and Neo- Realism (Kenneth Waltz). b. Neo- Liberalism: complex Interdependence (Robert O. Keohane and Joseph Nye). c. Structural Approaches: World System Approach (Immanuel Wallerstein) and Dependency School (Andre Gunder Frank). **d.** Feminist Perspective (J. Ann Tickner).				
2	**Cold War and Post- Cold War Era:**				

	a. Second World War and Origins of Cold War. b. Phases of Cold War: i. First Cold War ii. Rise and Fall of Détente iii. Second Cold War iv. End of Cold War and Collapse of the Soviet Union **c.** Post- Cold War era and emerging centres of Power (European Union, China, Russia and Japan)	**ESE- 60** **TOTAL- 75**	Subhra Debnath	**15.03.2022 To** **25.06.2022**	
3	**India's Foreign Policy:**				
	a. Basic Determinants (Historical, Geo-Political, Economic, Domestic and Strategic) b. India's Policy of Non-alignment. c. India: An Emerging Power				
UNITS	**PAPER: SEC-2- Public Opinion and Survey Research**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
1	**Introduction to the course:**		Padmabati Chowdhury		
	Definition and characteristics of public opinion, conceptions and characteristics, debates about its role in a democratic political system, uses for opinion poll.				

2	**Measuring Public Opinion with Surveys: Representation and sampling:**				
	a. What is sampling? Why do we need to sample? Sample design. b. Sampling error and non-response c. Types of sampling: Non random sampling (quota, purposive and snowball sampling); random sampling: simple and stratified.	**CA- 10** **ESE- 40** **TOTAL- 50**	Sonam Maiti	**15.03.2022 To** **25.06.2022**	
3	**Survey Research:**				
	a. Interviewing: Interview techniques pitfalls, different types of and forms of interview b. Questionnaire: Question wording; fairness and clarity.				
4	**Quantitative Data Analysis:**				
	a. Introduction to quantitative data analysis b. Basic concepts: correlational research, causation and prediction, descriptive and inferential Statistics		Padmabati Chowdhury		

5	**Interpreting polls:**				
	Prediction in polling research: possibilities and pitfalls Politics of interpreting polling.				

Teaching Plan: Department of Political Science: SEMESTER-V(GENERAL)

UNITS	**PAPER: DSE-1A/2A- Themes in Comparative Political Theory**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	**Internal Examination**
1	Distinctive features of Indian and Western political thought.	**CA- 15** **ESE- 60** **TOTAL- 75**	Dr. Sujit Ghosh		**1st week of November, 2021 &4th week of December,2021** **REMARKS**
2	**Western Thought: Thinkers and Themes-**				

	a. Aristotle on Citizenship b. Locke on Rights c. Rousseau on Inequality d. J.S. Mill on Liberty and Democracy e. Marx and Bakunin on State		Subhra Debnath	**14.09.2021 TO** **18.01.2022**	**REMARKS**
3	**Indian Thought: Thinkers and Themes-**				
	a. Kautilya on State b. Tilak and Gandhi on Swaraj c. Ambedkar and Lohia on Social Justice d. Nehru and Jayaprakash Narayan on Democracy e. Pandita Ramabai on Patriarchy		Dr. Sujit Ghosh		

UNITS	**PAPER: SEC-3- Democratic Awareness with Legal Literacy**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	➢ Outline of the Legal system in India. ➢ System of courts/tribunals and their jurisdiction in India – criminal and civil courts, writ jurisdiction, specialized courts such as juvenile courts, Mahila courts and tribunals. ➢ Role of the police and executive in criminal law administration. ➢ Alternate dispute mechanisms such as Lok Adalat, non – formal mechanisms.	**CA- 10** **ESE- 40** **TOTAL- 50**	Sunam Thapa	**14.09.2021 TO**	
II	➢ Brief understanding of the laws applicable in India. ➢ Constitution - fundamental rights, fundamental duties, other constitutional rights and their manner of enforcement, with emphasis on public interest litigation and the expansion of certain rights under Article 21 of the Constitution. ➢ Laws relating to criminal jurisdiction - provision relating to filing an FIR, arrest, bail search and seizure and some understanding of the questions of evidence and procedure in Cr. P.C. and related laws, important offences under the Indian Penal Code, offences against women, juvenile justice, prevention of atrocities on Scheduled Castes and Scheduled Tribes.				

	➢ Concepts like Burden of Proof, Presumption of Innocence, Principles of Natural Justice, Fair comment under Contempt laws. ➢ Personal laws in India: Pluralism and Democracy. ➢ Laws relating to contract, property and tenancy laws. ➢ Laws relating to dowry, sexual harassment and violence against women. ➢ Laws relating to consumer rights. ➢ Laws relating to cybercrimes. ➢ Anti-terrorist laws: implications for security and human rights.		Padmabati Chowdhury	**18.01.2022**	
III	**Access to courts and enforcement of rights:**				
	➢ Critical Understanding of the Functioning of the Legal System ➢ Legal Services Authorities Act and right to legal aid, ADR systems		Sunam Thapa		
UNITS	**PAPER: GE-1- Nationalism in India**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Approaches to the Study of Nationalism in India:**				
	Nationalist, Imperialist, Marxist, and Subaltern Interpretations.				
II	**Reformism and Anti-Reformism in the Nineteenth Century:**		Sonam Maiti		
	Major Social and Religious Movements in 19th century.				

III	**Nationalist Politics and Expansion of its Social Base:**	**CA- 15** **ESE- 60** **TOTAL- 75**		**14.09.2021 TO** **18.01.2022**	
	a. Phases of Nationalist Movement: Liberal Constitutionalists, Swadeshi and the Radicals; Beginning of Constitutionalism in India. b. Gandhi and Mass Mobilisation: Non-Cooperation Movement, Civil Disobedience Movement, and Quit India Movement. **c.** Socialist Alternatives: Congress Socialists, Communists.		Nilmony Sasmal		
IV	**Social Movements:**				
	a. The Women's Question: Participation in the National Movement and its Impact. **b.** The Caste Question: Anti-Brahminical Politics.		Sonam Maiti		
	c. Peasant, Tribals and Workers Movements.				
V	**Partition and Independence:**		Nilmony Sasmal		
	a. Communalism in Indian Politics. **b.** The Two-Nation Theory, Negotiations over Partition.				

Teaching Plan: Department of Political Science: SEMESTER-VI(GENERAL)

UNITS	PAPER: DSE-1B/2B- Administration and Public Policy: Concept and Theories	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal Examination
1	Public Administration as a discipline: Meaning, scope and significance of the subject, public and private administration, brief evolution and major approaches, and comparative approaches to public administration.	CA- 15 ESE- 60 TOTAL- 75	Dr. Sujit Ghosh	21.02.2022 TO 10.06.2022	1st week of April,2022 & 1st week of June,2022 REMARKS REMARKS
2	Administrative Theories: the classical theory, scientific management, the human-relation theory, and rational decision-making.				
3	Understanding Public Policy: Concept and Theories, relevance of policy making in public administration and process of policy formulation, implementation and evaluation.				

4	From Development Administration to New Public Management: Elements and politics of development administration, the New Public Management paradigm – a critical perspective in the post globalized era.				
UNITS	**PAPER: SEC-4- Conflict and Peace Building**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**Concepts:**		Subhra Debnath		
	a. Understanding Conflict. b. Conflict Management, conflict resolution and Conflict Transformation. c. Peace Building.				
II	**Dimensions of Conflict:**				

	a. Ideology. b. Economic/Resource Sharing Conflict. c. Scio- Cultural Conflicts (Ethnic, Religious, Gender- based)		Dr. Sujit Ghosh		
III	**Sites of Conflict:**	**CA- 10** **ESE- 40** **TOTAL- 50**	Sunam Thapa	**21.02.2022 TO** **10.06.2022**	
	a. Local. b. National c. International				
IV	**Conflict Responses- Skills and Techniques:**				
	a. Negotiations: Trust Building. b. Mediation: Skill Building; Active Listening. c. Track I, Track II and Multi-Track Diplomacy. d. Gandhian Methods.				
UNITS	**PAPER: GE-2- United Nations and Global Conflicts**	**FULL MARKS**	**NAME OF THE TEACHER**	**MONTH OF TEACHING**	
I	**The United Nations:**		Padmabati Chowdhury		
	(a) An Historical Overview of the United Nations.				

	(b) Principles and Objectives.				
	(b) Structures and Functions: General Assembly; Security Council, and Economic and Social Council; the International Court of Justice and the specialised agencies (International Labour Organisation [ILO], United Nations Educational, Scientific and Cultural Organisation [UNESCO], World Health Organisation [WHO], and UN programmes and funds: United Nations Children's Fund [UNICEF], United Nations Development Programme [UNDP], United Nations Environment Programme [UNEP], United Nations High Commissioner for Refugees [UNHCR]). (d) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect. (e) Millennium Development Goals	**CA- 15** **ESE- 60** **TOTAL- 75**	Sonam Maiti	**21.02.2022 TO** **10.06.2022**	
II	**Major Global Conflicts since the Second World War:**				
	(a) Korean War (b) Vietnam War (c) Afghanistan Wars (d) Balkans: Serbia and Bosnia		Nilmony Sasmal		

III	**Assessment of the United Nations as an International Organisation: Imperatives of Reforms and the Process of Reforms.**				

Sanskrit

Teaching Plan: Department of Sanskrit: SEMESTER-I(M.A)

UNITS	PAPER: SAN 101 : Vedic Hymns	FULL MARKS	NAME OF THE TEACHER	MONTH OF TEACHING	Internal Examination
I	Ṛgveda -1.1-2, Visvāmitranadī-Saṃvāda 111.33, Puruṣasūkta 10.90, Nāsadīya -10.129.	50	Satyanarayan Sau Debasri Giri	25.10.2021 to 20.01.2022	3rd week of December,2021
II	Yajurveda - śivasaṃkalpa -1.6		Sushil Jana		
III	Atharvaveda - pṛthvīsūkta – 12.1.1-10, Kālasūkta - 19.53		Sudipta Kumar Karan		
UNITS	PAPER: **SAN 102 : Brāhmanas &Upanisadas**	50			
I	Śatapatha – Pancamahāyajňa		Sushil Jana		
II	Aitareya- śunahśepa Ākhyāna		Sourav Goswami		
III	Kathopaniṣada - Chapter –I (Valli –I& II) : Kenopaniṣada - Chapter –I & II		Satyanarayan Sau Sushil Jana Debasri Giri		
UNITS	**PAPER: SAN 103 : Grammar –I**	50			
I	Siddhāntakoumudī (Samjňā)		Sourav Goswami		

II	Siddhāntakoumudī (Paribhāṣā)		Dipankar Mishra		
UNITS	**PAPER: SAN 104 : Drama & Dramaturgy**	**50**			
I	Uttararāmacarita		Dipankar Mishra		
II	Nāṭyaśastra - Chapter –I & II		Supti Bhattacharya		
UNITS	PAPER: **SAN 105 : Linguistics & Manuscriptology**	**50**			
I	Theoretical basis of historical linguistics, Historical development of OIA		Satyanarayan Sau		
II	Elementary knowledge of Manuscriptology Manuscript, Manuscriptology, Archetype, Colophon, Critical Apparatus, Recession, Catalogus Catalogorum, New Catalogus Catalogorum, Descriptive Catalogue, Gilgit Manuscript, Bower Manuscript, Causes of Variant readings.		Ritabrata Sau		
Teaching Plan: Department of Sanskrit: SEMESTER-II(M.A)					
UNITS	**PAPER: SAN 201 : Vedic Studies**	**50**		07.02.2022 to 11.07.2022	**2nd week of June,2022**
I	Ṛgvedabhāṣyabhūmikā by Sāyaṇa		Sourav Goswami		

II	Nirukta - Chapter –I & II		Satyanarayan Sau		
UNITS	**PAPER: SAN 202 : Grammar-II**	**50**			
I	Siddhāntakoumudī -Ac Sandhi with prakṛtibhāva		Debasri Giri		
II	Siddhāntakoumudī- Ajantapunlinga		Sudipta Kumar Karan		
UNITS	**PAPER: SAN 203 : Poetry-I**	**50**			
I	Naiṣadacarita – Canto –I		Rathin Biswas		
II	Meghadūta 25		Supti Bhattacharya		
UNITS	**PAPER: SAN 204: History of Sanskrit literature. & General Grammar (CBCS)**	**50**			
I	History of Sanskrit literature. , · Vedic history · Classical history · Scientific & Technical history				
II	General Grammar · Construction of Sentence · Application				
UNITS	**PAPER: SAN 205: Philosophy – I**	**50**			

I	Vedāntasāra		Sourav Goswami		
II	Mahābhāṣya (Paspaśāhnika)		Satyanarayan Sau		
Teaching Plan: Department of Sanskrit: SEMESTER-III(M.A)					
UNITS	**PAPER: SAN-301 : Grammar -III**	**50**		15.09.2021 to 20.01.2022	**3rd week of December,2021**
I	Siddhāntakoumudī - Tiṃanta (Bhū & Edh)		Sourav Goswami		
II	Siddhāntakoumudī – Stripratyaya		Sudipta Kumar Karan		
UNITS	**PAPER: SAN 302 : Poetics – I**	50			
I	kāvyaprakāśa – Chapter-I & II Chapter- IX &X		Sushil Jana. Amal Samanta		
UNITS	**PAPER: SAN 303 : Poetics – II**	50			
I	Daśarūpaka –I & III		Amal Samanta		
II	Dhvanyaloka –I		Rathin Biswas		
UNITS	**PAPER: C-SAN 304: Drama & Modern Sanskrit short stories. (CBCS)**	50			
I	Abhijñānaśakuntala 1-4				
II	Aparājitā by Vīṇāpaṇipāṭanī				

UNITS	**PAPER: SAN 305 : Philosophy-II**	50			
I	Tarkabhāṣa		Satyanarayan Sau		
II	Bhāṣāpariccheda (Vyāpti)		Sourav Goswami		
Teaching Plan: Department of Sanskrit: SEMESTER-IV (LITERATURE) (M.A)					
UNITS	**PAPER: SAN-401A : Poetics-III**	**50**		07.02.2022 to 11.07.2022	**2nd week of June,2022**
I	Kāvyaprakāśa (IV & V)		Dipankar Mishra		
II	Rasagangādhara (1st Ānana upto Rasanirupana)		Rathin Biswas		
UNITS	**PAPER: SAN 402A : Poetics-IV**	50			
I	Vakroktijivitam -Chapter -I		Dipankar Mishra		
II	Kāvyamīmāṃsā –Chapter-4-6		Rathin Biswas		
UNITS	**PAPER: SAN 403A : Poetry-II**	50			
I	Harṣacarita –V		Sudipta Kumar Karan		
II	Buddhacarita- III		Supti Bhattacharya		

UNITS	**PAPER: SAN 404A : Drama**	50			
I	Mudrārākṣasa		Supti Bhattacharya		
II	Mṛcchakatika		Amal Samanta		
UNITS	**PAPER: SAN 405A : Modern Sanskrit literature**	50			
I	Amaramaṃgala by Paňcananatarkaratna		Amal Samanta		
II	Rukminiharana by Haridāsasiddhantavāgīśa		Sudipta Kumar Karan		
Teaching Plan: Department of Sanskrit: SEMESTER-IV (PHILOSOPHY) (M.A)					
UNITS	**PAPER: SAN 401B : Sarvadarśanasaṃgraha**	**50**		07.02.2022 to 11.07.2022	**2nd week of June,2022**
I	Cārvāka		**Sushil Jana**		
II	Bouddha		**Rathin Biswas**		
III	Arhat 15		Ritabrata Sau		
UNITS	**PAPER: SAN 402B : Sāṃkhya-yogadarśana**	50			
I	Sāṃkhyakārikā with Sāṃkhyatattvakoumudī		Debasri Giri		
II	Yogasūtra with vyāsabhāṣya (Samādhipāda)		Ritabrata Sau		

UNITS	**PAPER: SAN 403B : Nyāyavaiśeṣikadarśana**	50			
I	Nyāyasūtra with Vātsyanabhāṣya (upto Apavargasūtra 1.1.22)		Satyanarayan Sau		
II	Praśastapādabhāṣya (Dravya section and Nyāyakandalī on uddeśaprakaraṇa only)		Sourav Goswami		
UNITS	**PAPER: SAN 404B : Purvottarmīmāṃsādarśana**	50			
I	Arthasaṃgraha		Sourav Goswami		
II	Brahmasūtra with śāṃkarbhāṣya –Catussūtrī (1.1.4)		Debasri Giri		
UNITS	**PAPER: SAN 405B : Vyākaraṇadarśana**	50			
I	Vākyapadīya (Brahmakāṇḍa)		Dipankar Mishra		
II	Paramalaghumaňjūsa (Kāraka)		Satyanarayan Sau		
Teaching Plan: Department of Sanskrit: SEMESTER-I (HONOURS)					
UNITS	**PAPER: CC-1 : Classical Sanskrit Literature (Poetry)**	**75**		01.10.2021 to 24.02.2022	
	Section 'A' Raghuvaṁśam: Canto-I (Verse: 1-25)				1st internal examination on 4th

I	Raghuvaṁśam: Introduction (Author and Text), Appropriateness of title, Canto I, 1-10 Grammatical analysis, Meaning/translation, Explanation, content analysis, Characteristics of Raghu Clan.		**Debasri Giri**		week of December, 2022 and 2nd internal examination on 2nd week of March,2022
II	Raghuvaṁśam: Canto I (Verses 11-25) grammatical analysis, Meaning/translation, Explanation, Role of Dilīpa in the welfare of subjects		**Sudipta Kumar Karan**		
	Section 'B' Kumārasambhavam: Canto-V (Verse: 1-30)				
I	Kumārasambhavam: Introduction (Author and Text), Appropriateness of title, Background of given contents. Text Reading Canto I Verses 1-15, (Grammatical analysis, Translation, and Explanation), Poetic excellence and Plot.		**Rathin Biswas**		
II	Kumārasambhavam : Text Reading Canto I Verses 16-30 (Grammatical analysis, Translation, Explanation), Penance of Pārvati, Poetic excellence, Plot.		**Rathin Biswas**		
	Section 'C' Kirātārjunīyam - Canto I (1-25 Verses)				

I	Kirātārjunīyam: Introduction (Author and Text), Appropriateness of title, Background of given contents, Canto I Verses 1-16, Grammatical analysis, Translation, Explanation, Poetic excellence, thematic analysis		**Sushil Jana**		
II	Kirātārjunīyam: Verses 17-25, Grammatical analysis, Translation, Explanation, Poetic excellence, thematic analysis.		**Sushil Jana**		
	Section 'D' Nītiśatakam (1-20 Verses, 1st two Paddhatis)-M. R. Kale Edition.				
I	Nītiśatakam: Verses (1-10) Grammatical analysis Translation, explanation.		**Amal Samanta**		
II	Nītiśatakam: Verses (11-20) Grammatical analysis Translation, explanation, thematic analysis bhartṛhari's comments on society.		**Amal Samanta**		
	Section 'E' Origin and Development of Mahākāvya and Gītikāvya				
I	Origin and development of different types of Māhākavya with special reference to Aśvaghoṣa, Kālidāsa, Bhāravi, Māgha,Bhatti, Śṛiharṣa		**Sourav Goswami**		
II	Origin & Development of Sanskrit gītikāvayas with special reference to Kālidāsa, Bilhaṇa, Jayadeva, Amarūk, Bhartṛhari and their works.		**Sourav Goswami**		

UNITS	PAPER: CC-2 : Classical Sanskrit Literature (Prose)	75			
	Section 'A' Śukanāsopadeśa (Ed. Prahlad Kumar)				
I	Introduction- Author/Text, Text up to page 116 of Prahlad Kumar Up to the end of the Text		Ritabrata Sau		
II	Society, Āyurveda and political thoughts depicted in Śukanāsopadeśa, logical meaning and application of sayings like , □□□□ □□□□ □□□□, □□□ etc.		Ritabrata Sau		
	Section 'B' Viśrutacaritam Upto 15th Para				
I	Para 1 to 10 - Introduction- Author, Text, Text reading (Grammar, Translation, and Explanation), Poetic excellence, plot, Timing of Action		**Supti Bhattacharya**		
II	Para 11 to 15 - Text reading (Grammar, Translation, and Explanation), Poetic excellence, plot, Timing of Action. Society, language and style of Daṇḍin. Exposition of Saying , □ □□□ ।		**Supti Bhattacharya**		
	Section 'C' Origin and development of prose, Important prose romances and fables				
I	Origin and development of prose, important prose romances and fables		**Sudipta Kumar Karan**		

II	(i) Subandhu, Daṇḍin, Bāṇa, Ambikādatta Vyāsa. (ii) Paṅcatantra, Hitopadeśa, Vetālapaṅcaviṁśatikā, Siṁhāsanadvātriṁśikā,		**Sudipta Kumar Karan**		
UNITS	**PAPER: GE-1 : Basic Sanskrit**	75			
	Section 'A' Grammar and composition Part I				
I	Nominative forms of pronouns- asmad, yuṣmad, etat and tat in masculine, feminine and neuter. Nominative forms of 'a' ending masculine and neuter gender nouns with paṭh, khād, likh and similar simple verbs in present, past and future. Objective forms of the above nouns and pronouns in singular with more simple verbs		**Amal Samanta**		
II	Instrumental, dative, ablative forms of the above nouns and pronouns in singular, dual and plural instrumental, dative, ablative forms of all the words in this syllabus.		**Amal Samanta**		
III	'ā' and ' ī' ending feminine words in nominative and accusative cases with loṭ lakāra (imperative)		**Amal Samanta**		
IV	'ā' and ' ī' ending feminine nouns in singular in Genitive/ possessive and locative cases, genitive and locative cases in singular in pronouns tat, etat, yat, kim		**Amal Samanta**		

V	Masculine and Feminine nouns ending in ‘i’ and masculine nouns ending in ‘u’ in various cases in singular		**Sushil Jana**		
VI	Masculine nouns ending in consonants – bhavat, guṇin, ātman and Feminine nouns ending in consonants – vāk, Neuter nouns ending in consonants – jagat , manas		**Sushil Jana**		
	Section ‘B’ Grammar and composition Part II				
I	Special Verb forms – in parasmaipada –past, present, future and imperative - kṛ, śrū		**Supti Bhattacharya**		
II	Special Verb forms – in parasmaipada –past, present, future and imperative jñā . Special Verb forms – in parasmaipada –past, present, future and imperative dā.		**Supti Bhattacharya**		
	ātmanepada – sev, lab		**Supti Bhattacharya**		
III	Phonetic changes – visarga sandhi vowel sandhis.		**Debasri Giri**		
IV	Participles - śatṛ, śānac, ktavatu, kta. Pratyayas – ktvā, lyap, tumun. Active – passive structures in lakāras – (third person forms only) and pratyayas kta, ktavatu		**Rathin Biswas**		
	Section ‘C’ Literature				

I	Gita Chapter XII		**Satyanarayan Sau**		
Teaching Plan: Department of Sanskrit: SEMESTER-II(HONOURS)					
UNITS	**PAPER: CC-3: Critical Survey of Sanskrit Literature**	**75**		01.04.2022 to 09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
	Section 'A' : Vedic Literature				
I	Samhita (R.k, Yajul:,, Sama, Atharva) time, subject-matter, religion & Philosophy, social life		**Sudipta Kumar Karan**		
II	Brahma,:ia, Ara,:iyaka, Upani$ad, Vedanga (Brief Introduction)		**Sudipta Kumar Karan**		
	Section 'B': Ramayana				
I	Ramaya,:ia-time, subject-matter, Ramaya,:za as an Adikavya.		**Sushil Jana**		
II	Ramaya,:ia as a Source Text and its Cultural Importance.		**Sushil Jana**		
	Section 'C':Mahabharata				
I	Mahabharata and its Time, Development, and subject matter		**Debasri Giri**		

II	Mahiibhiirata : Encyclopaedic nature, as a Source, Text, Cultural Importance		**Debasri Giri**		
	Section 'D':Purana				
I	PurarJas : Subject matter, Characteristic		**Ritabrata Sau**		
II	Pura1Jas Social, Cultural and Historical Importance		**Ritabrata Sau**		
	Section 'E':General Introduction to Vyakarana, Darsana and Sahitvasastra				
I	General Introduction to Vyakaral)a- Brief History of Vyakara1Jasastra		**Sudipta Kumar Karan**		
II	General Introduction to Darsana-Major schools ofindian Philosophy Carvaka, Bauddha, Jaina, Sankhya-yoga, Nyaya-Vaisesika, Purvamimarhsa and Uttara mI111a1i1sa.		**Sourav Goswami**		
III	General Introduction to Poetics- Six major Schools of Indian Poetics-Rasa, Alari1kara, Riti. Dhvani,Vakrokti and Aucitya.		**Supti Bhattacharya**		
UNITS	**PAPER: CC-4: Self Management in the Gita**	75			
	Section.' A' Gita: Cognitive and emotive apparatus				

I	Hierarchy of indriya. manas. buddhi and atman 111.42; xv. 7 Role of the atman -XV. 7: XV.9 Mind as a product of prakrti VI 1.4 Properties of three gu1)as and their impact on the mind-XIII. 5-6; XIV.5-8, 11-13; XIV.17		Ritabrata Sau		
	Section 'B' GIHI: Controlling the mind				
I	Nature of conflict I. I; IV .16; 1.45; II.6 Causal factors - Ignorance - II.41; Indriya - II.60, Mind - 11.67; Rajogu,:za - III.36-39; XVI.21; Weakness of mind- 11.3: IV.5		Ritabrata Sau		
II	Means of contro 11 ing the mind Vleditatic;;1-d({fic11lties · V!J:t		Ritabrata Sau		
III	Importance of knowledge - II. 52; IV.38-39; IV.42 Clarity of huddhi - XVIII.30-32 Process of decision making - XV!II.63 Control over senses -11.59, 64 Surrender of kartrbhava -XVlll .13-16; V.8-9 Desirelessness- II.48; II.55 Put1 ing others before self- IT 1.25		Satyanarayan Sau		
	Section 'C' Gitl'i: Self management through devotion				
I	Surrender of ego - II.7 ; ,IX.27; VIII. 7; XI.55 ; Il.4 7 Abandoning frivolous debates - VII.21, IV. I I;· IX.26 Acquisition of moral qualities - XII. I I; XII.13-19		Satyanarayan Sau		

UNITS	**PAPER: GE-2: Sanskrit and other Modern Indian Languages**	75			
	Section 'A' Indo-Arynn Languages				
I	Stages of Indo-Aryan - Old Indo-Aryan, Middle lndo-Aryan Stages of development in the present day		Sourav Goswami		
	Section 'B' Philology				
I	Phonetics of Sanskrit and other Modern Indian Languages		Sourav Goswami		
II	Morphology of Sanskrit and other Modern Indian Languages		Dipankar Mishra		
III	Syntax of Sanskrit and other Modern Indian Languages		Debasri Giri		
	Section 'C' Litcra turc				
I	Sanskrit as a source of Modern Indian Literature		Sudipta Kumar Karan		
II	Vernacular Languages as a source of enrichment of Sanskrit		Ritabrata Sau		

Teaching Plan: Department of Sanskrit: SEMESTER-III (HONOURS)

UNITS	PAPER: CC-5: Classical Sanskrit Literature (Drama)	75		01.10.2021 to 05.02.2022	Internal Examination
	Section A: Svapnavāsavadattam– Bhāsa Act I & VI				4th week of November,2021 &1st Week of January,2022
I	Svapnavāsavadattam: Act I&VI Story, Meaning/Translation and Explanation.		**Amal Samanta**		
II	Svapnavāsavadattam: Unique features of Bhāsa's style, Characterization, Importance of 1st and 6th Act, Society, Norms of Marriage, Story of 'regains'. □□□□□□□		**Amal Samanta**		
	Section B: Abhijñānaśākuntalam– Kālidāsa I & IV				
I	Abhijñānaśākuntalam : Act I- (a) Introduction, Author, Explanation of terms like nāndī, prastāvanā, sūtradhāra, naṭī, viṣkambhaka, vidūṣaka, kañcukī, (b) Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action. Personification of nature, Language of Kālidāsa, dhvani in Upamā Kālidāsa, Purpose and design behind Abhijñānaśākuntalam and other problems related to texts, popular saying about Kālidāsa &Sākuntalam .		**Sushil Jana**		
II	Abhijñānaśākuntalam Act IV- Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action.		**Debasri Giri**		

	Section C: Mudrārākṣasam - Viśākhadatta I, II & III				
I	Mudrārākṣasam: Act I – (a) Introduction, Author, Purpose and design behind Mudrārākṣasa. (b) Text Reading prescribed verses for translation and explanation- 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 14, 16, 18, 19, 21, 22, 24, 26, 27. (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action.		**Sudipta Kumar Karan**		
II	Mudrārākṣasam: Act II - prescribed verses for translation and explanation- 1, 3, 4, 5, 7, 8, 9, 10, 13, 15, 16, 17, 18, 19, 22, and 23, Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot,		**Dipankar Mishra**		
III	Mudrārākṣasam: Act III - prescribed verses for translation and explanation- 1, 3, 4, 6, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 29, 31 and 33. Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action.)		**Satyanarayan Sau**		
	Section D : Critical survey of Sanskrit Drama				
I	Sanskrit Drama: Origin and Development, Nature of Nātaka,		**Supti Bhattacharya**		

II	Some important dramatists and dramas: Bhāsa, Kālidāsa, Śūdraka, Viśākhadatta, Śri Harṣa, Bhavabhūti, Bhaṭṭanārāyaṇa and their works.		**Sourav Goswami**		
UNITS	**PAPER: CC- 6: Poetics and literary criticism**	75			
	Section A: Introduction to Sanskrit poetics				
I	Introduction to poetics: Origin and development of Sanskrit poetics, its various names- kriyākalpa, alaôkāraśāstra, sāhityaśāstra, saundryaśāstra.		Sudipta Kumar Karan		
II	Definition (lakṣaṇa), objectives (prayojana) and causes (hetu) of poetry. (according to kāvyaprakāśa)		Rathin Biswas		
	Section B: Forms of Kāvya-Literature				
I	Forms of poetry: dṛśya, śravya, miśra, (campū)		Rathin Biswas		
II	Mahākāvya, khaṇḍakāvya, gadya-kāvya: kathā, ākhyāyikā (according to Sāhityadarpaṇa)		Amal Samanta		
	Section C: Śabda-śakti (Power of Word) and rasa-sūtra				
I	Power/Function of word and meaning (according to kāvyaprakāśa). abhidhā (expression/ denotative meaning), lakṣaṇā (indication/ indicative meaning) and vyañjanā (suggestion/ suggestive meaning).		Dipankar Mishra		

II	Rasa: rasa-sūtra of Bharata and its prominent expositions: utpattivāda, anumitivāda, bhuktivāda and abhivyaktivāda, alaukikatā (transcendental nature) of rasa (as discussed in Kāvyaprakāśa).		Supti Bhattacharya		
	Section D: Alaṁkāra (figures of speech) and chandasa (metre)				
I	Figures of speech- anuprāsa, yamaka, śleṣa, upamā, rūpaka, sandeha, bhrāntimān, apahnuti, utprekṣā, atiśayokti, tulyayogitā, dīpaka, dṛṣṭānta, nidarśanā, vyatireka, samāsokti, svabhāvokti,		Dipankar Mishra		
II	Metres- anuṣṭup, āryā, indravajrā, upendravajrā, drutavilambita, upajāti, vasantatilakā, mālinī, mandākrāntā, śikhariṇī, śārdūlavikrīḍita, sragdharā.		Supti Bhattacharya		
UNITS	**PAPER: CC-7: Indian Social Institutions and Polity**	75			
	Section A: Indian Social Institutions: Nature and Concepts				

I	Indian Social Institutions: Definition and Scope: Sociological Definition of Social Institutions. Trends of Social Changes, Sources of Indian Social Institutions (Vedic Literature, Sūtra Literature, Purāṇas, Rāmāyaṇa , Mahābhārata ,Dharmaśāstras, Buddhist and Jain Literature, Literary Works, Inscriptions, Memoirs of Foreign Writers)		Sudipta Kumar Karan		
II	Social Institutions and Dharmaśāstra Literature: Dharmaśāstra as a special branch of studies of Social Institutions, sources of Dharma (Manusmṛti, 2, 12; Yājñavalkyasmṛti,1.7). Different kinds of Dharma in the sense of Social Ethics Manusmṛti, 10, 63; Viṣṇupurāṇa 2.16-17); Six kinds of Dharma in the sense of Duties (Mitākṣarāṭīkā on Yājñavalkyasmṛti,1.1).		Sushil Jana		
	Section B: Structure of Society and Value of Life				

I	Varṇa-System and Caste System: Four-fold division of Varṇa System, (Ṛgveda, 10.90.12), Mahābhārata, Śāntiparva, 72. 3-8); Division of Varṇa according to Guṇa and Karma (Bhagvadgīta , 4.13, 18.41-44). Origin of Caste-System from Inter-caste Marriages (Mahābhārata, Anuśāsanaparva, 48.3-11); Emergence of non-Aryan tribes in Varṇa-System (Mahābhārata, Śāntiparva, 65.13-22). Social rules for up-gradation and down-gradation of Caste System (Āpastambadharmasūtra, 2.5.11.10-11, Baudhāyanadharmasūtra, 1.8.16.13-14, Manusmṛti, 10, 64, Yājñavalkyasmṛti, 1.96)		Ritabrata Sau		
II	Position of Women in the Society : Brief survey of position of women in different stages of Society. Position of women in Mahābhārata (Anuśāsanaparva, 46.5-11, Sabhāparva, 69.4-13. Praise of women in The Bṛhatsaṁhitā of Varāhamihira (Strīprasaṁsā, chapter-74.1-10)		Ritabrata Sau		
III	Social Values of Life: Social Relevance of Indian life style with special reference to Sixteen Saṁskāras. Four aims of life 'Puruṣārtha Catuṣṭaya'- 1. Dharma, 2. Artha, 3. Kāma, 4. Mokṣa. Four Āśramas - 1. Brahmacarya, 2. Gṛhastha, 3. Vānaprastha, 4. Saṁnyāsa		Supti Bhattacharya		

	Section C: Indian Polity: Origin and Development				
I	Initial stage of Indian Polity (from Vedic period to Buddhist period). Election of King by the people: 'Viśas' in Vedic priod (Ṛgveda,10.173;10.174; Atharvaveda,3.4.2; 6.87.1-2). Parliamentary Institutions: 'Sabhā,'Samiti' and 'Vidatha' in Vedic period (Atharvaveda,7.12.1;12.1.6 ; Ṛgveda ,10.85.26); King-maker 'Rājakartāraḥ' Council in Atharvaveda (3.5.6-7),Council of 'Ratnis' in śatapathabrāhmaṇa (5.2.5.1); Coronation Ceremony of Samrāṭ in śatapathabrāhmaṇa (51.1.8-13; 9.4.1.1-5). Republic States in the Buddhist Period (Digghnikāya, Mahāparinibbaṇa Sutta, Aṅguttaranikāya, 1.213; 4.252,256)		Debasri Giri		

II	Later Stages of Indian Polity (From Kauṭilya to Mahatma Gandhi). Concept of Welfare State in Arthaśāstra of Kauṭilya (Arthaśāstra, 1.13 : 'matsyanyāyābhibhuṭḥ' to 'yo' asmāngopāyatīti'); Essential Qualities of King (Arthaśāstra, 6.1.16-18: 'sampādayatyasampannaḥ' to 'jayatyeva na hīyate'); State Politics 'Rajadharma'(Mahābhārata , Śāntiparva,120.1-15; Manusmṛti, 7.1-15; Śukranīti,1.1-15); Constituent Elements of Jain Polity in Nitivākyāmṛta of Somadeva Suri, (Daṇḍanīti- samuddeśa, 9.1.18 and Janapada-samuddeśa, 19.1.10). Relevance of GandhianThought in Modern Period with special reference to 'Satyāgraha' Philosophy ('Satyāgrahagītā' of Panditā Kṣamārāva and 'Gandhi Gītā', 5.1-25 of Prof. Indra)		Dipankar Mishra		
	Section D: Cardinal Theories and Thinkers of Indian Polity				

I	Cardinal Theories of Indian Polity: 'Saptāṅga' Theory of State: 1.Svāmi, 2. Amātya, 3. Janapada 4. Pura, 5. Kośa, 6. Daṇḍa and 7. Mitra (Arthaśāstra, 6.1. Mahābhārata, Śāntiparva, 56.5, Śukranīti, 1.61- 62). 'Maṇḍala 'Theory of Inter-State Relations: 1.Ari, 2. Mitra, 3. Ari-mitra,4.Mitra- mitra, 5.Ari-mitramitra; 'Śāḍgunya' Policy of War and Peace : 1. Sandhi, 2. Vigraha, 3. Yāna, 4. Āsana, 5. Saṁśraya 6. Dvaidhibhāva. 'CaturvidhaUpāya'for Balancing the power of State : 1.Sāma 2.Dāma,3.Daṇḍa.4.Bheda; Three Types of State Power 'Śakti': 1.Prabhu- śakti, 2. Mantra-śakti, 3. Utsāha-śakti.		Rathin Biswas. Sourav Goswami.		
II	Important Thinkers on Indian Polity: Manu, Kautilya, Kāmandaka, Śukrācārya, SomadevaSuri, Mahatma Gandhi.		Sudipta Kumar Karan. Debasri Giri		
UNITS	**PAPER: SEC-1: Acting and Script Writing**	50			
	Section A: Acting (Abhinaya				

I	a. Persons competent for presentation (acting) : kuśala (skilful), vidagdha (learned), pragalbha (bold in speech), jitaśramī (inured to hard-work) . b. Lokadharmī and Nātyadharmī Abhinaya c. Nāṭya-prayoktā-gaṇa (members of theatrical group) : sūtradhāra (director), nāṭyakāra (playwrighter), naṭa (actor) kuśīlava(musician), bharata, nartaka (dancer), vidūṣaka (jester) etc.		Supti Bhattacharya. Ritabrata Sau		
II	(i.) Assignment of role: a. General principles of distribution b. Role of minor characters c. Role of women characters d. Special cases of assigning of role (ii.) Kinds of roles: anurūpa (natural), virūpa (unnatural), rūpānusariṇī (imitative)		Supti Bhattacharya Ritabrata Sau		
III	Definition of abhinaya and its types: a. Āṅgika (gestures): aṅga, upāṅga and pratyaṅga b. Vācika(oral): svara, sthāna, varṇa, kāku, bhāṣā . c. Sāttvika (representation of the Involuntary gestures) d. Āhārya: pusta, alaṅkāra, aṇgaracanā, sañjiva (dresses and make-up)		Rathin Biswas Dipankar Mishra		
	Section B: Script Writing (Paṭakathālekhana)				
I	Types of dramatic production: sukumāra (delicate), āviddha (energetic). Nature of plot (vastu): Ādhikārika (principal), Prāsaṅgika (subsidiary), Dṛsya (presentable), Sūchya (restricted scenes).		Sushil Jana		

II	Division of Plot a. Source of plot: Prakhyāta (legendary), Utpādya (invented), Miśra (mixed); b. Objectives of plot- Kārya (dharma, artha, kāma); c. Elements of plot- Five kinds of Arthaprakṛtis (caustations), Kāryāvasthā (stages of the action of actor); Sandhis (junctures) and their sub-divisions (segments) d. Five kinds of Arthopakṣepaka (interludes);		Sushil Jana		
III	Dialogue writing: kinds of saṁvāda (dialogue) a. Sarvaśrāvya or Prakāśa (aloud) b. Aśrāvya or Svagata (aside) c. Niyataśrāvya : Janāntika (personal address), Apavārita (confidential) d. Ākāśabhāṣita (conversation with imaginary person).		Sudipta Kumar Karan		
IV	a. Duration of play b. Three Unities: Time, Actions and place. c. Starting of a play: Pūrvaraṅga – Raṅgadvāra, Nāndī, Prastāvanā, Prarocanā. d. Analysis of acting, plot and dialogue in the context of Abhijñānaśākuntalam.		Amal Samanta		
UNITS	**PAPER: GE-3: Fundamentals of Indian Philosophy**	75			
	Section A: General Introduction				
I	Darśana - concept and aims, Classification of Indian Philosophical schools,		Sushil Jana		

	Salient features of Indian Philosophy		Sourav Goswami		
	Section B: Schools of Indian Philosophy				
I	Heterodox Schools • Cārvāka – General introduction with emphasis on Chanllenge to Veda, Rejection of Transcendental Entities, Ethics (Based on Sarvadarshansamgrah) • Jainism – General introduction with emphasis on Anekāntavāda, Syādvāda, Saptabhaṅginaya, triratna • Buddhism- General Introduction with emphasis on Four Noble Truths		Debasri Giri		
II	Orthodox Schools of Philosophy • Sāṁkhya – General Introduction with emphasis on prakṛti, guṇatraya & puruṣa Entities (Based on Sāṃkhyakārikā) • Yoga - Eight fold path of Yoga (Based on Yogasūtra Sādhanapāda and their on Yogabhāṣya thereon)		Satyanarayan Sau		
III	Nyāya –General introduction with emphasis on Vaiśesika : Seven Padārthas (Based on Tarksamgrah)		Satyanarayan Sau		
IV	Advaita Vedānta – General introduction with emphasis a Brahman, Māyā, Jīva and Jagat (Based on Vedāntasāra)		Satyanarayan Sau		
V	Mīmāṃsā - Svataḥ Prāmāṇyavāda		Sourav Goswami		

VI	Bhakti Schools of Vedānta – General introduction with emphasis on God, Īśvara & nature of bhakti		Ritabrata Sau		
	Section C: Problems in Indian Philosophy				
I	Epistemology: six pramāṇas		Ritabrata Sau		
II	Metaphysics: realism, idealism, Causation - Satkāryavāda. Asatkāryavāda, Pariṇāmavāda, Vivartavāda, svabhāvavāda, consciousness and matter, theories of self		Sourav Goswami		
III	Ethics: Karma & Punarjanma theory, Liberation		Sourav Goswami		
Teaching Plan: Department of Sanskrit: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC-8: Indian Epigraphy, Paleography ,pd Chronology**	**75**		15.03.2022 to 25.06.2022	**4th week of April,2022 &3rd week of June,2022**
	Section 'A' :Epigraphy				
I	Introduction to Epigraphy and Types of Inscriptions		**Ritabrata Sau**		

II	Importance of Indian Inscriptions in the reconstruction of Ancient Indian History and Culture		**Supti Bhattacharya**		
III	History of Epigraphical Studies in India		**Sourav Goswami**		
IV	History of Decipherment of Ancient Indian Scripts (Contribution of Scholars in the field of epigraphy): Fleet, Cunninghum, Princep, Buhler, Ojha, D.C.Sircar.		**Satyanarayan Sau**		
	Section 'B':Paleography,				
I	Antiquity of the Art of Writing		**Amal Samanta**		
II	Writing Materials, Inscribers and Library		**Amal Samanta**		
III	Introduction to Ancient Indian Scripts.		**Amal Samanta**		
	Section 'C': Study of selected inscriptions,				
I	Asoka's Giranara Rock Edict-I Asoka's Saranatha Pillar Edict		**Sudipta Kumar Karan**		
II	Gimara Inscription ofRudradaman		**Sudipta Kumar Karan**		
III	Eran Pillar Inscription of Samudragupta Mehrauli Iron Pillar Inscription of Candra		**Dipankar Mishra**		

IV	Delhi Topra Edict ofBTsaladeva		**Dipankar Mishra**		
	Section 'D': Chronology				
I	General Introduction to Ancient Indian Chronology		**Satyanarayan Sau**		
II	System of Dating the Inscriptions (Chronograms)		**Satyanarayan Sau**		
III	Main Eras used in Inscriptions - Vikrama Era, Saka Era and Gupta Era		**Amal Samanta**		
UNITS	**PAPER: CC-9: Modern Sanskrit Literature**	75			
	Section'A': Mahakavya and Charitakavya,				
I	SvatantryaSam bhavam (RevaprasadaDwi vedi) Canto 2, verses 1-45 Bhimayanam (Prabha Shankar Joshi) Canto X. verses 20-29; Canto - XI. Verses 13-20 & 40-46.		Amal Samanta		
	Section 'B':GadyaKavya and Rupaka,				
I	Sataparvika (Abhiraja Rajendra Mishra)		Sudipta Kumar Karan		
II	SardulaSakatam (Virendra Kumar Bhattacharya)		Sudipta Kumar Karan		
	Section 'C':GitiKavya and Other genres,				

I	Bhatta Mathuma Nath Shastri (Kundaliyan, BacchuLal Avasthi Jnaana (Kaete, Kva Yataste), SrinivasaRath (Katama Kavita) etc		Dipankar Mishra		
II	Hariram Acharya (Sankalpa Gitih) Dikshit (Bruhi kosminYuge ..) Pushpa Radha Vallabh Tripathi (Naukamihasaramsaram ...); DhivaraGitih		Dipankar Mishra		
III	Harshdev Madhava Haiku- Snanagrihe, vedana, mrityuh I, mrtyuh 2; khanih; shatavadhani R. Ganesh (kavi-vi~adah, var~avibhutih		Dipankar Mishra		
	Section 'D': General Survey of Modern Sanskrit Literature				
I	Pandita Kshama Rao, P.K. Narayana Pillai, S. B. Varnekar, ParmanandShastri, Reva Prasad Dwivedi		Sudipta Kumar Karan		
	Janaki VallabhShastri, Ram Karan Sharma, Jagannath Pathak, S. Sunderrajan, Shankar Dev Avatare		Sudipta Kumar Karan		
II	Haridas SiddhantaVagish, Mula Shankar M. Yajnika, Mahalinga Shastri, Leela Rao Dayal, Y atindra Vimal Chowdhury, Virendra Kumar Bhattacharya		Debasri Giri		
UNITS	**PAPER: CC-10: Sanskrit and World Literature**	75			

	Section 'A':Survey of Sanskrit Literature in the World,				
I	Vedic cultural elements in ancient Eastern and Western societies.		Sudipta Kumar Karan		
II	Presence of Sanskrit words in the World languages.		Dipankar Mishra		
III	General survey of the Classical Sanskrit Literature in the Eastern and Western literature.		Sushil Jana		
	Section 'B': Upani~ads and Gita in World Literature,				
I	Dara Shikoh's Persian Translation of Upanisads and their Influence on Sufism, Latin translation and its influence on Western thought		Ritabrata Sau		
II	Translation of the Gita in European languages and religio-philosopliical thought of the west.		Ritabrata Sau		
	Section'C': Sanskrit Fables in World Literature,				
I	Translation of Pancatantra in Eastern and Western Languages. Translation of Vetalapancavirhsatika, Sirhhasanadva.rrirpsika and Sukasaptati in Eastern		Sudipta Kumar Karan		
II	Languages and Art.		Amal Samanta		

	Section'D': Ramayarya and Mahabharata in South East Asian Countries,				
I	Rama Katha in south eastern countries		Ritabrata Sau		
II	Mahabharata stories as depicted in folk cultures of SE Asia		Supti Bhattacharya		
	Section'E':Kalidasa's Literature in World Literature		Sudipta Kumar Karan		
I	English and Gennan translation of Kalidasa 's writings and their influence on western literature and theatre.		Ritabrata Sau		
	Section'F': Sanskrit Studies across the World				
I	i. Sanskrit Study Centers in Asia ii. Sanskrit Study Centers in Europe iii. Sanskrit Study Centers in America		Rathin Biswas		
UNITS	**PAPER: SEC-2: Sanskrit Meter and Music**	50			
	Section 'A': Brief Introduction to Chhanda}.lsastra				
I	Brief Introduction to Chhandal)sastra		Ritabrata Sau		
	Section 'B': Classification and Elements of Sanskrit Meter,				

II	Syllabic verse (ak~aravrtta): Syllabo-quantitative verse (van:iavrtta) Quantitative verse (matravrtta) Syllables: laghu and guru		Ritabrata Sau		
III	Ga1;1a Feet		Ritabrata Sau		
	Section 'C': Analysis of Selected Vedic Meters and their musical rendering,				
I	Definition, Example, Analysis and Lyrical Methods of following Meters: gayatrf, uniika, anu~fupa, brhatf, pwnkti, .tri~Jup andjagatf		Sudipta Kumar Karan		
	Section 'D': Analysis of Selected Classical Meters and their musical rendering				
I	Definition, Example, Analysis and Lyrical Methods of following Meters: bhujaligaprayata, sragvb;zf, vidyunmala, anunupa, arya, vasantatilaka, mandakranta, fardulvikrftjita Suggested Books/Readings: tofaka, harigftika, malinf, sikharil;f, sragdhara and,		Sushil Jana		
UNITS	**PAPER: GE-4: Basic Principles of Indian Medicine System (Ayurveda)**	75			
	Section 'A' Introduction to Indian Medicine System: Ayurveda				

I	Definition of Ayurveda, Ayuh (Life), Sarira (Body), Health, Aim of Ayurveda, Subject Matter Credits 06 of Ayurveda, Salient Features of Ayurveda, Concept of Health according to Ayurveda, Unique features of .Ayurveda.		Sudipta Kumar Karan		
II	History of Ayurveda, Atharvaveda as an early source for medicinal speculations, Introduction to Major Texts (Susrut Samhita and Caraka Samhita) and Authors (Susruta and Caraka) and A~tanga Hrdayam, A~tanga Sali.graha of Vagbhata.		Sudipta Kumar Karan		
III	Eight Components of .Ayurveda (a~tangaAyurveda): 1. Kaycikitsa (General Medicine) 2. Kaumarabhftya(Pediatrics) 3. SalyaTantra (Surgery) 4. Salakya-Tantra (Ent. and Ophthalmology) 5. Bhuta Vidya (Psychiatry Medicine). 6. Vi~a Vijfiana (Toxicology). 7. Rasayana (Rejuvenates). 8. VajikaraI).a (Aphrodisiac).		Sudipta Kumar Karan		
	Section 'B' Basic Principles of Ayurveda Dietetics,				

I	1. The Trigu1.1as: Sattva,Rajas and Tamas. 2. The Paficamahabhiitas:Akasa (Space), Vayu (Air),Teja or Agni(Fire),Jala(Water) ~nd PrthvI (Earth). 3. The Trido~as: Vata,Pitta and Kapha. 4. The Saptadhatus: Rasa (fluid), Rakta(blood), Marhsa, Meda (fat),Asthi, Majja and Sukra. 5. The Trayodosagni: Jatharagni (gastric fire), Saptadhatvagni and Paficabhiitagni. 6. The Trimalas:PurI~a (faeces),Miitra (urine) and Sveda (sweat).		Supti Bhattacharya		
II	Ayurvedic understanding of lifestyle and concepts of preventive medicine. Seasonal regimen & social conduct and its effect on health, Concepts of Prakfti, Agni, and Kosta. SvasthaVrtta (Preventive Medicine) Understanding Health and Disease in Ayurveda		Supti Bhattacharya		
III	Diagnosis of illness: eight ways to diagnose illness, called Nac;II (pulse), Miitra (urine), Mala (stool), Jihva (tongue), Sabda (speech), Sparsa (touch), Drk (vision), and A.kfti (appearance).		Supti Bhattacharya		
	Section 'C' Nutrition and Treatments in Ayurveda .				
I	Ayurvedic understanding of nutrition and metabolism, Classification of A.hara according to Ayurveda and Viruddhahara (incompatible diet) & role of diet		Sushil Jana		

II	Commonly used substances and their therapeutic properties and Pharmacology: Intro to basic principles of Ayurvedic pharmacology, Art and science of Ayurvedic Pharmacy and Understanding Ayurvedic Herbs and common formulations		Sushil Jana		
III	Paficakarma and Other Ayurvedic Specialty Treatments: Method and classification of treatments in Ayurveda, Pretreatment, Therapeutic vomiting (Yamana), Purgation Therapy, Enema (Basti), Nasal Administration - Nasya, Blood Letting (RaktaMok~a), Introduction and importance of Paficakarma/Detoxification, Science and art of rejuvenation (Rasayana and VajikaraQa). Ayurvedic prenatal and postpartum care for healthy mothers and babies, Sarhskara, care of infants and children.		Sourav Goswami		
	Section 'D' Important Medicinal Plants and their based on Ayuyveda.				
I	19 Medicinal Plants in Susruta Sarhhita: Tuls1, Haridra, Sarpagandha, Gh:rta Kuman, Guggulu, Brahm1, Amala, Aswagandha, Arjun Tree, Turmeric, Ceylon Hydrolea, Neema Plant, Lady Fems, Blackberries, Pot Marigold, Camomile, Peppermint, Fenugreek and Aloe Vera.		Sudipta Kumar Karan		

Teaching Plan: Department of Sanskrit: SEMESTER-V(HONOURS)

UNITS	**PAPER: CC-11: Vedic Literature**	**75**		14.09.2021 to 18.01.2022	**1st week of November, 2021 &4th week of December,2021**
	Section'A' Sanhita and Brahmana,				
I	*Rgveda-* Agni- 1.1, Usas- 3.61, Aksa Siikia 10.34, Hiranyagarbha- 10.121		**Satyanarayan Sau**		
II	*Yajurveda- k* ivasamkalpa Sñkta- 34.1-6		**Sushil Jana**		
III	*Athorvaveda-* Sammanasyam- 3.30, Bhiimi- 12.1-12		**Sudipta Kumar Karan**		
	Section'B' Vedic Grammar,				
I	Declensions *{s'abdarupo),* Subjunctive Mood *(let),* Gerunds *{ktvârthaka, Tumarthaka),* Vedic Accent and Padapatha		**Sourav Goswami**		
	Section'C' Mundakopanisad.				
I	Mundakopanisad – 1.1 to 2.1		**Sushil Jana**		
II	Mundakopanisad – 2.2 to 3.2		**Sushil Jana**		
UNITS	**PAPER: CC-12: Sanskrit Grammar**	75			
	Section'A' Laghusiddhanta Kaumudi- Samjna Prkarana,				

I	*Sanjn‹i Prakarana*		Dipankar Mishra		
	Section'B' Laghusiddhanta Kaumudi- Sandhi Prkarana,				
I	ac sandhi: *yen, giiyn, di°rgha, ayâdi, vrddhi* and yiirvor‹i/›o.		Rathin Biswas		
II	halsandhi. .it-on n, *ititva, aiitinusikatvn,* cli/iofvn and jastava		Rathin Biswas		
III	visarga sandhi: *uwn, lapa, saiva* and *rutva*		Rathin Biswas		
	Section'C' Laghusiddhanta Kaumudi- Vibhakti Prkarana				
I	Vibhaktyartha Prakarana		Sushil Jana		
UNITS	**PAPER: DSE-1B: Art of Balanced Living**	75			
	Section'A' Self Presentation,				

I	Method of Self-presentation : Hearing *(:sravana),* Reflection *(manana)* &meditation *(niâidhyâsano)* (Brhadñranyakopanisad, 2.4.5)		Ritabrata Sau		
	Section'B' Concentration,				
I	Concept of Yoga : *(Yogasutra,* 1.2) Restriction of fluctuations by practice *(obhyâsa)* and passionlessness *(vairâgya) :(Yogasñlra,* 1.12- 16) Eight aids to Yoga *(a:stâñgayogo)* . (Xognstifra, 2.29, 30,32, 46, 49, 50; 3.1-4). Yoga of action *(kriyâyoga) : yogasñtra,* 2.1) Four distinct means of mental purity *{cittaprasâdana j* leading to oneness : *(Yogas5tra,* 1.33)		Debasri Giri		
	Section'C' Refinement of behaviour				

I	Methods of Improving Behavior : jñâna-yoga,'dhyâna-yoga, karma-yoga and bhakti-yoga (especially karma-yoga) Karma : A natural impulse, essentials for like , journey, co-ordination of the world, an ideal duty and a metaphysical dictate (Ciik, 3.5, 8, 10-16, 20 &21)		Sourav Goswami		
UNITS	**PAPER: DSE-2A: Theatre and Dramaturgy in Sanskrit**	50			
	Section'A' Theatre: Types and Constructions				
I	Types of theatre: *vikrsla* (oblong), *catwasra* (square), *tryazra* (tnangular), *jyestha* (big), *madhyamo* (medium), *avara* (small). *bh5mi- s'odhana* (Examining the land) and *mâpa* (measurement of the site), *matlavârayi* (raising of pillars), *raiigap!tpa and rangaéir;a* (stage), *dârukarma* (wood—work), *nepalhya -grha* (green- house), *preks.Lopaves'a* (audience-hall), Doors for entrance &exit		Sushil Jana		
	Section'B' Drama: Vastu, Neta and Rasa,				

I	Definition of drama and its various names - *drs'ya, rñpa,rñpaka , abhineya,'* abhinaya and its types: *âkgika*(gestures), vficiR(oral), *sâttvika* (representaion of the sattva), *âhârya* (dresses and make-up). *Kastu•* (subject-matter) : *âdhik0rika* (principal), *prâsangika* (subsidiary), Five kinds of *arlhaprakr.ti, L0ryâvasthâ* (stages of the action of actor) and *Gandhi* (segments), *orlhopaks.epaka* (interludes), kinds of dialogue:1. *Barvaérâvya* or *prakâs'a* (aloud) " *râvya*or *Eva Sta* (aside) 3. *niyoias'rdvya :janântiLa* (persoqal address), *apavârita*(confidence) 4. *â.Us"abhâ:sita*(conversation with imaginary person).		Supti Bhattacharya		
II	*Neta:* Four kinds of heroes, Three kinds of heroines,sñ1radfiñrn(stage manager), *pâripârFika* (assistant of siitradhñra), *vidusaka* (jester), koñcukl (chamberlain), *pratinâyaka* (villain).		Supti Bhattacharya		

III	*Rasa:* definition and constituents, ingredients of *rasa-ni;patti: - bhâva* (emotions), *vibhâva* (determinant),*anubhâva* (consequent), *sâttvikabhâva* (involuntary state), *sthâyibhâva* (permanent states),*vyabhicâribhâva*		Rathin Biswas		
	Section'C' Tradition and History of Indian Theatre				
I	Origin and development of stage in different ages: pre-historic, Vedic age, epic-puranic age, court theatre, temple theatre, open theatre, modern theatre: folk theatre, commercial theatre, national and state level theatre		Sudipta Kumar Karan		
Teaching Plan: Department of Sanskrit: SEMESTER-VI (HONOURS)					
UNITS	**PAPER: CC-13: Ontology and Epistemology**	**75**		21.02.2022 to 10.06.2022	**1st week of April,2022 & 1st week of June,2022**
	Section 'A' Essentials of Indian Philosophy,				
I	Meaning and purpose of darsana, general cl,assification of philosophical schools in classical lnbian philosophy		**Rathin Biswas**		
II	Realism ***athârthavâda*** or *vastuvâda)* and Idealism *@rotyayavâda),* Monism *(ekoiwavâdo),* Dualism *(dvairavnvfida)* &Pluralism *(bahuttvavâda) ;* dharma (property)-dharmi (substratum)		**Sushil Jana**		

III	Causation {k0ryaLârayavâda) naturalism ‹svabhâvavâda), doctrine of pre-existence of effect {saik0ryavâda j, doctrine of real transformation Unit: THtparinâmavâda), doctrine of illusory transformation {vivartavâda), doctrine of non-prexistence of effect in cause (asatk0ryavâda and ârambhavâda)		**Satyanarayan Sau**		
	Section 'B' Ontology (Based on Tarkasamgraha)				
I	Concept of padartha, three dharmas of padirthas, definition of Dravya,		**Debasri Giri**		
II	Samanya, Vis'esa, Samavaya, Abhava.		**Debasri Giri**		
III	Definitions of first sevendravyas and their examination; Atma and its qualities,manas.		**Satyanarayan Sau**		
IV	Qualities (other than the qualities oftheiitman) Five types of Karma.		**Satyanarayan Sau**		
	Section 'C' Epistemology (Based on Tarkasamgraha				
I	Buddhi(jdana) — nature ofjfiâna in Nyaya vai4esika; smriti-anubhava; yathsnha and ayalhartha ,		**Debasri Giri**		

II	Kara9a and kirana, definitions and types of prams, kartñ-karana-vyapara-phala, model Pratyaksa		**Debasri Giri**		
III	Anumana including hetvabhñsa		**Satyanarayan Sau**		
IV	Upamina and sabda pramina		**Satyanarayan Sau**		
V	Types of ayaihñrtha anubhava		**Satyanarayan Sau**		
UNITS	**PAPER: CC-14: Sanskrit Composition and Communication**	75			
	Section 'A' Vibhaktyartha, Voice and Krt,				
I	Yibhaktyartha Prakarana LaghusiddhântakaumuM Voice (katfi. karma and bhâva)		Dipankar Mishra		
II	Selections from *Krt Prokarana*- from *Laghusiddhântakaumudi* Major Sutras for the formation *ot krdonta* words *ttavyat, tavya, anyar, yat, nyal, nvul, tric, an,kia,* *katavatu, éat5i, éânac, tumun, ktvâ-lyap,lyut* *,ghan, Min)*		Rathin Biswas		
	Section 'B' Translation and Communication,				

I	Translation and Communication Translation from Hindi/English to Sanskriton the basis of cases, Compounds and kbitsuffixes. Translation from Sanskrit andHindi		Rathin Biswas		
II	Communicative Sanskrit: SpokenSanskrit.		Rathin Biswas		
	Section 'C' Essay				
I	Essay (traditional subjects) e.g. veda, upnisad, ans it Language, skrit Mahâbhâra fa, purâna, g?tâ, principal Sanskrit poets.		Sudipta Kumar Karan		
II	Essay based on issues and topic related to modernsubjects like entertainment, sports, national and international affairs and social problcms.		Satyanarayan Sau		
UNITS	**PAPER: DSE- 4A: Fundamentals of Ayurveda**	75			
	Section 'A' Introduction of Ayrveda,				
I	Introduction of Ayurveda, History of Indian Medicine in the pre-caraka period, The two schools of Ayurveda: Dhanvantari andPunarvasu.		Sudipta Kumar Karan		
II	Main Aciiryas of Ayurveda — Caraka, Sus"ruta, Viigbbatta, Miidhava, Siirñgadhara and Bhavamis'ra		Sudipta Kumar Karan		
	Section 'B' Carakasarhita (Sutra-sihanam),				

I	Carakasamhitñ—(Siitra-sthanam):DivisionofTime and condition of nature and body in sixseasons. Regmen of Fall Winter (Hemanta), Winter (Sis'ira) &Spring (Vasanta) seasons.(Varsa) and		Supti Bhattacharya		
	Section 'C' Taittiriyopanisad.				
I	Taittiriyopanishad—Bguvalli,anuvak1-3		Sushil Jana		
II	Taittiriyopanisha Bh(guéal1i, anuvak 1-3		Sushil Jana		
Teaching Plan: Department of Sanskrit: SEMESTER-I (GENERAL)					
UNITS	**PAPER: CC-1:: Sanskrit Poetry**	**75**		01.10.2021 to 24.02.2022	
	Section 'A' Raghuva_śam				1st internal examination on 4th week of December, 2022 and 2nd internal examination on 2nd week of March,2022
I	Introduction (Author and Text) Canto-I (Verses 1-10) Meaning/translation, Explanation, Story, Characteristics of Raghu Clan, Characteristics of Dilīpa.		Sudipta Kumar Karan		
II	Canto-I (Verses: 11-25) Meaning/translation, Explanation, Role of Dilīpa for the welfare of the subjects. Appropriateness of title, Background of given contents		Sudipta Kumar Karan		

	Section ‘B’ Śiśupālavadham				
I	Introduction (Author and Text), Appropriateness of title, Background of given contents. Canto II, Verses 26-37, Grammar, Translation, Explanation, Poetic excellence, thematic analysis		Sushil Jana		
II	Verses 42-56, Grammar, Translation, Explanation, Poetic excellence, thematic analysis.		Sushil Jana		
	Section ‘C’ Nītiśatakam				
I	Verses (1-10) Translation, explanation		Amal Samanta		
II	Verses (11-20) Translation, explanation, Social experiences of Bhartṛhari, Types of Fool		Amal Samanta		
	Section ‘D’ History of Sanskrit Poetry				
I	Aśvaghoṣa, Kālidāsa, Bhāravi, Māgha, Śriharṣa, Jayadeva, Bhart_hari and their works		Sourav Goswami		
II	Origin and Development of Different types of Mahakavya and Gītikāvya with special reference to the following Poets and their works.		Sourav Goswami		

Teaching Plan: Department of Sanskrit: SEMESTER-II (GENERAL)

UNITS	PAPER: CC3 [DSC-1B] Sanskrit Prose	75		01.04.2022 to 09.07.2022	
	Section'A' Suknasopadesa,				1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
I	Introduction- Author/Text, Text up to page 116 of Prahlad Kumar upto □□□ □□□ □□□□ □□□□ □□□□□□□ried (up to the end of the text.)		Ritabrata Sau		
II	Society and political thought depicted in Sukanasopadeśa. logical meaning and application of savings.		Ritabrata Sau		
	Section 'B' Sivarajavijayam, Nihswasa-1,				
I	Para 1 to 20 Introduction- Author/Text, Text reading (Grammar. Translation, and Explanation), poetic excellence, plot. Timing of Action.		Sudipta Kumar Karan		
II	From para 21 to the end of the text. Text reading (Grammar, Translation, and Explanation), Poetic excellence, plot. Timing of Action.		Sudipta Kumar Karan		
	Section 'C' Survey of Sanskrit Literature-Prose				
I	Origin and development of prose and important prose romances		Debasri Giri		

II	Subandhu, Bäṇa, Dandin, Ambikadatta Vyāsa. Pañcatantra, Hitopadeśa, Vetālapañcavsattikā, Simhasanadvätrimsika and Puruṣaparīksā.		Rathin Biswas		
Teaching Plan: Department of Sanskrit: SEMESTER-III (GENERAL)					
UNITS	**PAPER: DSC-lC (CC-3): Sanskrit Drama**	75		1.10.2021 to 05.02.2022	**4th week of November,2021 &1st Week of January,2022**
	Section 'A' Pratimanatakam: Act I&III - Bhasa				
I	First Act Introduction, Text Reading (Grammar, Translation, and Explanation), Poetic excellence, Plot.		Dipankar Mishra		
II	Third Act Introduction, Text Reading (Grammar, Translation, and Explanation), Poetic excellence, Plot.		Dipankar Mishra		
	Section 'B' Abhijiianasakuntalam Act IV- Kalidasa				
I	Fourth Act (a) Introduction, Explanation of terms like nfindf, prastfivanii, sfitradhiira, naff, vi$kambhaka, vidii$aka and kmicukz. (b) Text Reading (Grammar, Translation, Explanation), Poetic excellence, Plot, Timing of Action. Personification of nature		Sudipta Kumar Karan		

II	kiivye$U nfitakarrt ramyam, upamfi, Language of Kalidasa, dhvani in Kalidasa, Pllrpo~e a_i:id dcf:Sign		Sudipta Kumar Karan		
	Section 'C' Technical Terms from Sanskrit Dramaturgy		Sudipta Kumar Karan		
I	Nataka, Nayaka, Nayika, Nandi, Sutradhara, Pratabana, Bidushaka.		Sudipta Kumar Karan		
II	Anka, Prakasha, Apabarita, Akashbhasita, Prabeshaka.		Sushil Jana		
	Section 'D' History of Sanskrit Drama and an Introduction to Principle of Sanskrit Dramas		Sushil Jana		
I	Origin and Development		Sourav Goswami		
II	Some important dramatists and dramas: Bhasa, Kalidasa, Sudraka, Visiikhadatta, Harg Bhavabhuti, and their works.		Sourav Goswami		
UNITS	**PAPER: SEC-1: Computer awareness for Sanskrit**		50		
	Section A: Basic Computer Awareness		Debasri Giri		
I	Design, Architecture: Operating System		Ritabrata Sau		
II	MS Office Tools (Word, Power points, Excel etc.)		Rathin Biswas		

III	Using Internet, Web Search (Searching E-text/ e-book for Sanskrit in Roman and Devanagari Scripts), Email etc		Sushil Jana		
	Section B: Typing in Unicode for Preservation and Digitalization of Sanskrit Text				
I	Character encoding, Unicode, ASCII, UTF-8, UTF-16		Sudipta Kumar Karan		
II	Typing in Unicode through various Softwares		Sourav Goswami		
III	Sanskrit Text Digitalization/Preservation/Storage		Satyanarayan Sau		
	Section C: Web Publishing		Satyanarayan Sau		
I	Basics HTML, Java Scripts and CSS		Supti Bhattacharya		
II	Basics of Databases		Sudipta Kumar Karan		
Teaching Plan: Department of Sanskrit: SEMESTER-IV (GENERAL)					
UNITS	**PAPER: DSC-1D(CC-4): Sanskrit Grammer**	75		15.03.2022 to 25.06.2022	**4th week of April,2022 &3rd week of June,2022**
	Section 'A' Laghusiddhantakaumudi: Samjna Prakarana,				
I	Samiñâ Prakarana		Amal Samanta		

	Section 'B' Laghusiddhantakaumudi: Sandhi Prakarana,				
I	ac sandhi: yen, giiyn, di°rgha, ayâdi, vrddhi and yiirvor‹i/›o.		Rathin Biswas		
II	Hal sandhi. .it-on n, ititva, aiitinusikatvn, cli/iofvn and jastava		Rathin Biswas		
III	visarga sandhi: uwn, lapa, saiva and rutva		Debasri Giri		
	Section 'C' Laghusiddhantakaumudi: Vibhakti		Sushil Jana		
I	***Vibhaktyartha Prakaiana***				
UNITS	**PAPER: SEC-2: Yogsasutra of Patanjali**	50			
	Section 'A' Yogsasutra of Patanjali: Samadhi Pada,				

I	Yogasiiria of' Patanjali: Samadhi Pada (Suiras: I - 15)		Satyanarayan Sau		
II	ogiisiirla ofPatanjali:Sair‹dhiPâd‹i(Sutras:16-		Satyanarayan Sau		
	Section 'B' Yogsasutra of Patanjali: Sadhana Pada ,				
I	Yogasfirta of Patanjali : S3dhana Pada (Sutra: 29-45)		Debasri Giri		
II	Yogasiirta of Patanjal i: S.adhiina P3da (Sutras: 46-55)		Sourav Goswami		
	Section 'C' Yogsasutra of Patanjali: Vibhuti Pada				
I	Y ogaxurta of' Patanjali: Vibhiiti Piida (Sutra.s: I-3)		Ritabrata Sau		
Teaching Plan: Department of Sanskrit: SEMESTER-V (GENERAL)					
UNITS	**PAPER: DSE1AT: Philosophy, Religion and Culture in Sanskrit Tradition**	75		14.09.2021 to 18.01.2022	**1st week of November, 2021**
	Section-A-Dharma,				

I	Form of God, Mode of worship, Bhakta as a morally evolved person - Gita Chapter XII		Ritabrata Sau		**&4th week of December,2021**
II	dharma ten fold dharma and its versions, definitions of satya, ahimsā, asteya, aparigraha, pañcha mahā yajña; theory of three debts.		Ritabrata Sau		
III	Man's initiative and God's design; God's līla and Krpā, Daiva versus puruṣakāra, adṛsta, three types of karma - saṁchita, kriyamāṇa and prārabdha, karma.		Debasri Giri		
	SectinB-Samskara and Purusartha,				
I	Process of acculturation - importance of Saṁskāra.		Sushil Jana		
II	Aim of human life - theory of Puruṣārtha.		Sushil Jana		
	Section c- Swadharma				
I	An amoral' person - svadharma and karmayoga, sthita prajna in the Gita (Chapter II).		Sourav Goswami		

II	Prakriti- three gunas and their impact on personality.		Sourav Goswami		
UNITS	**PAPER: SEC-3: Basic Elements of Jyotisha**	50			
	SecA- Origine, Development and Branches of Jyotisa				
I	Origin and Development of Jyotisa		Sudipta Kumar Karan		
II	General introduction to following branches of Astrology: Siddhanta, Samhita, Horā, Tājika, Praśna, Vastuśāstra and Muhurtaśāstra.		Sudipta Kumar Karan		
	SecB- Jyotischandrika: sanjna Prakaranam,				
I	Jyotiṣachandrikā- Sañjñā- Prakaraṇam, Verses: 1-29		Sudipta Kumar Karan		
II	Jyotiṣachandrikā- Sañjñā- Prakaraṇam, Verses: 30-65		Amal Samanta		
	Sec C: Jyotischandrika: sanjna Prakaranam				
I	Jyotisachandrikā- Sañjñā- Prakaraṇam, Verses: 66- 90.		Sushil Jana		

II	Jyotiṣachandrikā- Sañjñā- Prakaraṇam, Verses: 91- 115.		Supti Bhattacharya		
UNITS	**PAPER: GE 1T: Political Thoughts in Sanskrit**	75			
	SecA- Basic features of Ancient Indian Political Thought				
I	Name, Scope and Sources of Ancient Indian Political Thought: Name of the Science: 'Dandanīti', 'Dharmaśāstra', 'Nītiśāstra'. Scope of Indian Political Thought: relation with Dharma, Artha and Nīti; Sources of Ancient Indian Political Thought :Vedic Literature, Purāṇa, Rāmāyaṇa, Mahābhārata, Dharmaśāstra, Nītiśāstra Kautilya's Arthaśāstra and Rajaśāsana (Inscriptions).		Sudipta Kumar Karan		
II	Nature, Types and Theories of the State: Nature of the State in Arthaśāstra (6.1) and Manusmrti (9.294) with Special reference to Saptanga-Theory: Svāmi, Amatya, Janapada, Pura, Kośa, Danda and Mitra. Types of the State: Rajya, Svarājya, Bhojya, Vairājya, Mahārājya, Sāmarājya (Aitreya Brāhmaṇa,8.3.13-14: 8.4.15-16).		Dipankar Mishra		

	Sec B- Ancient Indian Political Thought: Origine and Development				
I	Ancient Indian Political Thought: Origin and Development Indian Political Thought from Vedic Period to Buddhist Period: Election of King by the People' Visas 'in Vedic period: (Rgveda, 10.173;10.174, Parliamentary Atharvaveda, 3.4.2;6.87.1-2), Institutions: 'Sabha, 'Samiti' and 'Vidatha' in Vedic period (Atharvaveda, 7.12.1;12.1.6 ; Rgveda,10.85.26), King-maker Council: 'Rajakartarah 'and Ratnis' in Vedic period (Atharvaveda, 3.5.6-7 and Satapathabrahmana, 5.2.5.1); Coronation Ceremony of the King 'Samrata' (Satapathabrāhmaṇa, 51.1.8- 13; 9.4.1.1-5) Republics in the Buddhist Period (Diggnikaya, Mahāparinibbāṇa Sutta, Anguttaranikaya, 1.213;4.252,256)		Debasri Giri		

II	Indian Political Thought from Kautilya to Mahatma Gandhi: Kautilya's concept of Welfare State (Arthaśāstra, 1.13); Essential Qualities of King (Arthaśāstra,6.1.16-18); Duties of King and State 'Rajadharma'(Mahābhārata, Santiparva, 120.1-15; Manusmrti,7.1-15; Sukranīti, 1.1-15) Constituent Elements of Jain political thought (Somadeva's Nītivākyāmṛta,9.1.18 and, 19.1.10); Relevance of Gandhian political thoughts in modern period (Gandhi Gītā of Prof. Indra, 5.1-25)		Rathin Biswas		
	Sec C:- Cardinal theories and Ancient Indian Political Thinker				
I	Cardinal Theories of Indian Political Science: 'Saptānga' Theory of State: Svāmī, Amatya,Janapada, Pura, Kośa, Danda and Mitra (Arthaśāstra-6.1, Mahābhārata-Santiparva-56.5, Sukranīti, 1.61-62).'Mandala 'Theory of Inter-State Relations:'Sadgunya' Policy of War and Peace Diplomacy:Sandhi, Vigraha, Yana, Asana, Sanśraya and Dvaidhībhāva.'Caturvidha Upaya' for balancing the power of State: Śāma, Dāma, Danda, Bheda.Three types of State power 'Sakti': Prabhu Śakti,Mantra Sakti, Utsäha Śakti.		Sourav Goswami		

II	ProminentIndianPoliticalManu, Śukrācārya, Kautilya, Somadeva Suri and Mahatma Gandhi.Thinkers: Kāmandaka,Somadebasuri and Mahatma Gandhi.		Ritabrata Sau		
Teaching Plan: Department of Sanskrit: SEMESTER-VI (GENERAL)					
UNITS	**PAPER: DSE1BT: Literary Criticism**	75		21.02.2022 to 10.06.2022	**1st week of April,2022 & 1st week of June,2022**
	Sec A- Kavya Prakasa: Kavyavaisistya and Kavya Prayojana				
I	Kavya Prakāśa: Kavya Vaisiṣṭya and Kavya Prayojana		Sushil Jana		
	Sec B- Kavya Prakasa: Kavyakarana				
I	Kavya Prakāśa: Kavya Kāraṇa		Dipankar Mishra		
	Sec C- Kavya Prakasa: KavyaSvarupa and Kavyabheda				
I	Kavya Prakāśa: Kavya Svarūpa and Kavyabheda		Rathin Biswas		

UNITS	PAPER: SEC4T: Indian Theatre	50			
	Sec A: Tradition and History of Indian Theatre				
I	Origin and development of stage in different ages: pre-historic, Vedic age.		Sourav Goswami		
II	Epic-puranic age, court theatre, temple theatre, open theatre, modern theatre, folk theatre, commercial theatre, national and state level theatre.		Sourav Goswami		
	Sec B:Theatre: Types and Constructins				
I	Theatre: Types and Constructions		Sushil Jana		
	Sec C- Acting				
I	Acting: Ängika, Vācika		Ritabrata Sau		
II	Sättvika and Ähārya		Ritabrata Sau		
	Sec D- Drama				
I	Vastu (Subject-Matter)		Sudipta Kumar Karan		

II	Netā (Hero)		Supti Bhattacharya		
III	Rasa (Sentiment)		Rathin Biswas		
UNITS	**PAPER: GE2T: Sanskrit Meter and Music**				
	Section 'A' Brief Introduction to Chhanda sastra				
I	Brief Introduction to Chanda śāstra		Supti Bhattacharya Amal Samanta		
	Section 'B' Classification and Elements of Sanskrit Meter,				
I	Syllabic verse (akṣaravṛtta): Syllabo-quantitative verse (varṇavṛtta) Quantitative verse (mātrāvṛtta)		Dipankar Mishra		
II	Syllables: laghu and guru Gana Feet		Dipankar Mishra		
	Section 'C': Analysis of Selected Vedic Meters and their musical rendering,				

I	Definition, example, Analysis and Lyrical Methods of following Meters: gayatrī, uṣṇik, anuṣṭup, bṛhatī, pamkti, tristup and jagati.		Satyanarayan Sau		
	Section 'D': Analysis of Selected Classical Meters and their musical rendering				
I	Definition, example, Analysis and Lyrical Methods of following Meters: bhujangaprayāta, sragvinī, totaka, harigītikā, vidyunmālā, anuştup, āryā, mālinī, śikharini, vasantatilakā, mandākrāntā, sragdharā and nyuśārdülvikrīḍita		Supti Bhattacharya Ritabrata Sau		

Sociology

Teaching Plan: Department of Sociology: SEMESTER-I(HONOURS)

UNITS	PAPER: CC1: Introduction to Sociology – I	FULL MARKS	NAME OF THE TEACHER	DATE/MONTH OF TEACHING	Intermal Examination
		75		01.10.2021-24.02.2022	1st internal examination on 4th week of December,
1.1	Thinking Sociologically		Arun Kumar Maity		

1.2	Emergence of Sociology and Social Anthropology		Arun Kumar Maity		2022 and 2nd internal examination on 2nd week of March,2022
2.1	Sociology and Social Anthropology		Debjani Khanra		
2.2.	Sociology & Psychology		Debjani Khanra		
2.3	Sociology & History		Debjani Khanra		
3.1	Individual and Group		Arun Kumar Maity		
3.2	Associations and Institutions		Arun Kumar Maity		
3.3	Culture and Society		Debjani Khanra		
3.4	Social Change		Debjani Khanra		
UNITS	**PAPER: CC2: Sociology of India – I**	75		01.10.2021-24.02.2022	
1.1	The Colonial Discourse		Sanghamitra Nath		
1.2	The Nationalist Discourse		Sanghamitra Nath		
1.3	The Subaltern Critique		Saswati Mondal		

2.1	Caste: Concept and Critique		Sanghamitra Nath		
2.2	Agrarian Classes		Suvendu Kumar Maity		
2.3	Industry and Labour		Suvendu Kumar Maity		
2.4	Tribe: Profile and Location		Saswati Mondal		
2.5	Village: Structure and Change		Saswati Mondal		
2.6	Kinship: Principle and Pattern		Sanghamitra Nath		
2.7	Religion and Society		Suvendu Kumar Maity		
UNITS	**PAPER: GE-1: Indian Society: Images and Realities**	75		01.10.2021-24.02.2022	
1	Ideas of India: Civilization, Colony, Nation and Society		Suvendu Kumar Maity		
2.1	Village, Town and Region		Saswati Mondal		
2.2	Caste, Religion and Ethnicity		Debjani Khanra		
2.3	Family and Gender		Sanghamitra Nath & Debjani Khanra		

2.4	Political Economy		Sanghamitra Nath		

Teaching Plan: Department of Sociology: SEMESTER-II(HONOURS)

UNITS	PAPER: CC3: Introduction to Sociology II	FULL MARKS	NAME OF THE TEACHER	DATE/MONTH OF TEACHING	REMARKS
		75		01.04.2022-09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
1.	On the Plurality of Sociological Perspective		Arun Kumar Maity		
2.	Functionalism		Debjani Khanra		
3.	Interpretive Sociology		Sanghamitra Nath		
4.	Conflict Perspective		Suvendu Kumar Maity		
5.	Structuralism		Saswati Mondal		
6.	Interactionism		Arun Kumar Maity		
7.	Feminist Perspective		Sanghamitra Nath		

UNITS	**PAPER: CC4: Sociology of India – II**	75		01.04.2022-09.07.2022	
1.1	Gandhi and Ambedkar		Sanghamitra Nath		
1.2	Indological and Ethnographic Approaches		Arun Kumar Maity		
2.1	Dalit Politics		Sanghamitra Nath		
2.2	Mobility and Change		Saswati Mondal		
2.3	Women's Movement		Arun Kumar Maity		
2.4	Peasant Movements		Suvendu Kumar Maity		
2.5	Ethnic Movements		Suvendu Kumar Maity		
2.6	Middle Class Phenomenon		Sanghamitra Nath		
3.1	Communalism		Debjani Khanra		
3.2	Secularism		Debjani Khanra		
3.3	Nationalism		Saswati Mondal		
UNITS	**PAPER: GE-2: Gender and Violence**	75		01.04.2022-09.07.2022	

1	What is Gendered Violence?		Sanghamitra Nath		
2.	Structural and Situated Violence		Suvendu Kumar Maity		
2.1	Caste, Gender and Violence		Saswati Mondal		
2.2	Domestic and Familial Violence		Debjani Khanra		
2.3	Gender and the Conflict Situation		Saswati Mondal		
2.4	Violence, Harassment and the Workplace		Debjani Khanra		
3	Sexual Violence		Saswati Mondal		
4	Addressing Gendered Violence: Politics and Public Policy		Sanghamitra Nath		

Teaching Plan: Department of Sociology Philosophy: SEMESTER-III(HONOURS)

UNITS	**PAPER: CC5: Political Sociology**	75		01.10.2021-05.02.2022	**4th week of November,2021**
1	Contextualising the study of politics		Arun Kumar Maity		
2.1	Power and Authority		Debjani Khanra		

2.2.	State, Governance and Citizenship		Saswati Mondal		**&1st Week of January,2022**
2.3	Elites and the Ruling Classes		Suvendu Kumar Maity		
3	Political Systems: Segmentary, Totalitarian and Democratic		Arun Kumar Maity, Debjani Khanra, Sanghamitra Nath		
4	Everyday State and Local Structures of Power: State and Politics in India		Sanghamitra Nath		
UNITS	**PAPER: CC6: Sociology of Religion**	75		01.10.2021-05.02.2022	
1.1	Formulating Religious		Saswati Mondal		
1.2	Asceticism and Accumulation		Saswati Mondal		
1.3	Theodicy and Eschatology		Sanghamitra Nath		
1.4	State, Religion and Emancipation		Suvendu Kumar Maity		
1.5	Religion and Solitude		Sanghamitra Nath		
2.1	Sacred, Myth, Ritual		Saswati Mondal		
2.2	Time-Space		Saswati Mondal		

2.3	Rationality		Sanghamitra Nath		
3.1	Prayer		Suvendu Kumar Maity		
3.2	Craft		Suvendu Kumar Maity		
3.3	Body		Suvendu Kumar Maity		
UNITS	**PAPER: CC7: Sociology of Gender**	75		01.10.2021-05.02.2022	
1	Gendering Sociology		Arun Kumar Maity		
2.1	Gender, Sex, Sexuality		Saswati Mondal		
2.2	Production of Masculinity and Femininity		Arun Kumar Maity		
3.1	Class, Caste		Debjani Khanra		
3.2	Family, Work		Debjani Khanra		
4.1	Power and Subordination		Suvendu Kumar Maity		
4.2	Resistance and Movements		Sanghamitra Nath		

UNITS	**PAPER: SEC-1: Framing Questionnaire and Conducting Interview**	50		01.10.2021-05.02.2022	
1	Questionnaire and Interview Method: application; preparations before using these methods		Debjani Khanra		
2	Types of Questionnaire, framing a questionnaire		Debjani Khanra		
3	Types of Interviews, preparing interview schedule		Sanghamitra Nath		
4	Data Recording, Processing and interpretation		Sanghamitra Nath		
5	Limitations of Questionnaire and Interview Methods		Sanghamitra Nath		
UNITS	**PAPER: GE-3: Sociology of Social Movements**	75		01.10.2021-05.02.2022	
1	Contextualizing Social Movements		Sanghamitra Nath		
2	Theories of Social Movements		Arun Kumar Maity, Saswati Mondal		
3	Ideology, Participation and Mobilization: Case Studies		Sanghamitra Nath, Suvendu Kumar Maity		

Teaching Plan: Department of Sociology: SEMESTER-IV(HONOURS)					
UNITS	**PAPER: CC8: Economic Sociology**	75		15.03.2022-25.06.2022	**4th week of April,2022 &3rd week of June,2022**
1.1	Formalism and Substantivism		Saswati Mondal		
1.2	New Economic Sociology		Sanghamitra Nath		
2.1	Reciprocity and Gift		Arun Kumar Maity		
2.2	Exchange and Money		Arun Kumar Maity		
3.1	Hunting and Gathering		Suvendu Kumar Maity		
3.2	Domestic Mode of Production		Suvendu Kumar Maity		
3.3	Peasant		Debjani Khanra		
3.4	Capitalism		Debjani Khanra		
3.5	Socialism		Suvendu Kumar Maity		
4.1	Development		Sanghamitra Nath		
4.2	Globalisation		Saswati Mondal		

UNITS	**PAPER: CC9: Sociology of Kinship**	75		15.03.2022-25.06.2022	
1	Key terms and approaches		Sanghamitra Nath		
2	Family, Household and Marriage		Saswati Mondal		
3.1	Relatedness		Arun Kumar Maity		
3.2	Kinship and Gender		Arun Kumar Maity		
3.3	Re-imagining Families		Suvendu Kumar Maity		
3.4	New Reproductive Technologies		Suvendu Kumar Maity		
UNITS	**PAPER: CC10: Social Stratification**	75		15.03.2022-25.06.2022	
1	Introducing Stratification		Arun Kumar Maity		
2.1	Marx, Weber and Class		Debjani Khanra		
2.2	Functionalism		Suvendu Kumar Maity		
3.1	Caste (Debjani Khanra), Race and Ethnicity (Sanghamitra Nath)		Debjani Khanra, Sanghamitra Nath		

3.2	Feminism and Gendered Stratification		Sanghamitra Nath		
4	Mobility and Reproduction		Saswati Mondal		
UNITS	**PAPER: SEC-2: Statistical Reasoning for Sociology**	50		15.03.2022-25.06.2022	
1	Use of statistics in Social Research		Arun Kumar Maity		
2.	Basic Concepts		Saswati Mondal		
3	Sampling		Debjani Khanra		
4	Frequency Distribution and Graphical Techniques		Sanghamitra Nath		
5	Coding and Tabulation		Sanghamitra Nath		
6	Central tendency		Suvendu Kumar Maity		
7	Dispersion		Suvendu Kumar Maity		
UNITS	**PAPER: GE-4: Population and Society**	75		15.03.2022-25.06.2022	
1	Introducing Population Studies		Saswati Mondal		

2.	Population, Social Structure and Processes		Suvendu Kumar Maity		
3	Population, Gender and Migration		Saswati Mondal		
4	Population Dynamics and Development		Sanghamitra Nath		
Teaching Plan: Department of Sociology: SEMESTER-V(HONOURS)					
UNITS	**PAPER: CC11: Sociological Thinkers–I**	75		14.09.2021-18.01.2022	**1st week of November, 2021 &4th week of December,2021**
1	Karl Marx		Debjani Khanra, Sanghamitra Nath		
2	Max Weber		Saswati Mondal, Debjani Khanra		
3	Emile Durkheim		Arun Kumar Maity, Debjani Khanra		
UNITS	**PAPER: CC12: Sociological Research Methods – I**	75		14.09.2021-18.01.2022	
1	The Logic of Social Research		Debjani Khanra, Arun Kumar Maity		

2	Methodological Perspectives		Sanghamitra Nath		
3	Modes of Enquiry		Suvendu Kumar Maity, Saswati Mondal		
UNITS	**PAPER: DSE-1: Urban Sociology**	75		14.09.2021-18.01.2022	
1	Introducing Urban Sociology		Arun Kumar Maity		
2	Perspectives in Urban Sociology		Arun Kumar Maity, Suvendu Kumar Maity, Sanghamitra Nath		
3	Movements and Settlements		Saswati Mondal		
4	Politics of Urban Space		Arun Kumar Maity, Suvendu Kumar Maity, Debjani Khanra		
UNITS	**PAPER: DSE-2: Environmental Sociology**	75		14.09.2021-18.01.2022	
1	Envisioning Environmental Sociology		Arun Kumar Maity, Sanghamitra Nath		

2	Approaches		Arun Kumar Maity, Suvendu Kumar Maity, Sanghamitra Nath, Saswati Mondal		
3	Environmental Movements in India		Debjani Khanra, Suvendu Kumar Maity		
Teaching Plan: Department of Sociology: SEMESTER-VI(HONOURS)					
UNITS	**PAPER: CC13: Sociological Thinkers II**	75		21.02.2022-10.06.2022	**1st week of April,2022 & 1st week of June,2022**
1.	Talcott Parsons		Debjani Khanra		
2.	Claude Levi-Strauss		Suvendu Kumar Maity		
3.	G. H. Mead and Erving Goffman		Sanghamitra Nath		
4.	Peter L. Berger and Thomas Luckmann		Suvendu Kumar Maity		
5.	Max Horkheimer, T.W. Adorno and Herbert Marcuse		Saswati Mondal		

UNITS	**PAPER: CC14: Research Methods – II**	75		21.02.2022-10.06.2022	
1.	Doing Social Research		Suvendu Kumar Maity		
2.	Methods of Data Collection		Debjani Khanra		
3.1	Graphical and Diagrammatic Presentation of Data		Saswati Mondal		
3.2	Measures of Central Tendency		Arun Kumar Maity		
3.3	Measures of Dispersion		Arun Kumar Maity		
4.	Research Projects		Sanghamitra Nath		
UNITS	**PAPER: DSE-3: Indian Sociological Traditions**	75		21.02.2022-10.06.2022	
1	G S Ghurye		Saswati Mondal		
2.	Radhakamal Mukerjee		Suvendu Kumar Maity		
3.	D P Mukerji		Debjani Khanra		
4.	Verrier Elwin		Sanghamitra Nath		
5.	M.N. Srinivas		Debjani Khanra		

6.	Irawati Karve		Arun Kumar Maity		
7.	Leela Dube		Sanghamitra Nath		
UNITS	**PAPER: DSE-4: Project : Fieldwork And Dissertation**	75		21.02.2022-10.06.2022	
	PROJECT WORK TO BE EQUALLY DISTRIBUTED AMONG Sanghamitra Nath, Debjani Khanra, Saswati Mondal, Arun Kumar Maity, & Suvendu Kumar Maity				

Teaching Plan: Department of Sociology: SEMESTER-I(GENERAL)

UNITS	**PAPER: DSC-1A/2A: Introduction to Sociology**	75		01.10.2021-24.02.2022	Internal Examination
1	Nature and Scope of Sociology		Debjani Khanra		1st internal examination on 4th week of December, 2022 and 2nd internal
2	Sociological Concepts		Debjani Khanra & Arun Kumar Maity		

					examination on 2nd week of March,2022
Teaching Plan: Department of Sociology: SEMESTER-II(GENERAL)					
UNITS	**PAPER: DSC-1B/2B**	75		01.04.2022-09.07.2022	1st internal examination on 2nd week of May, 2022 and 2nd internal examination on 2nd week of July,2022
1.	India as a Plural Society		Arun Kumar Maity		
2.1	Caste		Debjani Khanra		
2.2	Tribe		Debjani Khanra		
2.3	Class		Debjani Khanra		
2.4	Village		Debjani Khanra		
2.5	Family and Kinship		Debjani Khanra		
3	Identities and Change		Arun Kumar Maity		
3.1	Dalits' Movement		Arun Kumar Maity		
3.2	Women's Movement		Arun Kumar Maity		
4.1	Communalism		Debjani Khanra		

4.2	Secularism		Debjani Khanra		
Teaching Plan: Department of Sociology: SEMESTER-III(GENERAL)					
UNITS	**PAPER: DSC-1C/2C: Sociological Theories**	75		01.10.2021-05.02.2022	**4th week of November,2021 &1st Week of January,2022**
1	Karl Marx		Arun Kumar Maity		
2.	Emile Durkheim		Arun Kumar Maity, Debjani Khanra		
3	Max Weber		Debjani Khanra		
UNITS	**PAPER: SEC-1: Framing Questionnaire and Conducting Interview**	50		01.10.2021-05.02.2022	
1	Questionnaire and Interview Method: application; preparations before using these methods		Arun Kumar Maity		
2	Types of Questionnaire, framing a questionnaire		Arun Kumar Maity		
3	Types of Interviews, preparing interview schedule		Sanghamitra Nath		

4	Data Recording, Processing and interpretation		Sanghamitra Nath		
5	Limitations of Questionnaire and Interview Methods		Sanghamitra Nath		
Teaching Plan: Department of Sociology: SEMESTER-IV(GENERAL)					
UNITS	**PAPER: DSC-1D/2D: Methods of Sociological Enquiry**	75		15.03.2022-25.06.2022	**4th week of April,2022 &3rd week of June,2022**
1.1	What is Sociological Research		Debjani Khanra		
1.2	Objectivity in the Social Sciences		Debjani Khanra		
1.3	Reflexivity		Sanghamitra Nath		
2.1	The Comparative Method		Arun Kumar Maity		
2.2	The Ethnographic Method		Arun Kumar Maity		
3.1	Theory and Research		Suvendu Kumar Maity		
3.2	Analyzing Data: Quantitative and Qualitative		Saswati Mondal		

UNITS	**PAPER: SEC-2: Counseling**	50		15.03.2022-25.06.2022	
1	Aims, Goal and Scope of Counseling		Arun Kumar Maity		
2	Characteristics/Frameworks		Arun Kumar Maity		
3	Types/Areas		Sanghamitra Nath		
4	Counsellor-Client Communication		Sanghamitra Nath		
5	Processes and Outcome		Sanghamitra Nath		
Teaching Plan: Department of Sociology: SEMESTER-V(GENERAL)					
UNITS	**PAPER: DSE-1A/2A: Social Stratification**	75		14.09.2021-18.01.2022	**1st week of November, 2021 &4th week of December,2021**
1	Social Stratification: Concepts and Approaches		Arun Kumar Maity		
2	Forms of Social Stratification		Arun Kumar Maity, Suvendu Kumar Maity, Sanghamitra Nath		
3	Social Mobility		Debjani Khanra		

UNITS	**PAPER: SEC-3: Gender Sensitization**	50		14.09.2021-18.01.2022	
1	Sex, Gender and Sexuality		Arun Kumar Maity, Saswati Mondal, Sanghamitra Nath		
2	Gender, Family, Community and the State		Saswati Mondal		
3	Gender Rights and the Law		Debjani Khanra		
4	Understanding Intersections of Gender, Caste, Class, Region, Religion and Disability		Suvendu Kumar Maity		
UNITS	**PAPER: GE-1: Invitation to Sociology I**	75		14.09.2021-18.01.2022	
1	Sociology as a Discipline		Arun Kumar Maity		
2	Some Basic Concepts		Arun Kumar Maity		
3	Culture, Society and Socialization		Debjani Khanra		
4	Social Change and Social Mobility		Arun Kumar Maity		
5	Social Stratification		Suvendu Kumar Maity		

Teaching Plan: Department of Sociology: SEMESTER-VI(GENERAL)					
UNITS	**PAPER: DSE-1B/2B**	75		21.02.2022-10.06.2022	**1st week of April,2022 & 1st week of June,2022**
1	Gendering Sociology		Debjani Khanra		
2	Gender as a Social Construct		Arun Kumar Maity		
3	Differences and Inequalities		Suvendu Kumar Maity, Arun Kumar Maity		
4	Politics of Gender		Sanghamitra Nath		
UNITS	**PAPER: SEC-4: Project Report Writing**	50		21.02.2022-10.06.2022	
1.	Report Writing		Arun Kumar Maity		
2.	Stages in Planning and Writing Process		Debjani Khanra		
3.	Structure and Components of Research		Suvendu Kumar Maity		
4.	Interpretation of Tables, Graphical Representation of Data, Use of Photographs, Case History		Sanghamitra Nath		

5.	Ethical Issues; Referencing the Works of Others		Arun Kumar Maity		
UNITS	**PAPER: GE-2: Sociology of India**	75		21.02.2022-10.06.2022	
1	India as a Plural Society		Arun Kumar Maity		
2.1-2.3	Caste, Tribe, Class		Suvendu Kumar Maity		
2.4-2.5	Village, Family and Kinship		Saswati Mondal		
3.	Identities and Change		Arun Kumar Maity		
4.	Challenges to State and Society		Debjani Khanra		

Geography

Teaching Plan: Department of Geography: PG. SEMESTER-I(M.SC)

UNITS	PAPER: 101: GEO 101.1: Geotectonics	FULL MARKS	NAME OF THE TEACHERS	MONTHS OF TEACHING	Internal Examination
GEO 101.1	**1.** Origin and evolution of solar system with special reference to the Earth/Moon.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Rabin Das**	**25.10.2021-20.01.2022**	**3rd week of December 2021**
	2. Relative and absolute dating: principles and techniques.		**Rabin Das**		
	3. Origin of earth's magnetic field, paleomagnetism, geomagnetic polarity reversal and paleomagnetic timescale, paleomagnetic polar wandering curves and reconstruction of plate tectonic motions.		**Rabin Das**		

	4. Mechanism of plate dynamics. Application of plate tectonic theory in explaining orogenesis, volcanism, earthquake.		**Rabin Das**
	5. Neo-tectonics and its worldwide evidences.		**Rabin Das**
UNITS	**PAPER: 101: GEO 101.2: Geomorphology**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 101.2	1. Concepts in geomorphology: historical and functional approaches, uniformitarianism and catastrophism, base level, grade and profile of equilibrium.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Susanta Ban**
	2. Weathering: factors, processes and landforms. Mass wasting: resultant landforms and safety factor.		**Susanta Ban**
	3. Slope Evolution: process-form relationship on slope elements, theories of Wood, Davis, Penck, King, Young and Savigear. Dynamic metastability in slope evolution.		**Bikash Bhunia**
	4. Fluvial processes and forms: threshold energy for entrainment and transport, channel form and patterns, flood plains, alluvial fan, terraces and delta.		**Bikash Bhunia**
	5. Applied geomorphology in planning, hydrology and economic geology. Geomorphology in hazard Management (flood, landslide and subsidence).		**Bikash Bhunia**
UNITS	**PAPER: 102: GEO 102.1: Oceanography**	**FULL MARKS**	**NAME OF THE TEACHERS**
	1. Marine Environment and Processes: Major subdivisions of the marine environment, winds and ocean	**Total (T) =25**	**Sumitra Rani Jana**

GEO 102.1	circulation, waves in the ocean, origin of the tides and tidal characteristics.	**Theory=20 Internal Assessment (IA) =05**	
	2. Physical and chemical structure of oceans: Water masses and their properties. Sediment in the sea.		**Sumitra Rani Jana**
	3. Coastal Habitats: Estuaries, lagoons, salt marshes, mangrove swamps, coral reefs-origin, circulation, sedimentation and ecology.		**Suman Pahari**
	4. The Dynamic Shoreline: Coastal water movement, circulation in surf zone, beaches, beach profiles, sediment budgets, coastal dunes, barrier islands, tidal inlets, cliffed coasts, deltas, effects of storms. Human impacts on the coastline.		**Suman Pahari**
	5. The Ocean's Resources: Law of the sea, law of the sea treaty, exclusive economic zones/coastal regulation zones, mineral resource- oil and natural gas, gas hydrates, sand and gravel, manganese nodules, cobalt-rich oceanic crusts, phosphate deposits, biotic resources.		**Suman Pahari & Sumitra Rani Jana**
UNITS	**PAPER: GEO 102: GEO 102.2: Hydrology**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 102.2	1. Hydrological systems, estimating water potential, water budgeting at watershed level. Hydrologic frequency analysis (Gumbel's equation and log probability law).	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Taniya Roy**
	2. Precipitation estimates: point rainfall analysis, area-depth curve, theissen network and isohyetal method for estimating rainfall volumes.		**Taniya Roy**

	3. Infiltration and evapotranspiration: soil-vegetation complex and infiltration estimates. Methods of estimating evapotranspiration.		**Taniya Roy**
	4. Runoff estimates using curve number, stream discharge estimates by area-velocity method. Ground water: storage structure, flow, recharge and discharge.		**Taniya Roy**
	5. Hydrographs and Rating curve: Time dimensions of hydrographs: concept of unit hydrograph and rating curves and their significance. flood & drought as hydrological hazards.		**Taniya Roy**
UNITS	**PAPER: 103: GEO 103.1: Climatology**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 103.1	1. Nature and Scope of Climatology and its relationship with Meteorology, climatological systems operating in different space and timescale: thunderstorm, tropical cyclone and associated hazards, jet Stream, planetary wind systems.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Mintu Jana**
	2. The General Circulation: GCM, Tropical circulation- mechanism of Indian monsoon, Walker circulation and ENSO phenomena, Temperate Circulation.		**Mintu Jana**
	3. The Climatic Zones of the world with special reference to tropical climates: wet, wet and dry, savanna, desert and highland.		**Mintu Jana**
	4. Sea surface temperature and it's climatic significance; Maritime influence on coastal weather: seasonal changes and storm events.		**Mintu Jana**

	5. Climatic changes through geological periods- evidences and possible causes; Global Warming- Natural and anthropogenic causes and probable consequences.		**Mintu Jana**
UNITS	**PAPER: 103: GEO 103.2: Soil and Agriculture**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 103.2	1. Variation in physico-chemical properties of soil with climate and dominance of local factors: organic matter content, pH clay content, clay mineralogy, soil colour, calcium carbonate and soluble salt content.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Susanta Ban**
	2. Soil Geomorphology: soil landscape analysis in relation to geomorphic surfaces and surface morphometry, catena concept- catena and soil hydrology, slope description and catena, soil catena under different environment, soil morphology and chrono-sequence.		**Susanta Ban**
	3. Approaches in agricultural geography: agricultural systems (ecological or nearecological systems). Approaches to study agricultural geography, Jonnason's theory on agricultural landuse.		**Susanta Ban**
	4. Determinants of agricultural pattern: physical and institutional, precision farming, use of modern technology.		**Dr. Debashis Manna**
	5. Issues and policies in modern Agriculture: Impact of green revolution, GM Crops and agricultural hazards, food security, agricultural policies and their implication.		**Dr. Debashis Manna**
UNITS	**PAPER: 104: GEO 104.1: Basics of Environment and Ecology**	**FULL MARKS**	**NAME OF THE TEACHERS**

GEO 104.1	1. Concept of Environment, major elements of environment, functioning of environmental systems, role of biotic and abiotic elements.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Bikash Bhunia**
	2. Ecosystem: structure, function and processes, patterns of energy flow.		**Bikash Bhunia**
	3. Biogeochemical cycles (Nitrogen, Carbon, Phosphorus), ecosystem metabolism, ecosystem process (photosynthesis and respiration), trophic levels (food web and chain) decomposition, ecosystem stability.		**Dr. Baikuntha Behari Josh**
	4. Terrestrial ecosystems: Forest, Grassland, Desert and Agriculture.		**Dr. Baikuntha Behari Josh**
	5. Biodiversity: Genetic, species, community and ecosystem diversity; biodiversity uses, threats to biodiversity, biodiversity conservation.		**Dr. Baikuntha Behari Josh**
UNITS	**PAPER: 104: GEO 104.2: Landscape ecology and Planning**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 104.2	**1.** Landscape: Definition, concept, nature and role, ecological description of landscape.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Mintu Jana**
	2. Structure of Landscape: Patches (shape, size, nature and boundary), corridors (type, network, matrix) and mosaics, habitat arrangement measuring metrices (Shanon Diversity Index and Simpson Diversity Index).		**Mintu Jana**
	3. Landscape Dynamics: Energy flow, species movement, nutrient movement.		**Mintu Jana**
	4. Anthropogenic Modification: Agricultural intensification, deforestation and development.		**Mintu Jana**

	5. Landscape management and planning: Role of keystone species, conservation of fragmented habitats, sustainable landscape, and role of Traditional Ecological Knowledge (TEK) in conserving landscape. Role of GIS in landscape planning.		**Mintu Jana**
UNITS	**PAPER: 195: GEO 195.1: Hydrological Techniques**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 195.1	1. Point rainfall analysis, area-depth curves, Thiessen network and Isohyetal methods to determine rainfall volumes.	**Total (T) =25**	**Taniya Roy**
	2. Estimating infiltration using infiltrometre and other field techniques. Drawing infiltration curve.		**Taniya Roy**
	3. Evaporation estimation: Use of evaporation pan and empirical equations using climatic data.		**Taniya Roy**
	4. Runoff and discharge estimation: Curve Number methods for estimating runoff: area-velocity method for discharge estimate.		**Taniya Roy**
	5. Construction of hydrograph, unit-hydrograph and rating curves.		**Taniya Roy**
UNITS	**PAPER: 195: GEO 195.2 Sedimentological Analysis**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 195.2	1. Phi-scale of grain size distribution, texture analysis of sediment samples using standard techniques, statistical representation.	**Total (T) =25**	**Taniya Roy**
	2. Form and shape analysis of pebble grade sediments.		**Taniya Roy**

	3. Megascopic and microscopic examination of sediments.		**Taniya Roy**
	4. Identification of sedimentary and bioturbation structures.		**Taniya Roy**
	5. Sedimentary environmental facies analysis.		**Taniya Roy**
UNITS	**PAPER: 196: GEO 196.1: Environmental Mapping**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 196.1	1. Estimation and mapping of soil properties: texture, structure, moisture, colour, pH, organic matter, NPK, soil profile mapping.	**Total (T) =25**	**Bikash Bhunia**
	2. Estimation of Water Properties: BOD, COD, Dissolved Oxygen, pH, suspended solid, turbidity and electric conductivity.		**Bikash Bhunia**
	3. Ecological Micro- zonation Mapping.		**Bikash Bhunia**
	4. Vegetation density mapping		**Bikash Bhunia**
	5. Association between soil parameters, vegetation types and density.		**Bikash Bhunia**
UNITS	**PAPER: 196: GEO 196.2: Physical and Social Thematic Mapping**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 196.2	**1.** Morphometry and Drainage Network Analysis of watershed.	**Total (T) =25**	**Rabin Das**
	2. Mapping of farming practices: Crop-combination, diversification and cropping intensity.		**Rabin Das**
	3. Mapping of social vulnerability and social disparities, ethnic mapping.		**Rabin Das**
	4. Estimation and Mapping of Social Well-being, HDI, GDI, GEM.		**Rabin Das**

	5. Estimation of Human Poverty Index – (HPI-I and II) for developed and developing countries.		**Rabin Das**		
Teaching Plan: Department of Geography: PG. SEMESTER-II (M.SC)					
UNITS	**PAPER: 201 GEO 201.1: Environmental Ethics and Regulation**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**Internal Examination**
GEO 201.1	1. Environmental ethics and education; Concept, development of environmental philosophy, Ecocentrism and Anthropocentrism, the land ethic (Aldo Leopold), Gaia concept, Ecofeminism. Formal and non-formal environmental education, Tbilisi conference, environmental awareness.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Susanta Ban**	**07.02.2022-11.07.2022**	**2nd Week of June, 2022**
	2. Approaches to conservation of environment: Landscape ecology and ethno-ecology, environmental stewardship.		**Susanta Ban**		
	3. Environmental Impact Assessment (EIA), Environmental Management Planning (EMP), Environmental Performance Assessment (EPA).		**Susanta Ban**		
	4. Global Environmental Issues: Stockholm Conference, the Earth Summits, Inter-Governmental Panel for Climate Change (IPCC).		**Susanta Ban**		
	5. Environmental Laws in India: Wild life Act, Forest Acts, Environmental Protection Act, National Environmental Tribunal Act.		**Susanta Ban**		
UNITS	**PAPER: 201: GEO 201.2: Environmental Engineering**	**FULL MARKS**	**NAME OF THE TEACHERS**		

GEO 201.2	1. Definition and domain of Environmental Engineering, Waste water treatment: Primary, Secondary and Tertiary treatment; Disposal.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Bikash Bhunia**
	2. Sludge treatment; Solid (Municipal) waste management, Hazardous waste management.		**Bikash Bhunia**
	3. Air pollution; Indoor pollution, Air sampling and measurement, Air pollution control technologies.		**Bikash Bhunia**
	4. Noise Pollution; Measurement of noise		**Bikash Bhunia**
	5. Arsenic and Fluoride Pollution; Spatial distribution		**Bikash Bhunia**
UNITS	**PAPER: 202 GEO 202.1: Population Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 202.1	1. Scope, development and recent trends of population geography and its interdisciplinary nature.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Sumitra Rani Jana**
	2. Population composition and structure: Types, spatial and temporal variation and determinants of age, sex, literacy and rural-urban ratio.		**Taniya Roy**
	3. Demographic Transition: Facts, theories, different waves. Its social, political and economic impacts.		**Dr. Debashis Manna**
	4. Population projection: Concept, types and methods.		**Sumitra Rani Jana**
	5. Population- resource relationship: Critical analysis of over, under and optimum population, population resource regions, carrying capacity and change in carrying capacity over time. Population policy issues, population equilibrium.		**Dr. Debashis Manna**

UNITS	GEO 202.2: GEO 202.2: Population and Development	FULL MARKS	NAME OF THE TEACHERS
GEO 202.2	1. The fate of Millennium development goals, Human development and gender issues: HDI, GDI, GEM-concept, measures and criticism, disparities	Total (T) =25 Theory=20 Internal Assessment (IA) =05	Dr. Pijush Kanti Dandapath
	2. Population growth: Link to economic development, resource scarcity, food security and sustainable development. Concept of logistic and exponential growth		Mintu Jana
	3. Population and development integration with special reference to India		Mintu Jana
	4. Theories and approaches of population growth and regulation: Malthus, Marx and Neo- Malthusiasm		Dr. Debashis Manna
	5. Migration: Concept of social mobility, concept, types, patterns, theories (Ravenstein, Lee, Louis and Zelinsky), consequences.		Dr. Debashis Manna
UNITS	**PAPER: 203: GEO 203.1: Regional Geomorphology of India and WB**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 203.1	1. Geomorphology of Darjeeling Himalaya and Terai Region with special reference to landslides and alluvial fans.	Total (T) =25 Theory=20 Internal Assessment (IA) =05	Rabin Das
	2. Tectonics, drainage and geomorphology of Western Ghats with special reference to Deccan Trap.		Rabin Das
	3. Geomorphology and soil-landform assemblages of Chhotanagpur Plateau and its adjacent areas of West Bengal, Geomorphology of Rajasthan desert with special reference to Marusthali.		Rabin Das
	4. Form, process and evolution of Ganga, Subarnarekha and Godavari delta.		Taniya Roy

	5. Tectonics and Geomorphology of the Islands of Bay of Andaman and Nicobar, Rameswaram and Laksha-Minikoi and Amindivi.		**Taniya Roy**
UNITS	**GEO 203.2: Land,Water,Forest: Conflict and Coservation**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 203.2	**1.** Land class systems, land use capability classes.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Mintu Jana**
	2. Land degradation, land conservation and land improvement.		**Mintu Jana**
	3. Water assessment: water quality, water availability and scarcity of water, saline ground water in coastal areas, functions of wetlands.		**Suman Pahari**
	4. Characterization diversity of rainforests and mangrove forests		**Dr. Baikuntha Behari Josh**
	5. Characterization diversity of rainforests and mangrove forests		**Dr. Baikuntha Behari Josh**
UNITS	**PAPER: 204: GEO 204.1: Resource and Its Management**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 204.1	1. Geography as a science of synthesis; social relevance of geography	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Susmita Maiti**
	2. Resource assessments, management and mapping		**Sikha Kar**
	3. Human resource development in backward region.		**Sumitra Rani Jana**
	4. Indicators of livelihood security.		**Suman Pahari**
	5. Microlevel resource planning in watershed scale.		**Pranati Manna**
UNITS	**GEO 204.2: GEO 204.2: Earth System Science**	**FULL MARKS**	**NAME OF THE TEACHERS**
	1. Earth surface processes and Geo-tectonics.		**Susanta Ban**

GEO 204.2	2. Composition of atmosphere and atmospheric processes.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Dr. Baikuntha Behari Josh**
	3. Bottom relief of major oceans; temperature and salinity distribution.		**Bikash Bhunia**
	4. Principles of mapping and applications.		**Bikash Bhunia**
	5. Regional geomorphology of West Bengal.		**Dr. Debashis Manna**
UNITS	**PAPER: 295: GEO 295.1: Basic Statistics in Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 295.1	**1.** Measurement in Geography: Nominal, ordinal, interval and ratio measurement.	**Total (T) =25**	**Rabin Das**
	2. Concept of covariance, correlation and regression: Bi-variate analysis - linear, exponential, Product moment correlation, Spearman's Rank correlation, correlation matrix, partial correlation, residuals - mapping of residuals.		**Taniya Roy**
	3. Probability distribution: addition and Law of multiplication, concept of probability distributions (binomial distributions, normal probability distribution), properties of normal curve.		**Bikash Bhunia**
	4. Hypothesis testing: Formulation, Rejection rule, one and two tailed tests, significance level, degrees of freedom type I and type II errors, Standard Error. Different types of significance test for various purposes. Chi- square test, student's t- test.		**Mintu Jana**
	5. Sampling techniques for geographical analysis.		**Rabin Das**

UNITS	PAPER: 295: GEO 295.2: Advance Quantitative Method	FULL MARKS	NAME OF THE TEACHERS
GEO 295.2	**1.** Analysis of Variance: Objectives; One-way and Two-way ANOVA.	Total (T) =25	**Rabin Das**
	2. Fitting Second Degree Polynomial curves to bivariate geographical data and testing by ANOVA.		**Rabin Das**
	3. Multiple Regression: Linear multiple regression equation, Multiple and partial correlation coefficient.		**Rabin Das**
	4. Elementary multiple regression modeling techniques: Stepwise variable entry method, Path Analysis.		**Goutam Kumar Das**
	5. Model building techniques		**Goutam Kumar Das**
UNITS	**PAPER: 296: GEO 296.1: Principles of Remote Sensing and Aerial Photograph**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 296.1	1. Physics of Remote Sensing: Electro Magnetic Radiation (EMR), Radiation laws (wavelengthfrequency- energy relationship of EMR numerical problems).	Total (T) =25	**Goutam Kumar Das**
	2. Satellite System: Keplers's Laws, Major-Semi-major axis, eccentricity, velocity (Numerical problems).		**Goutam Kumar Das**
	3. Satellite Sensors: Concept of IFOV, resolution and determination of pixel size, referencing scheme of satellite system (path/row calculation).		**Goutam Kumar Das**
	4. Basics of Aerial Photograph: Basics geometry of aerial photograph, determination of scale and height, Distortions, Image parallax, Relief displacement.		**Goutam Kumar Das**
	5. Stereoscopy and Aerial Photo Interpretation: Stereoscopy,		**Goutam Kumar Das**

	Pseudoscopy, Mirror Stereoscope, mosaic, edge information, mapping of Physical and Cultural features with the Air photo interpretation keys: shape, size, pattern, tone, texture, shadow,site and associations.				
UNITS	**GEO 296.2: GEO 296.2: Computer Basics and Application**	**FULL MARKS**	**NAME OF THE TEACHERS**		
GEO 296.2	1. Computer components: Hardware and software: CPU, Input and Output devices; Common computer languages, System Software, Application Software and Operating Systems.	**Total (T) =25**	**Goutam Kumar Das**		
	2. Representation of data; Numbering Systems; Binary Arithmetic; Basic Logic Gates; Boolean Logic and Reduction Techniques.		**Rabin Das**		
	3. Computation, Storing and Formatting Spreadsheets: Computation of Rank, Mean, Median, Mode, Standard Deviation, Moving Averages, Sample Variation; Derivation of Correlation, Covariance and regression; Selection of technique and interpretation using MS-Excel and SPSS Environment.		**Rabin Das**		
	4. Regression, correlation, curve fitting, multivariate analysis.		**Mintu Jana**		
	5. Internet Surfing- generations of data and extraction of information for power-point presentation, Manipulation and editing of graphic files.		**Mintu Jana**		

Teaching Plan: Department of Geography: PG. SEMESTER-III (M.SC)					
UNITS	**PAPER: 301: GEO 301.1: Regional Approach in Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**Internal Examination**

GEO 301.1	1. Regional concept in geography: concept, typology, hierarchy, methods of regional delineation and regional system.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Mintu Jana**	**15.09.2021-20.01.2022**	**3rd Week of December, 2021**
	2. Contribution of Ratzel, Hartshorne, Hettner and Vidal de la Blache to the development of regional concept. The character of regional geography, Space: the fundamental stuff of geography.		**Susanta Ban**		
	3. Formal regions: Natural, Agro-climatic, socio-cultural regions with special reference to India.		**Susanta Ban**		
	4. Functional region: City region, industrial region with special reference to India.		**Mintu Jana**		
	5. Planning regions in India: Conceptual framework, Purpose, types and methods of delineating planning region.		**Mintu Jana**		
UNITS	**GEO 301.2: GEO 301.2: Rural Development**	**FULL MARKS**	**NAME OF THE TEACHERS**		
GEO 301.2	1. Concept and approach to rural development, Indicators of Development & Rural Development and their measurements.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Dr. Baikuntha Behari Josh**		
	2. Rural Economics: Agriculture Development and Land Reforms in India.		**Dr. Baikuntha Behari Josh**		
	3. Rural Micro-finance, self-help group and women empowerment.		**Dr. Baikuntha Behari Josh**		
	4. Rural Industries and entrepreneurship: Definition and meaning of rural industries. Relevance of rural industries in solving socio-economic problems with special reference to Food Processing and Tourism.		**Sumitra Rani Jana**		
	5. Rural Development Programmes: poverty alleviation schemes- National Rural Employment Guarantee Act, Jawahar Rozgar Yojana, Sampoorna Grameen Rozgar Yojana, Provisions of Urban Amenities in Rural Area (PURA); Infrastructural development programmes-		**Sumitra Rani Jana**		

	Indira Avas Yojana; Transport Development: Pradhan Mantri Gram Sadak Yojana.		
UNITS	**PAPER: 302: GEO 302.1: Settlement Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 302.1	**1.** Concept of shelter; Dwelling places as cultural expression.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Dr. Pijush Kanti Dandapath**
	2. Census categories of settlements; Types, building materials and architectural design of houses- dependence on climate.		**Dr. Debashis Manna**
	3. Site, situation and spacing of settlements- dependence on terrain characteristics and water availability.		**Dr. Debashis Manna**
	4. Concepts and components of rural and urban morphology.		**Suman Pahari**
	5. Socio-economic segregation of rural settlements. Cities as melting pot of culture.		**Suman Pahari**
UNITS	**PAPER: 302: GEO 302.2: Transport Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 302.2	1. Concept of distance, Transportation and space, space-time relation through transportation, Transport network analysis, Centrality, Accessibility, Connectivity and Rationality. Transport Models (Gravity Models, Allocation Model, Linear Programming Model, Traffic Congestion Model).	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Bikash Bhunia**
	2. Transport cost, Principles of transport cost fixation, comparative cost advantage.		**Bikash Bhunia**
	3. Planning for public transport, desired characteristics, modes and optimal pricing, services, ownership and regulation.		**Taniya Roy**
	4. Transport Policy: Problem oriented planning, and objective-led approach; Infrastructure, Management, Information, Pricing and landuse components;		**Taniya Roy**

	National transport policy (national highways, railways and waterways).		
	5. Communication Technology- roles in reducing transport demand.		**Taniya Roy**
UNITS	**PAPER: 303B : GEO 303B.1:Coastal Processes**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 303B.1	1. Definition of coastal zone, relevance of coastal study, classification of coast - Beach stage model.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Taniya Roy**
	2. Wave hydrodynamics; wave modification near coast with special reference to attenuation, breaker types, energy dissipation during breaking wave.		**Suman Pahari**
	3. Tide; diurnal and semi-diurnal, rotating and progressive tide, concept of live storage, tidal environment with special reference to estuary.		**Suman Pahari**
	4. Coastal current; intensity of long shore component and its implications, cell circulation.		**Taniya Roy**
	5. Macro land forms with special reference to beaches and dunes; micro and biogenic forms.		**Taniya Roy**
UNITS	**PAPER: 303B : GEO 303B.2: Coastal Environments: Focus on Indian Regions**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 303B.2	1. Tide dominated coastal environment: (Estuaries of India, estuary morphology, estuary hydrolodynamics); wave dominated coastal environments: (The shore face, beaches, barriers and human activity)- Indian experiences.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Taniya Roy**
	2. Morphodynamic behavior of coastal systems (Modification of coastal features in temporal and spatial scales with feedback mechanisms).		**Taniya Roy**
	3. Carbonate platforms and beach rocks (Andaman and Nicobar Islands).		**Suman Pahari**
	4. Coastal erosion problems (West Bengal, Orissa coasts), land reclamations and associated problems (Sundarban coastal tract).		**Suman Pahari**

	5. Techniques for assessing coastal hazards areas (Hazard zonation along the coasts).		**Suman Pahari**
UNITS	**PAPER: 303C: GEO 303C.1: Foundation of Urban Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 303C.1	1. Development of urban geography: Definition of Towns, cities and metropolitan area. Trends of Urbanisation in the World and India.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Mintu Jana**
	2. Concept and definitions of urban system: Urban, urbanization, urbanism and urban ecology, National urban system, National urbanisation policy.		**Mintu Jana**
	3. Today's cities and suburbs: suburban sprawl, smart growth, exurbs, the new cities and gated communities, gentrification, green city, Urban Livability Index.		**Mintu Jana**
	4. Origin and growth of urban living: bases and processes, Historical perspectives on world urbanization		**Mintu Jana**
	5. Urban planning, policies and regeneration: Architectural vision, European, Anglo American tradition and planning the social city, the new towns movement, toward planning for sustainable urban development.		**Mintu Jana**
UNITS	**PAPER: 303C: GEO 303C.2: Contemporary Urban Issues**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 303C.2	**1.** Changing spatial and temporal scenario of metropolitan development in India.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Rabin Das**
	2. The economy of urban areas: structure of urban economy-basic and non-basic activities.		**Rabin Das**
	3. Social environment of the city: Social stratification, social class diversity, suburban social class, poverty, strangers, crowding, crime and homelessness.		**Rabin Das**
	4. Urban environment problems: Heat island, drainage, sewerage, sanitation, solid waste, transport, pollution and health, the city's ecological footprint.		**Sumitra Rani Jana**

	5. Urban renewal and Urban redevelopment in India: Role of JNNURM, Smart city, AMRUT and Housing for All by 2022.		**Sumitra Rani Jana**
UNITS	**PAPER: 303D : GEO 303D.1: Physical Basis of Remote Sensing**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 303D.1	1. Physics of Remote Sensing: Source of Energy, Electro Magnetic Radiation (EMR), Radiation laws (wavelength-frequency-energy relationship of EMR), influence of atmosphere on Remote Sensing operation.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Bikash Bhunia**
	2. Fundamental of Thermal Remote Sensing: Radiant temperature, Kinetic temperature, Black body and real body radiation.		**Susanta Ban**
	3. Satellite orbits and Trajectories: Principles of satellite movements, orbits and trajectory, orbiting satellites-basic principles, orbital parameters, types of satellites.		**Goutam Kumar Das**
	4. Satellite Platforms and Sensors: Types of platform for civilian applications, advantages, disadvantages and characteristics of various satellite platforms. Physical principles and characteristics of various satellites sensor, sensor selection parameters, resolution.		**Bikash Bhunia**
	5. Remote Sensing Data: Data acquisition and reception, Data products, storage and Dissemination.		**Susanta Ban**
UNITS	**PAPER: 303D : GEO 303D.2: Photogrammetry, Aerial Photo and Satellite System**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 303D.2	1. Basics of Aerial Photograph: Types of aerial photographs, Geometry of single Aerial Photograph, Photographic overlap, flight planning, Scale, Lens Distortions, Relief distortions and Tilt distortions. Image displacement and parallax.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Goutam Kumar Das**
	2. Aerial Photographic Film: Film density and Characteristics Curve, Colour Infrared Films, Film resolution, Filters.		**Bikash Bhunia**

	3. Photogrammetry: Development of Photogrammetry, Classification, processes and Limitations of photogrammetry.		**Susanta Ban**
	4. Stereo photogrammetry: Conditions for Stereo vision, stereoscopic measurements, Sterescopic 3D viewing, Image parallax, Rectification, Orthorectification.		**Goutam Kumar Das**
	5. Satellite Systems: Whiskbroom system, Pushbroom system, Microwave system, coarse resolution, fine resolution and very fine resolution system.		**Goutam Kumar Das**
UNITS	**PAPER: 304: C-GEO 304.1: Emerging Issues and Policies on Environment**	**FULL MARKS**	**NAME OF THE TEACHERS**
C-GEO 304.1	1. Global climate change, water scarcity and politics of water.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Sumitra Rani Jana**
	2. Environmental degradation and pollution.		**Pranati Manna**
	3. Environment and development: Debate and Issues.		**Susmita Maiti**
	4. Social and Cultural Hazards.		**Sikha Kar**
	5. Globalization and Environment.		**Dr. Debashis Manna**
C-GEO 304.2	**PAPER: 304: C-GEO 304.2: Environmental Hazards and Disaster Management**	**FULL MARKS**	**NAME OF THE TEACHERS**
	1. Concepts and techniques for analysis of risk, hazard, disaster, vulnerabilities and resilience.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Susanta Ban**
	2. Cyclone and storm surges, thunderstorms and lighting, earthquake, tsunami wave and landslide hazards.		**Bikash Bhunia**
	3. Natural hazard and disaster management in India, Agricultural drought hazard and the national experience.		**Mintu Jana**
	4. International Disaster Response Laws Rules (IDRL).		**Taniya Roy**
	5. National policy and appraisal of hazard		**Goutam Kumar Das**
UNITS	**PAPER: 395: Geo 395. 1: Applications of Remote Sensing &Geographic**	**FULL MARKS**	**NAME OF THE TEACHERS**

	Information System		
GEO 395. 1	1. Geo-referencing of maps and satellite images.	**Total (T) =25**	**Goutam Kumar Das**
	2. Preparation of different types of FCC. Image enhancement, Band rationing, Density slicing..		**Goutam Kumar Das**
	3. Supervised and Unsupervised Classification Techniques, generation of signature statistics and 4. signature reparability reports. Generation of NDVI.		**Goutam Kumar Das**
	5. GIS: RS		**Goutam Kumar Das**
	6. Map layers: Overlay analysis		**Goutam Kumar Das**
UNITS	**PAPER: 395: Geo 395.2: Research Methodology**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 395.2	**1.** Research ethics and paradigm shift of research methodology in Geography.	**Total (T) =25**	**Rabin Das**
	2. Need for research, basic research types.		**Rabin Das**
	3. Identification of research problems, development of theoretical background- literature review, research gap and research question and specification of the objectives of study; hypothesis building, Framework of research writing.		**Rabin Das**
	4. Methods of data collection- primary and secondary; Preparation of questionnaire and survey schedule and their differences, research ethics.		**Rabin Das**
	5. Methods of writing notes, style of referencing, bibliography and appendices, abstract and synopsis writing.		**Rabin Das**

UNITS	PAPER: 396B : GEO 396B.1: Field Work (Coastal Management)	FULL MARKS	NAME OF THE TEACHERS
GEO 396B.1	1. Studies on the shore profile forms and channel cross sections using echo-sounder and current meter. Littoral environment observation with special reference hydrological parameters: Waves, tides, winds and currents.	Total (T) =25	Taniya Roy
	2. Coastal sediment budget analysis.		Taniya Roy
	3. Analysis of population pressure on the coastal zones.		Suman Pahari
	4. Analysis of coastal ecosystem diversity using remote sensing.		Suman Pahari
	5. Hazard mapping and community vulnerability mapping Mapping CRZ violation areas using GPS handset, Nearshore geomorphological mapping with conventional surveying equipments or with Total Station. Mapping of the forms of coastline changes		Suman Pahari
UNITS	**PAPER: 396B : GEO 396B.2: Field Report (Coastal Management)**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 396B.2	1. Generation of report (within about 100 A4 size pages including 30-40 maps/diagrams/field photographs) on the basis of field works carried out under Unit-47.		Taniya Roy & Suman Pahari
UNITS	**PAPER: 396C : GEO 396C.1: Field Work (Urban Geography)**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 396C.1	1. Wardwise landuse/land cover survey using high resolution Remote Sensing data. Wardwise distribution of population and its change over time.	Total (T) =25	Rabin Das
	2. Survey of spatial distribution of urban facilities (Bank, School, College, Offices, Hospitals etc.), urban transport: Nodes, Network and flow: Collection of database (Primary and Secondary), Water supply system: waste collection and disposal system.		Rabin Das

	3. Study of Urban sprawling, renewal, economics, environmental problems etc.: Collection of database (Primary and Secondary).		**Rabin Das**
	4. Income/Social grouping, Ethnic groups Education; Occupation; Age-sex Composition etc.		**Rabin Das**
	5. Enquiries on future prospects and planning strategies		**Rabin Das**
UNITS	**PAPER: 396C: GEO 396C.2: Field Report (Urban Geography)**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 396C.2	1. Generation of report (within about 100 A4 size pages including 30-40 maps/diagrams/field photographs) on the basis of field works carried out under Unit-47	**Total (T) =25**	**Rabin Das & Mintu Jana**
UNITS	**PAPER: 396D: GEO 396D.1: Field Work (Remote Sensing)**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 396D.1	1. Remote Sensing in Earth Sciences: Geomorphic Mapping; Visual interpretation of landforms; Basic Concepts, Recognition elements, interpretation of drainage pattern, erosion and deposition landforms.	**Total (T) =25**	**Susanta Ban**
	2. Remote Sensing in Agricultural Applications: Soil Mapping, Crop Mapping/ Crop stress determination. Forest Management-Forest density mapping, Forest type mapping.		**Goutam Kumar Das**
	3. Remote Sensing in Land and Water Management: Landuse/ Land cover Planning, Land resource management; Water Resources: Surface water-ground water, water deciphering, quality inventory and monitoring, quality assessment; Watershed Management: Morphometric Analysis, Hydro-morphogeologic interpretation techniques for targeting ground water potential zones in alluvial, sedimentary and hard rock areas; flood assessment and watershed management.		**Bikash Bhunia**
	4. Remote Sensing in Urban and Rural Development: Mapping of human habitation and type.		**Goutam Kumar Das**

	5. Remote Sensing in Coastal Management: Coastal Landuse, Spatial and temporal changes, SST, Phytoplankton assessment, Sediment assessment.		**Bikash Bhunia**		
UNITS	**PAPER: 396D : GEO 396D.2: Field Report(Remote Sensing)**	**FULL MARKS**	**NAME OF THE TEACHERS**		
GEO 396D.2	1. Generation of report (within about 100 A4 size pages including 30-40 maps/diagrams/field photographs) on the basis of field works carried out under Unit-47.	**Total (T) =25**	**Bikash Bhunia, Goutam Kumar Das & Susanta Ban**		

Teaching Plan: Department of Geography: PG. Semester-IV (M.Sc.)

UNITS	**PAPER: 401: GEO 401.1: Schools in Geographical Thought**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**Internal Examination**
GEO 401.1	1. The Field of Geography, Place of Geography in classification of knowledge and other disciplines, Geography as a social science, Physical and Human Geography. Linkages among the sub-disciplines of physical and human geography.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Bikash Bhunia**	**07.02.2022-11.07.2022**	**2nd Week of June, 2021**
	2. Development of Geography in 19th Century: Contribution of German, French, British and American schools of thought.		**Bikash Bhunia**		
	3. Conceptual and methodological development in 20th Century: changing paradigms, evolution of man-nature relation.		**Bikash Bhunia**		
	4. Typology of models and uses: structure component and characters.		**Susanta Ban**		
	5. Dualism and dichotomies in Geography: Determinism and Possibilism, Systematic and Regional, Aerial differentiation and Spatial organization.		**Susanta Ban**		
UNITS	**PAPER: 401: GEO 401.2: Contemporary Discourses in Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**		
	1. Pragmatism, Positivism and Quantitative revolution in geography	**Total (T) =25**	**Taniya Roy**		

GEO 401.2	2. Development of critical social theories: Humanistic geography, Behaviouralism, Radicalism, Welfare geography, Feminist geography	**Theory=20 Internal Assessment (IA) =05**	**Sumitra Rani Jana**
	3. Structuralism and Post-structuralism, Modernism and Postmodernism.		**Taniya Roy**
	4. Concept of space: absolute, relative, material and social space, concept of 3rd space in geography, temporal geography, time-space prism		**Sumitra Rani Jana**
	5. Recent trends in geography.		**Taniya Roy**
UNITS	**PAPER: 402: GEO 402.1: Political Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 402.1	1. Politics and Geography: Politics of Space, Scope of electoral geography, Global strategic views- Heartland and Rimland theories and their significance in present international politics.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Mintu Jana**
	2. Geopolitical significance of core-periphery theory; Nationalism and Regionalism.		**Mintu Jana**
	3. Geography and federalism; Reorganization of Indian states since independence, Partition of India and its consequences		**Mintu Jana**
	4. International and interstate water disputes in India.		**Mintu Jana**
	5. Political and economic blocs; Geopolitics in the context of globalization, colonialism and post colonialism.		**Mintu Jana**
UNITS	**PAPER: 402: GEO 402.2: Geography of Globalization**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 402.2	1. Transformed Geography: Concept of Liberalization, Privatization and Globalization (LPG), beginning of the globalization, globalization to glocalilisation.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Dr. Debashis Manna**
	2. Globalization and Economic Geography: Impact of globalization on agriculture, industry and trade.		**Dr. Baikunta Behari Josh**
	3. World economic order: Economic booms and crisis.		**Dr. Debashis Manna**

	4. Globalization and cultural changes: Globalization and cultural transformations.		**Dr. Baikunta Behari Josh**
	5. Future of globalization and global challenges: Issues and recent trends.		**Dr. Baikunta Behari Josh**
UNITS	**PAPER: 403: GEO 403.1: Social and Cultural Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 403.1	1. Nature, scope and content of social Geography; Ethnicity, tribe, dialect, language, caste and religion.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Pijush Kanti Dandapath**
	2. Social structure and processes, social exclusion, geographies of social well-being with special reference to India.		**Susanta Ban**
	3. Cultural Geography: Definition, scope and nature. Race, religion, language as cultural attributes with special reference to India, North-South, social -cultural divide.		**Pijush Kanti Dandapath**
	4. World cultural Realms, Morphology of cultural landscape (Carl O Sauer) and cultural diversity. Cities as melting pot of culture. Traditional folk culture-crisis and transformation		**Susanta Ban**
	5. Cultural processes: Diffusion, acculturation, assimilation and cultural pluralism		**Susanta Ban**
UNITS	**PAPER: 403: GEO 403.2: Regional Planning**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 403.2	1. Concept of planning: Levels of planning: Types of planning	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Rabin Das**
	2. Basic principles and methodology of regional planning		**Rabin Das**
	3. Regional planning strategies: Centralized, decentralized and multilevel planning for rural and urban areas, people's participation in planning-Panchayati Raj Institution.		**Suman Pahari**

	4. Regional disparities: Concept, Types; Demographic, social and economic disparities in India.		**Suman Pahari**
	5. Planning of problem regions: Tribal, coastal, drought prone area, flood prone area.		**Rabin Das**
UNITS	**PAPER: 404B : GEO 404B.1: Coastal Ecology and Hazards**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 404B.1	**1.** Study and management of- Sea weeds; seaweed ecosystem, artificial seaweeds.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Taniya Roy**
	2. Dune vegetation: Dune initiating and dune building types, adaptation and reproduction, plantanimal interaction in sand dune. Mangroves: physical environment and ecology.		**Taniya Roy**
	3. Coastal hazards and their management: Sea level change- long and short term changes, regional and global effects on shore; Coastal erosion- causes and effects; Storm hazard- role in sediment transfer, effects on open and estuarine coast, management of storm hazard.		**Taniya Roy**
	4. Techniques of monitoring coastal processes and land forms.		**Suman Pahari**
	5. Coastal studies in India: Monitoring and research.		**Suman Pahari**
UNITS	**PAPER: 404B: GEO 404B.2: Coastal Issues and Management**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 404B.2	1. Coral bleaching: Impact of Global warming, coastal eutrophication and habitat conservation (Coastal lagoons, other coastal wetlands)	**Total (T) =25 Theory=20**	**Taniya Roy**
	2. Coastal tourism and environment conflicts (Beaches and barrier coasts, mangrove dominated coasts, coral coasts, environmental regulations).		**Taniya Roy**

	3. Application of remote sensing and GIS techniques in coastal management (Geomorphological mapping, coastal cell circulation systems, environmental zoning approach, identification and diversity of coastal habitats)	**Internal Assessment (IA) =05**	**Taniya Roy**
	4. Managing coastal change: Assessment of coastal vulnerability, ecosystem valuation of coast, integrated coastal zone management, coastal regulations); Coastal engineering: Developments in hard structure designs, developments in soft structure designs, new dredging techniques and procedures.		**Suman Pahari**
	5. Coastal urbanization and population pressures, Coastal resource management.		**Suman Pahari**
UNITS	**PAPER: 404C: GEO 404C.1: Theoretical Bases of Regional Planning**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 404C.1	1. History of regional planning in India, theories of regional planning. Concept of balanced and unbalanced growth	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Rabin Das**
	2. Regional development perspectives: Colonial period (Dependency theories- Friedman, Andre Gander Frank, David Slater)		**Rabin Das**
	3. Growth Pole theories and the developing world by Perroux, Myrdal, Hirschman, and Boudiville.		**Rabin Das**
	4. Agropolitan Development, Basic need approach (E.A.J Johnson, Dennis Rondinelli-USAID)		**Rabin Das**
	5. Regional Environmental issues in Purba and Paschim Medinipur Districts- Flood, Drought, coastal erosion, Salinization, Deprivation and related social conflicts, conflict in forest society interface.		**Rabin Das**
UNITS	**PAPER: 404C: GEO 404C.2: Planning for Urban Development**	**FULL MARKS**	**NAME OF THE TEACHERS**
	1. Concept of developed and underdeveloped economy, Intra- and Inter-regional planning. Policies of Urban planning and development.	**Total (T) =25 Theory=20**	**Mintu Jana**

GEO 404C.2	2. Urban infrastructure planning: Sanitation and Water supply systems, Waste Water disposal systems, Solid waste collection and disposal.	**Internal Assessment (IA) =05**	**Mintu Jana**
	3. Urban traffic and transportation planning.		**Mintu Jana**
	4. Planning for Urban housing: concepts of land use and land valuation, Needs and types of housing; Housing Policy and programmes in India; Real estate development.		**Mintu Jana**
	5. Application of Remote Sensing and GIS in urban planning and management.		**Mintu Jana**
UNITS	**PAPER: 404D: GEO 404D.1: Advanced Remote Sensing**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 404D.1	**1.** Thermal Remote Sensing: Concept, Sensors and Utility.	**Total (T) =25 Theory=20 Internal Assessment (IA) =05**	**Susanta Ban**
	2. Microwave Remote Sensing:Concept, Comparison with optical system, advantages and disadvantages, spatial resolution, Real and Synthetic Aperture Radar, Passive Microwave Remote Sensing, Lidar.		**Susanta Ban**
	3. Hyperspectral Remote Sensing: Concept, Sensors and utility.		**Goutam Kumar Das**
	4. Visual Image Processing& Digital image interpretation: Elements of Visual image interpretation, generation of thematic maps, information extraction.		**Bikash Bhunia**
	5. Digital Image Processing: Pre-processing, Image Registration, Image geometric operations, Enhancement, Spatial filtering, Transformation, classification, data compression, spectral pattern recognition, output generation.		**Goutam Kumar Das**
UNITS	**PAPER: 404D: GEO 404D.2: Advanced GIS and Applications of Remote Sensing**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 404D.2	1. Advanced GIS: Spatial data model, Data entry, data analysis, Data models. Data sources, Data captures, attribute data management and Meta data concept.	**Total (T) =25 Theory=20**	**Goutam Kumar Das**

	2. Data Infrastructure: Spatial Data Infrastructure: NSDI.	**Internal Assessment (IA) =05**	**Goutam Kumar Das**
	3. Modern trend in GIS: Local to Global concept in GIS, Integration of GIS and Multimedia, 3D GIS and Web GIS, Real time GIS, Mobile GIS, Collaborative GIS, concept and application of GPS and GNSS.		**Goutam Kumar Das**
	4. Integration of Remote sensing and GIS: Concept and importance of Remote Sensing and GIS integration in Geographical studies.		**Goutam Kumar Das**
	5. Applications of Remote Sensing and GIS: Landuse/land covers mapping, soil and agricultural mapping, geomorphological mapping, watershed mapping.		**Goutam Kumar Das**
UNITS	**PAPER: 495: GEO 495.1: Spatial Analysis in Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 495.1	1. Transport network analysis: Centrality Indices, Shortest path analysis(Transport and allocation problems), Detour and spread.	**Total (T) =25**	**Taniya Roy**
	2. Distance Matrix (Aggregate Travel Distance).		**Taniya Roy**
	3. Point spatial distribution analysis: Uniformity, randomness and compactness.		**Taniya Roy**
	4. Analysis of Directional Data; Rose diagram, Dominant Direction, Mean direction.		**Taniya Roy**
	5. Analysis of Shape: Measures based on axial ratios, perimeters to areas, areas to axial length.		**Taniya Roy**
UNITS	**PAPER: 495: GEO 495.2: Research Exercise in Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 495.2	1. Field work on a specific environmental issue and generation of report (within about 50 A4 size pages including 15-20 maps/diagrams/field photographs).	**Total (T) =25**	**All Teachers**

UNITS	PAPER: 496: GEO 496.1: Map Transformation and Geodesy	FULL MARKS	NAME OF THE TEACHERS
GEO 496.1	1. Map transformation: Scale factor; distortion types; systems of map projections; principles of choosing map projection; importance of map projection in GIS.	Total (T) =25	**Goutam Kumar Das**
	2. Principle, construction, properties and uses of following map projections: a) Conformal Projections- Mercator's Projection; Transverse Mercator Projection and Lambert's Conformal Conic (LCC) Projection.		**Goutam Kumar Das**
	3. Principle, construction, properties and uses of following map projections b) Equal Area Projection- Mollweide's Projection. c) Conical Projection- Simple Conical Projection with Two Standard Parallels.		**Bikash Bhunia**
	4. Geodesy: Scope and application; concept of Geoid, reference ellipsoid and spheroid- WGS84, Everest Spheroid.		**Bikash Bhunia**
	5. Coordinate Systems: Cartesian, Rectangular, Spherical, Curvilinear, Spherical, UTM Grid System.		**Bikash Bhunia**
UNITS	**PAPER: 496: GEO 496.2: Geographical Information System(GIS)**	**FULL MARKS**	**NAME OF THE TEACHERS**
GEO 496.2	1. Basic Concepts and components in GIS: An overview of the development of the GIS fields, Data Sources; Data acquisition methods	Total (T) =25	**Goutam Kumar Das**
	2. Data structure: Vector and Raster data structures, data storage.		**Goutam Kumar Das**
	3. Modern trends in GIS: 3D GIS and Web GIS, Real time GIS, Mobile GIS and application of GIS		**Goutam Kumar Das**
	4. Basics of GPS Surveying: Conceptual Framework, Space Segment, Ground Segment, Control Segment, Satellite Triangulation, Pseudo Random Code. DGPS and GNSS		**Goutam Kumar Das**

	5. GPS-aided traversing; Manual and Computer plotting for preparation of maps.		**Goutam Kumar Das**		

Teaching Plan: Department of Geography: UG. SEMESTER-I(HONOURS)

UNITS	PAPER: CC1: C1T: Unit-I: Geotectonics	FULL MARKS	NAME OF THE TEACHERS	MONTHS OF TEACHING	REMARKS
I	1. Earth's tectonic and structural evolution with reference to geological time scale	Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05	Suman Pahari	01.10.2021-24.02.2022	1st Internal Assessment: 4th Week of December,2022
	2. Earth's interior with special reference to seismology. Isostasy: Models of Airy and Pratt		Suman Pahari		
	3. Plate Tectonics: Processes at constructive, conservative, destructive margins and hotspots; resulting landforms		Rabin Das		
	4. Folds and Faults—origin and types		Dr. Debashis Manna		
UNITS	**PAPER: CC1: C1T: Unit-II: Geomorphology**		**NAME OF THE TEACHERS**		2nd Internal Assessment: 2nd Week of March,2022
II	1. Degradational processes: Weathering, mass wasting and resultant landforms		Susmita Maiti		
	2. Processes of entrainment, transportation and deposition by different geomorphic agents. Role of humans in landform development.		Taniya Roy		
	3. Development of river network and landforms on uniclinal and folded structures		Susanta Ban		
	4. Landforms on igneous rocks with special reference to Granite and Basalt		Dr. Baikuntha Behari Josh		

	5. Karst landforms: Surface and sub-surface. Coastal processes and landforms		**Pranati Manna**
	6. Glacial and fluvio-glacial processes and landforms; fluvio-glacial landforms		**Mintu Jana**
	7. Aeolian and fluvio-aeolian processes and landforms; fluvio-aeolian processes		**Sikha Kar**
	8. Models on landscape evolution: Views of Davis, Penck, King and Hack		**Susanta Ban**
UNITS	**PAPER: CC2: C2T: Cartographic Techniques**	**FULL MARKS**	**NAME OF THE TEACHERS**
C2T	**1.** Maps: Classification and types. Components of a map	**Total (T) =75 Theory=40 Practical=20 Internal Assessment (IA) =10 Class Attendance (CA)=05**	**Goutam Kumar Das**
	2. Concept and application of scales: Plain, comparative, diagonal and vernier		**Rabin Das**
	3. Coordinate systems: Polar and rectangular. Concept of geoid and spheroid		**Bikash Bhunia**
	4. Concept of generating globe. Grids: angular and linear systems of measurement		**Bikash Bhunia**
	5. Bearing: Magnetic and true, whole-circle and reduced		**Suman Pahari**
	6. Map projections: Classification, properties and uses. Concept and significance of UTM projection		**Bikash Bhunia**
	7. Basic concepts of surveying and survey equipment: Prismatic compass, dumpy level, theodolite, Abney level, clinometer		**Taniya Roy**

	8. Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps		**Dr. Pijush Kanti Dandapath**
UNITS	**PAPER: CC2: C2P: Cartographic Techniques-Lab.**		**NAME OF THE TEACHERS**
C2P	1. Graphical construction of scales: Plain, comparative, diagonal and vernier		**Rabin Das**
	2. Construction of projections: Polar Zenithal Stereographic, Simple conic with two standard parallels, Bonne's, Cylindrical Equal Area, and Mercator's.		**Bikash Bhunia**
	3. Delineation of drainage basin from Survey of India topographical map. Construction and interpretation of relief profiles (superimposed, projected and composite), relative relief map, slope map (Wentworth), and stream ordering (Strahler) on a drainage basin.		**Dr. Pijush Kanti Dandapath**
	4. Correlation between physical and cultural features from Survey of India topographical maps. using transect chart		**Sumitra Rani Jana**
UNITS	**PAPER: GE-1: GE-1T Disaster Management**	**FULL MARKS**	**NAME OF THE TEACHERS**
GE-1T	1. Definition and Concepts of Hazards and Disasters; Risk and Vulnerability; Classification of hazards	**Total (T) =75 Theory=60 Internal Assessment (IA) =10**	**Sumitra Rani Jana**
	2. Causes and consequences of hazards: Physical, economic and cultural		**Dr. Baikuntha Behari Josh**
	3. Role of National and International organizations in disaster management.		**Suman Pahari**

	4. Causes, Impact, Distribution and Mapping of: Earthquake and Tsunami, Landslides	**Claaa Attendance (CA)=05**	**Susmita Maiti**		
	5. Causes, Impact, Distribution and Mapping of: Flood and drought		**Pranati Manna**		
	6. Causes, Impact, Distribution and Mapping: Soil erosion, accidental release of toxic chemicals		**Sikha Kar**		
	7. Response and Mitigation to Disasters: Institutional set up, NDMA and NIDM		**Mintu Jana**		
	8. Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters		**Mintu Jana**		
	9. Emerging approaches to Disaster management: (a) Pre-disaster stage Preparedness- hazard zonation maps-predictability and forecasting warning, land use zoning, Information, Education & Communication (IEC) Disaster resistance house construction, Population reduction in vulnerable area and awareness. (b) Emergency Stage- Rescue training for search and operation at national and regional level, ground management plan preparation, immediate relief, Assessment surveys. (c) Post disaster stage rehabilitation – Political administrative aspects, social aspect, economic aspect, cultural aspect and environmental aspects.		**Susanta Ban & Bikash Bhunia**		
	10. Regional perspectives of hazards in India with reference to dimension, causes, consequences and remedial measures: (a) Hills/ coasts, (b) Terrorism		**Taniya Roy**		
	11. National and international policies for disaster management.		**Suman Pahari**		
	12. Role of geospatial technology (RS, GNSS and GIS) in disaster management		**Goutam Kumar Das**		

Teaching Plan: Department of Geography: UG. SEMESTER-II(HONOURS)					
UNITS	**PAPER: CC3: Human Geography: C3T-I: Nature and Principles**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**REMARKS**

I	1. Nature and scope and recent trends. Elements of Human Geography		**Dr. Debashis Manna**		
	2. Approaches to the study of Human Geography; Resource, Locational, Landscape,Environmental		**Mintu Jana**		
	3. Evolution of humans. Concept of race and ethnicity		**Susanta Ban**		
	4. Space, society and cultural regions (language and religion)		**Susanta Ban**		
UNITS	**PAPER: CC3: Human Geography : C3T-II: Society, Demography & Ekistics**		**NAME OF THE TEACHERS**		
II	1. Evolution of human societies: Hunting and food gathering, pastoral nomadism,subsistence farming, industrial and urban societies	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Taniya Roy**	**01.04.2022-09.07.2022**	**1st Internal Assessment: 2nd Week of May, 2022**
	2. Human adaptation to environment: Eskimo, Masai, Jarwa, Gaddi, Santhals.		**Pranati Manna**		
	3. Population growth anddistribution, population composition; demographic transition model		**Susmita Maiti**		
	4. Population–Resource regions (Ackerman)		**Dr. Baikuntha Behari Josh**		**2nd Internal Assessment: 2nd Week of July,2022**
	5. Human population and environment with special reference to development–environment conflict		**Dr. Baikuntha Behari Josh**		
	6. Social morphology and rural house types in India		**Sikha Kar**		
	7. Types and patterns of rural settlements		**Sikha Kar**		
	8. Types and patterns of urban settlements		**Dr. Debashis Manna**		
UNITS	**PAPER: CC-4: Cartograms & Thematic Mapping: C4T: Cartograms & Thematic Mapping**	**FULL MARKS**	**NAME OF THE TEACHERS**		
I	1. Concepts of rounding, scientific notation, logarithm and anti-logarithm, natural andlog scales	**Total (T) =75 Theory=40 Practical=20 Internal Assessment (IA) =10**	**Rabin Das**		
	2. Diagrammatic representation of data: Line, Bar, and Circle		**Suman Pahari**		
	3. Representation of point data: Isopleths.		**Sumitra Rani Jana**		
	4. Representation of area data: Dots, proportional circles and choropleth		**Bikash Bhunia**		

	5. Preparation and interpretation of large scale thematic maps: Geomorphological maps	**Claaa Attendance (CA)=05**	**Dr. Pijush Kanti Dandapath**
	6. Preparation and interpretation of large scale thematic maps: Climatological maps		**Suman Pahari**
	7. Preparation and interpretation of large scale thematic maps: Landuse landcovermaps		**Goutam Kumar Das**
	8. Preparation and interpretation of large scale thematic maps: Socio-economic maps		**Goutam Kumar Das**
UNITS	**C4P: Cartography Lab.**		**NAME OF THE TEACHERS**
II	1. Traverse survey using Prismatic Compass		**Rabin Das**
	2. Levelling by Dumpy Level and Prismatic Compass		**Mintu Jana**
	3. Thematic maps: Proportional squares, pie diagrams with proportional circles, dotsand spheres		**Suman Pahari & Bikash Bhunia**
	4. Thematic maps: Choropleth, isoline map, chorochromatic map		**Sumitra Rani Jana & Bikash Bhunia**
UNITS	**PAPER: GE-2: Geospatial Technology: GE2T: Geospatial Technology**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Components, scope and historical development of geospatial technology	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Goutam Kumar Das**
	2. Concepts of spheroid, ellipsoid and projection systems. Significance of WGS 84and UTM		**Bikash Bhunia**
	3. Data types and structures in spatial technology.		**Goutam Kumar Das**
	4. Principles of land-based surveying with reference to auto level and total station		**Goutam Kumar Das**
	5. Classification of Remote Sensing platforms, sensors and resolution. IRS(Resourcesat and Cartosat) and Landsat systems.		**Bikash Bhunia**
	6. Principles of georeferencing of maps and images		**Bikash Bhunia**

	7. Image enhancement, band combination and rationing. Vegetation indices.		**Goutam Kumar Das**		
	8. Image classification and preparation of thematic maps. Raster to vector conversion.		**Bikash Bhunia**		
	9. Sources, preparation and manipulation of GIS data. Spatial modelling and overlayanalysis.		**Susanta Ban**		
	10. GNSS: Principles of satellite positioning and navigation. Collection of waypointsand exporting to GIS		**Susanta Ban**		
	11. Principles of preparing DEMs from optical and RADAR sensors with reference toCartoDEM and SRTM data		**Susanta Ban**		
	12. Integration of different components of spatial technology. Development of web-based spatial platforms with reference to Bhuvan and Google Earth / Google Map		**Susanta Ban**		
Teaching Plan: Department of Geography: UG. SEMESTER-III (HONOURS)					
UNITS	**PAPER: CC-5: Climatology: CC5T-I: Elements of the Atmosphere**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**REMARKS**
I	**1.** Nature, composition and layering of the atmosphere	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Susmita Maiti**	**01.10.2021-05.02.2022**	**1st Internal Assessment: 4th Week of November, 2021**
	2. Isolation: controlling factors. Heat budget of the atmosphere		**Goutam Kumar Das**		
	3. Temperature: horizontal and vertical distribution. Inversion of temperature: types, causes and consequences		**Susanta Ban**		
	4. Greenhouse effect and importance of ozone layer		**Susmita Maiti**		
UNITS	**PAPER: CC-5: Climatology : CC5T-II: Atmospheric Phenomena & Climatic Classification**		**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**2nd Internal Assessment: 1st Week of January, 2022**
II	**1.** Condensation: Process and forms. Mechanism of precipitation: Bergeron-Findeisen theory, collision and coalescence. Forms of precipitation		**Sumitra Rani Jana**	**01.10.2021-05.02.2022**	
	2. Air mass: Typology, origin, characteristics and modification		**Mintu Jana**		

	3. Fronts: warm and cold; frontogenesis and frontolysis		**Mintu Jana**
	4. Weather: stability and instability; barotropic and baroclinic conditions		**Mintu Jana**
	5. Circulation in the atmosphere: Planetary winds, jet stream, index cycle		**Mintu Jana**
	6. Tropical and mid-latitude cyclones		**Pranati Manna**
	7. Monsoon circulation and mechanism with reference to India		**Bikash Bhunia**
	8. Climatic classification after Köppen, Thornthwaite and Oliver		**Sumitra Rani Jana**
UNITS	**PAPER: CC-6: Statistical Methods in Geography: C6T-I: Data Collection, Sampling, Tabulation, Frequency Distribution & Probability**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Importance and significance of Statistics in Geography. Discrete and continuous data, population and samples, scales of measurement (nominal, ordinal, interval and ratio), sources of data	**Total (T) =75 Theory=40 Practical=20 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Bikash Bhunia**
	2. Collection of data and formation of statistical tables		**Rabin Das**
	3. Sampling: Need, types, and significance and methods of random sampling		**Rabin Das**
	4. Theoretical distribution: frequency, cumulative frequency, normal and probability		**Bikash Bhunia**

UNITS	PAPER: CC-6: Statistical Methods in Geography : C6T-II: Central Tendency, Measures of Dispersion, Correlation, Regression & Time Series Analysis		NAME OF THE TEACHERS
II	1. Central tendency: Mean, median, mode, partition values		**Bikash Bhunia**
	2. Measures of dispersion range, mean deviation, standard deviation, coefficient of variation		**Rabin Das**
	3. Association and correlation: Rank correlation, product moment correlation		**Rabin Das**
	4. Regression (linear and non-linear) and time series analysis (moving average)		**Bikash Bhunia**
UNITS	**PAPER: CC-6: Statistical Methods in Geography: C6P: Statistical Methods in Geography Lab.**		**NAME OF THE TEACHERS**
	1. Construction of data matrix with each row representing an aerial unit (districts / blocks / *mouzas* / towns) and corresponding columns of relevant attributes.		**Rabin Das**
	2. Based on the above, a frequency table, measures of central tendency and dispersion would be computed and interpreted		**Rabin Das**
	3. Histograms and frequency curve would be prepared on the dataset.		**Rabin Das**
	4. From the data matrix a sample set (20%) would be drawn using, random, systematic and stratified		**Rabin Das**

	methods of sampling and locate the samples on a map with a short note on methods used.		
	5. Based on of the sample set and using two relevant attributes, a scatter diagram and regression line would be plotted and residual from regression would be mapped with a short interpretation.		**Rabin Das**
UNITS	**PAPER: CC-7: Geography of India: C7T-I: Geography of India**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Tectonic and stratigraphic provinces, physiographic divisions	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Bikash Bhunia**
	2. Climate, soil and vegetation: Characteristics and classification		**Susmita Maiti**
	3. Population: Distribution, growth, structure and policy		**Dr. Debashis Manna**
	4. Distribution of population by race, caste, religion, language, tribes and their correlates		**Sikha Kar**
	5. Agricultural regions. Green revolution and its consequences		**Sikha Kar**
	6. Mineral and power resources distribution and utilization of iron ore, coal, petroleum, gas;		**Sikha Kar**
	7. Industrial development: Automobile and information technology		**Mintu Jana**

	8. Regionalization of India: Physiographic (R. L. Singh), Socio-cultural (Sopher) and Economic (Sengupta)		**Dr. Baikuntha Behari Josh**		
UNITS	**PAPER: CC-7: Geography of India : C7T-II: Geography of West Bengal**		**NAME OF THE TEACHERS**		
II	1. Physical perspectives: Physiographic divisions, forest and water resources		**Bikash Bhunia**		
	2. Population: Growth, distribution and human development		**Dr. Pijush Kanti Dandapath**		
	3. Resources: Mining, agriculture and industries		**Pranati Manna**		
	4. Regional Problem: Darjeeling Hills, Jangalmahal and Sundarban **5.**		**Pranati Manna**		
UNITS	**PAPER: SEC-1: Coastal Management: SEC1T: Coastal Management**	**FULL MARKS**	**NAME OF THE TEACHERS**		
I	1. Components of a coastal zone. Coastal morphodynamic variables and their role in evolution of coastal forms.	**Total (T) =50 Theory=40 Internal Assessment (IA) =05 Claaa Attendance (CA)=05**	**Taniya Roy**		
	2. Environmental impacts and management of mining, oil exploration, salt manufacturing, land reclamation and tourism.		**Suman Pahari**		
	3. Coastal hazards and their management using structural and non-structural measures: Erosion, flood, sand encroachment, dune degeneration, estuarine sedimentation and pollution		**Taniya Roy**		
	4. Principles of Coastal Zone Management. Exclusive Economic Zone and Coastal Regulation Zones with reference to India.		**Suman Pahari**		

UNITS	PAPER: GE-3: Rural Development: GE3T: Rural Development	FULL MARKS	NAME OF THE TEACHERS	MONTHS OF TEACHING	REMARKS
	1. Defining Development: Inter-Dependence of Urban and Rural Sectors of the Economy	Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05	**Susmita Maiti**	**01.10.2021-05.02.2022**	**1st Internal Assessment: 4th Week of November, 2021** **2nd Internal Assessment: 1st Week of January, 2022**
	2. Paradigms of Rural Development: Lewis Model of Economic Development, 'Big Push' theory of Development, Myrdal's thesis of 'Spread and Backwash Effects'		**Mintu Jana**		
	3. 3.Need for Rural Development, Gandhian Approach to Rural Development		**Dr. Debashis Manna**		
	4. 4.Rural Economic Base: Agriculture and Allied Sectors, Seasonality and Need for expanding Non-Farm Activities,		**Sikha Kar**		
	5. Rural Co-operatives and agricultural marketing		**Bikash Bhunia**		
	6. Area Based Approach to Rural Development: Drought Prone Area Programmes, PMGSY		**Goutam Kumar Das**		
	7. Target Group Approach to Rural Development: SJSY, MNREGA, Jan DhanYojana		**Sumitra Rani Jana**		
	8. Provision of Services – Physical and Socio-Economic Access to Elementary Education and Primary Health Care and Micro credit; Concept of PURA		**Dr. Baikuntha Behari Josh**		
	9. Rural Governance: Panchayati Raj System		**Pranati Manna**		
	10. Rural Development Policies and Programmes in India		**Pranati Manna**		
	11. Rural Infrastructural Development programmes relating to: Rural Electrification, Transport, Housing, and Connectivity		**Susanta Ban**		
	12. Rural Development Programmes for Women and children: Janani Suraksha Yojana , National Nutrition Mission, Drinking water and sanitation programmes, NRHM, Sarva Sikha Mission		**Sikha Kar**		
Teaching Plan: Department of Geography: UG. SEMESTER-IV (HONOURS)					
UNITS	**PAPER: CC-8: Regional Planning & Development: C8T-I: Regional Planning**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**REMARKS**

I	1. Concept of regions: Types of regions and their delineation.	Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05	**Susanta Ban**	15.03.2022-25.06.2022	**1st Internal Assessment: 4th Week of April , 2022** **2nd Internal Assessment: 3rd Week of Jun, 2022**
	2. Types of planning, principles and objectives of regional planning, multi- levelplanning in India		**Suman Pahari**		
	3. Tools and techniques of regional planning, need for regional planning in India		**Susanta Ban**		
	4. Metropolitan concept: metropolitan areas, and urban agglomerations		**Suman Pahari**		
UNITS	**PAPER: CC-8: Regional Planning & Development: C8T-II: Regional Development**		**NAME OF THE TEACHERS**		
II	1. Development: Meaning, growth versus development		**Sumitra Rani Jana**		
	2. Concept and strategies of regional development with reference to India		**Mintu Jana**		
	3. Theories and models for regional development : Growth pole model of perroux;growth centre model in Indian context		**Mintu Jana**		
	4. Theories and models for regional development: Cumulative causation (Myrdal)and core periphery (Hirschman, Rostov and Friedman)		**Sumitra Rani Jana**		
	5. Changing concept of development, concept of underdevelopment; efficiency-equity debate		**Mintu Jana**		
	6. Indicators of development: Economic, social and environmental.Human development.		**Sumitra Rani Jana**		
	7. Regional development in India, regional inequality, disparity and diversity		**Mintu Jana**		
	8. Need and measures for balanced development in India		**Dr. Pijush Kanti Dandapath**		
UNITS	**PAPER: CC-9: Economic Geography: C9T-I: Economic Concepts**	**FULL MARKS**	**NAME OF THE TEACHERS**		
I	1. Meaning and approaches to Economic Geography, new Economic Geography	**Total (T) =75 Theory=60**	**Dr. Baikuntha Behari Josh**		

	2. Concepts in Economic Geography: Goods and services, production, exchange and consumption	**Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Dr. Baikuntha Behari Josh**
	3. Concept of economic man, theories of choices		**Dr. Debashis Manna**
	4. Economic distance and transport costs		**Dr. Debashis Manna**
UNITS	**PAPER: CC-9: Economic Geography: C9T-II: Economic Activities**		**NAME OF THE TEACHERS**
II	1. Concept and classification of economic activities		**Sikha Kar**
	2. Factors affecting location of economic activity with special reference to agriculture(Von Thunen), and industry (Weber).		**Sikha Kar**
	3. Primary activities: Subsistence and commercial agriculture, forestry, fishing andmining		**Susmita Maiti**
	4. Secondary activities: Manufacturing (cotton textile, iron and steel), concept ofmanufacturing regions, special economic zones and technology parks		**Susmita Maiti**
	5. Tertiary activities: transport, trade and services		**Taniya Roy**
	6. Agricultural systems: Case studies of tea plantation in India and mixed farming inEurope		**Sikha Kar**
	7. Transnational sea-routes, railways and highways with reference to India		**Pranati Manna**
	8. International agreements and trade blocs: GATT and OPEC		**Pranati Manna**
UNITS	**PAPER: CC-10: Environmental Geography: C10T: Environmental Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Geographers' approach to environmental studies	**Total (T) =75 Theory=40 Practical=20**	**Taniya Roy**
	2. Perception of environment in different stages of civilization		**Taniya Roy**

	3. Concept of holistic environment and system approach	**Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Taniya Roy**
	4. Ecosystem: Concept, structure and functions		**Dr. Baikuntha Behari Josh**
	5. Environmental pollution and degradation: Land, water and air		**Dr. Baikuntha Behari Josh**
	6. Space–time hierarchy of environmental problems: Local, regional and global		**Bikash Bhunia**
	7. Urban environmental issues with special reference to waste management		**Bikash Bhunia**
	8. Environmental programmes and policies – Global, national and local levels		**Bikash Bhunia**
UNITS	**PAPER: CC-10: Environmental Geography : C10T: Environmental Geography Lab.**		**NAME OF THE TEACHERS**
II	1. Preparation of questionnaire for perception survey on environmental problems		**Bikash Bhunia**
	2. Preparation of check-list for Environmental Impact Assessment of an urban /industrial project		**Rabin Das**
	3. Quality assessment of soil using field kit: pH and NPK		**Sumitra Rani Jana & Taniya Roy**
	4. Interpretation of air quality using CPCB / WBPCB data		**Rabin Das**
UNITS	**PAPER: SEC-2: Research Methods : SEC2T: Research Methods**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Geographic Enquiry: Definition and Ethics; Literature Review; Framing Research Questions, Objectives and Hypothesis; Preparing Sample Questionnaires and inventories	**Total (T) =50 Theory=40 Internal Assessment (IA) =05**	**Rabin Das**
	2. Data Collection: Type and Sources of Data; Methods of data Collection; DataInput and Editing		**Rabin Das**

	3. Data Analysis: Qualitative and Quantitative Analysis; Techniques Data Representation	**Claaa Attendance (CA)=05**	**Rabin Das**
	4. Structure of a Research Report: Preliminaries; Text; Citation, Notes, References, Bibliography and Abstract and Key words.		**Rabin Das**
UNITS	**PAPER: GE-4: Regional Development: GE4T: Regional Development**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Definition of Region; Types and need of regional planning	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Pranati Manna**
	2. Choice of a region for planning; Characteristics of an Ideal Planning Region;Delineation of Planning Region		**Pranati Manna**
	3. Regionalization of India for Planning (Agro-ecological zones)		**Sikha Kar**
	4. Strategies/Models for Regional Planning: Growth Pole Model of Perroux		**Sumitra Rani Jana**
	5. Growth Centre Model in Indian Context; Concept of Village Cluster		**Sumitra Rani Jana**
	6. Problem Regions and Regional Planning; Backward Regions and Regional Plans: Special Area Development Plans in India. DVC- The Success Story and its Failures.		**Mintu Jana**
	7. Changing concept of development and underdevelopment; Efficiency-equity debate		**Mintu Jana**
	8. Indicators of development: Economic, social and environmental. Concept of Human development		**Mintu Jana**
	9. Regional development in India, regional inequality, disparity and diversity		**Susmita Maiti**
	10. Development and Regional Disparities in India since Independence: Disparities inAgricultural Development		**Dr. Baikuntha Behari Josh**
	11. Development and Regional Disparities in India since Independence: Disparities inIndustrial Development		**Dr. Baikuntha Behari Josh**

	12. Development and Regional Disparities in India since Independence: Disparities inHuman Resource Development in terms of education and health..		**Bikash Bhunia**		
Teaching Plan: Department of Geography: UG. SEMESTER-V (HONOURS)					
UNITS	**PAPER: CC-11: Field Work & Research Methodology: C11T-I: Research Methodology**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**REMARKS**
I	1. Research in Geography: Meaning, types and significance	**Total (T) =75 Theory=40 Practical=20 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Dr. Pijush Kanti Dandapath**	**14.09.2021-18.01.2022**	**1st Internal Assessment: 1st Week of April , 2022**
	2. Literature review and formulation of research design		**Rabin Das**		
	3. Defining research problem, objectives and hypothesis. Research materials and methods		**Rabin Das**		
	4. Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract and keywords		**Rabin Das**		
	C11T-II: Field Work		**NAME OF THE TEACHERS**		**2nd Internal Assessment: 1st Week of June, 2022**
II	1. Fieldwork in Geographical studies – Role and significance. Selection of study area and objectives. Pre-field preparations. Ethics of fieldwork		**Dr. Pijush Kanti Dandapath**		
	2. Field techniques and tools: Observation (participant, non participant), questionnaires (open, closed, structured, non-structured). Interview with special reverence to focused group discussions.		**Rabin Das**		

	3. Field techniques and tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording.		**Rabin Das**
	4. Positioning and collection of samples. Preparation of inventory from field data. Post-field tasks.		**Rabin Das**
I	1. Each student will prepare an individual report based on primary data collected from field survey and secondary data collected from different sources for either a rural area (*mouza*) or an urban area (municipal ward) based on cadastral or municipal maps to study specific problems.		**All Teachers**
UNITS	**PAPER: CC-12: Remote Sensing & GIS: C12T-I: Remote Sensing**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Principles of Remote Sensing (RS): Types of RS satellites and sensors	**Total (T) =75 Theory=40 Practical=20 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Bikash Bhunia**
	2. Sensor resolutions and their applications with reference to IRS and Landsat missions, image referencing schemes and data acquisition.		**Bikash Bhunia**
	3. Preparation of False Colour Composites from IRS LISS-3 and Landsat TM and OLI data.		**Susanta Ban**
	4. Principles of image interpretation. Preparation of inventories of landuse land cover (LULC) features from satellite images.		**Susanta Ban**

UNITS	PAPER: CC-12: Remote Sensing & GIA: C12T-II: GIS		NAME OF THE TEACHERS
II	**1.** GIS data structures: types (spatial and non-spatial), raster and vector		**Goutam Kumar Das**
	2. Principles of preparing attribute tables, data manipulation and overlay analysis		**Bikash Bhunia**
	3. Principles of GNSS positioning and waypoint collection		**Susanta Ban**
	4. Transferring of waypoints to GIS. Area and length calculations from GNSS data.		**Goutam Kumar Das**
UNITS	**PAPER: CC-12: Remote Sensing & GIA: C12P: Remote Sensing & GIS Lab.**		**NAME OF THE TEACHERS**
I	1. Georeferencing of maps and images		**Goutam Kumar Das**
	2. Image enhancement. Preparation of reflectance libraries of LULC features across different image bands of IRS L3 or Landsat OLI data		**Goutam Kumar Das**
	3. Image classification, post-classification analysis and class editing		**Goutam Kumar Das**
	4. Digitization of features. Data attachment, overlay and preparation of thematic map		**Goutam Kumar Das**
UNITS	**DSE-1: Hydrology & Oceanography: DSE 1T-I: Hydrology**	**FULL MARKS**	**NAME OF THE TEACHERS**

I	1. Systems approach in hydrology. Global hydrological cycle: Its physical and biological role	Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05	**Taniya Roy**
	2. Run off: controlling factors. Infiltration and evapotranspiration. Run off cycle		**Taniya Roy**
	3. Drainage basin as a hydrological unit. Principles of water harvesting and watershed management		**Taniya Roy**
	4. Groundwater: Occurrence and storage. Factors controlling recharge, discharge and movement		**Taniya Roy**
UNITS	**DSE-1: Hydrology & Oceanography: DSE 1T-II: Oceanography**		**NAME OF THE TEACHERS**
II	**1.** Major relief features of the ocean floor: characteristics and origin according to plate tectonics		**Sumitra Rani Jana**
	2. Physical and chemical properties of ocean water		**Sumitra Rani Jana**
	3. Water mass, T–S diagram		**Sumitra Rani Jana**
	4. Air-Sea interactions, ocean circulation, wave and tide		**Suman Pahari**
	5. Ocean temperature and salinity : Distribution and determinants		**Sumitra Rani Jana**
	6. Coral reefs: Formation, classification and threats		**Suman Pahari**
	7. Marine resources: Classification and sustainable utilisation		**Suman Pahari**
	8. Sea level change: Types and causes		**Suman Pahari**
UNITS	**DSE-1: Cultural & Settlement Geography: DSE1T-Cultural Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**

I	1. Definition, scope and content of Cultural Geography	Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05	**Pranati Manna**
	2. Development of cultural geography in relation to allied disciplines		**Pranati Manna**
	3. Cultural Hearth and Realm; Cultural diffusion, diffusion of major world religions and languages		**Pranati Manna**
	4. Cultural segregation and cultural diversity, Culture, technology and development		**Pranati Manna**
	5. Races and racial groups of the world		**Susmita Maiti**
	6. Cultural regions of India		**Susmita Maiti**
UNITS	**DSE-1: Cultural & Settlement Geography: DSE1T-II Settlement Geography**		**NAME OF THE TEACHERS**
II	1. Rural Settlement: Definition, nature and characteristics of rural settlements		**Dr. Debashis Manna**
	2. Morphology of rural settlements: site and situation, layout-internal and external		**Dr. Debashis Manna**
	3. Rural house types with reference to India, Social segregation in rural areas; Census categories of rural settlements.		**Dr. Debashis Manna**
	4. Urban Settlements :Census definition (Temporal) and categories in India		**Dr. Debashis Manna**
	5. Urban morphology: Classical models-Burgess, Homer Hoyt, Harris and Ullman Metropolitan concept		**Sikha Kar**

	6. City-region and Conurbation , Functional classification of cities: Harris, Nelson and McKenzie		**Sikha Kar**
UNITS	**PAPER: DSE-2: Resource Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Natural Resources: Concept and classification	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Dr. Baikuntha Behari Josh**
	2. Approaches to Resource Utilization: Utilitarian, Conservational, Community based adaptive		**Dr. Baikuntha Behari Josh**
	3. Significance of Resources: Backbone of Economic growth and development		**Dr. Baikuntha Behari Josh**
	4. Pressure on resources. Appraisal and Conservation of Natural Resources		**Susanta Ban**
	5. Problems of resource depletion—global scenario (forest, water, fossil fuels).		**Susanta Ban**
	6. Sustainable Resource Development		**Goutam Kumar Das**
II	1. Distribution, Utilisation, Problems and Management of Metallic Mineral Resources: Iron ore, Bauxite, copper		**Sikha Kar**
	2. Distribution, Utilisation, Problems and Management of Non-Metallic Mineral Resources: Limestone, Mica, Gypsum		**Sikha Kar**

	3. Distribution, Utilisation, Problems and Management of Energy Resources: Conventional and Non-Conventional		**Susmita Maiti**
	4. Contemporary Energy Crisis and Future Scenario		**Susmita Maiti**
	5. Politics of Power resources		**Mintu Jana**
	6. Limits to Growth and Sustainable Use of Resources; Concept of Resource sharing		**Mintu Jana**
UNITS	**DSE1T-I:: Social Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Social Geography: Concept, Origin, Nature and Scope	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Dr. Debashis Manna**
	2. Concept of Space, Social differentiation and stratification; social processes		**Dr. Debashis Manna**
	3. Social Categories: Caste, Class, Religion, Race and Gender and their Spatial distribution		**Goutam Kumar Das**
	4. Basis of Social region formation; Evolution of social-cultural regions of India		**Goutam Kumar Das**
	5. Peopling Process of India: Technology and Occupational Change; Migration		**Susanta Ban**
	6. Social groups, social behaviour and contemporary social environmental issues with special reference to India		**Susanta Ban**
II	1. Concept of Social Well-being, Quality of Life, Gender and Social Well-being		**Pranati Manna**

	2. Measures of Social Well-being: Healthcare, Education, Housing, Gender Disparity		**Pranati Manna**		
	3. Social Geographies of Inclusion and Exclusion, Slums, Gated Communities, Communal Conflicts and Crime.		**Mintu Jana**		
	4. Social Planning during the Five Year Plans in India		**Mintu Jana**		
	5. Social Policies in India: Education and Health		**Suman Pahari**		
	6. Social Impact Assessment (SIA): Concept and importance		**Suman Pahari**		
Teaching Plan: Department of Geography: UG. SEMESTER-VI (HONOURS)					
UNITS	**PAPER: CC-13: Evolution of Geographical Thought: C13T-I: Nature of Pre Modern Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**REMARKS**
I	1. Development of Geography and contributions of Greek, Chinese, and Indian geographers.	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Sikha Kar**	**21.02.2022-10.06.2022**	**1st Internal Assessment: 1st Week of April , 2022**
	2. Impact of 'Dark Age' on Geography and Arab contributions		**Sikha Kar**		
	3. Geography during the Age of 'Discovery' and 'Exploration' (Contributions of Portuguese Voyages, Columbus, Vasco da Gama, Magellan, Thomas Cook)		**Sikha Kar**		
	4. Transition from Cosmography to Scientific Geography (Contributions of Bernard Varenius and Immanuel Kant); Dualism and Dichotomies (General vs. Particular, Physical vs. Human, Regional vs. Systematic, Determinism vs. Possibilism, Ideographic vs. Nomeothetic)		**Taniya Roy**		**2nd Internal Assessment: 1st Week of June, 2022**
	PAPER: CC-13: Evolution of Geographical Thought: C13T-II: Foundations of Modern Geography & Recent Trends		**NAME OF THE TEACHERS**		

II	1. Evolution of Geographical thoughts in Germany, France, Britain and United Statesof America.		**Pranati Manna**
	2. Contributions of Humboldt and Ritter		**Pranati Manna**
	3. Contributions of Richthofen, Hettner and Ratzel		**Pranati Manna**
	4. Schools of geographical thought: French, British and American;		**Pranati Manna**
	5. Trends of Geography in the post World War-II period		**Pranati Manna**
	6. Evolution of Geography in India: formative periods, establishments and emergingtrends		**Dr. Pijush Kanti Dandapath**
	7. Quantitative Revolution and its impact, behaviouralism, systems approach,radicalism, feminism		**Sumitra Rani Jana**
	8. Towards Post Modernism: Changing concept of space in geography. Geography inthe 21st Century		**Sumitra Rani Jana**
UNITS	**PAPER: CC-14: Disaster Management: C14T-I: Concepts**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Classification of hazards and disasters.	**Total (T) =75 Theory=40 Practical=20 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Bikash Bhunia**
	2. Approaches to hazard study: Risk perception and vulnerability assessment. Hazardparadigms		**Bikash Bhunia**
	3. Responses to hazards: Preparedness, trauma and aftermath. Resilience and capacitybuilding.		**Rabin Das**
	4. Hazards mapping: Data and techniques.		**Rabin Das**
	PAPER: CC-14: Disaster Management: C14T-II: Disaster Case Studies		**NAME OF THE TEACHERS**
II	1. Earthquake: Factors, vulnerability, consequences and management		**Susmita Maiti**
	2. Landslide: Factors, vulnerability, consequences and management		**Susmita Maiti**
	3. Cyclone: Factors, vulnerability, consequences and management		**Susanta Ban**

	4. Fire: Factors, vulnerability, consequences and management		**Susanta Ban**
I	*1. An individual Project Report based on any one case study among the following disasters incorporating a preparedness plan in the vicinity of the candidate's institution or residence:* Thunderstorm/ Landslide/ Flood/ Coastal / riverbank erosion/ Fire/ Industrial accident/ Structural collapse		**All Teachers**
UNITS	**DSE-3: Population Geography: DSE3T-I:**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Development of Population Geography as a field of specialization. Relation between population geography and demography. Sources of population data, their level of reliability and problems of mapping.	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Dr. Debashis Manna**
	2. Population distribution: density and growth. Classical and modern theories in population distribution and growth, Demographic transition model.		**Mintu Jana**
	3. World patterns determinants of population distribution and growth. Concept of optimum population.		**Pranati Manna**
	4. Population distribution, density and growth profile in India.		**Pranati Manna**
	DSE-3: Population Geography: DSE3T-II:		**NAME OF THE TEACHERS**
II	1. Population Composition and Characteristics– Age-Sex Composition; Rural andUrban Composition; Literacy.		**Susmita Maiti**
	2. Measurements of fertility and mortality. Concept of cohort and life table		**Susmita Maiti**

	3. Population composition of India. Urbanisation, Occupational structure.		**Susmita Maiti**
	4. Migration: Causes and types		**Susmita Maiti**
	5. National and international patterns of migration with reference to India.		**Dr.Debashis Manna**
	6. Population and development: population-resource regions. Concept of humandevelopment index and its components.		**Dr. Baikuntha Behari Josh**
	7. Population policies in developed and less development countries. India'spopulation policies, population and environment, implication for the future.		**Mintu Jana**
	8. Contemporary Issues – Ageing of Population; Declining Sex Ratio; Population andenvironment dichotomy, HIV/AIDS.		**Dr. Debashis Manna**
	DSE-3: Soil & Biogeography: DSE3T-I:	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Factors or soil formation. Man as an active agent of soil transformation.	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Rabin Das**
	2. Soil profile. Origin and profile characteristics of Lateritic, Podzol and Chernozemsoils		**Rabin Das**
	3. Definition and significance of soil properties: Texture, structure and moisture,		**Suman Pahari**
	4. Definition and significance of soil properties: p^H, organic matter and NPK		**Suman Pahari**
	5. Soil erosion and degradation: Factors, processes and mitigation measures		**Taniya Roy**
	6. Principles of soil classification: Genetic and USDA. Concept of land capability andits classification.		**Bikash Bhunia**
	7. Concepts of biosphere, ecosystem, biome, ecotone, community and ecology		**Dr. Baikuntha Behari Josh**

	8. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems		**Suman Pahari**
	9. Geographical extent and characteristic features of: Tropical rain forest, Taiga and Grassland biomes		**Sikha Kar**
	10. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen		**Sikha Kar**
	11. Deforestation: Causes, consequences and management		**Sikha Kar**
	12. Bio-diversity: Definition, types, threats and conservation measures		**Sikha Kar**
UNITS	**DSE-4: Agricultural Geography: DSE4T-I:**	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Progress of Agricultural Geography with reference to allied disciplines.Approaches to study of Agricultural Geography.	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Dr. Debashis Manna**
	2. Origin and dispersal of agriculture; Role of agriculture on human society.		**Dr. Debashis Manna**
	3. Factors affecting agriculture. Classification of world agricultural systems.		**Sikha Kar**
	4. Location and characteristics of major agricultural types: Intensive subsistence,extensive commercial and plantation agriculture.		**Sikha Kar**
	DSE-4: Agricultural Geography: DSE4T-II:		**NAME OF THE TEACHERS**
II	1. Concept of cropping pattern, crop combination, gross and net cropped area, croprotation.		**Dr. Debashis Manna**
	2. A critical review and contemporary perspective of Von Thunen' model		**Pranati Manna**

	3. Definition and factors affecting yield. Measures of agricultural productivity		**Dr. Debashis Manna**
	4. Role of irrigation in Indian agriculture		**Dr. Baikuntha Behari Josh**
	5. Problems of agriculture with special reference to South Asian countries.		**Dr. Debashis Manna**
	6. World patterns of agricultural production and food security		**Susanta Ban**
	7. Land use survey and land classification (USDA)		**Taniya Roy**
	8. Globalization and agriculture with special reference to India		**Susmita Maiti**
	DSE-4: Urban Geography: DSE4T-I:	**FULL MARKS**	**NAME OF THE TEACHERS**
I	1. Urban Geography: nature and scope, different approaches and recent trends inurban geography	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Mintu Jana**
	2. Origin of urban places in Ancient, Medieval, Modern and Post-Modern periods-factors, stages, and characteristics.		**Mintu Jana**
	3. Theories of Urban Evolution and Growth: Hydraulic Theory, Economic Theory		**Rabin Das**
	4. Aspects of urban places: Location, site and situation, Size and Spacing of Cities:The Rank Size Rule, The Law of the Primate City		**Sumitra Rani Jana**
	5. Urban Hierarchies : Central Place Theory; August Loch's theory of Market Centres		**Sumitra Rani Jana**
	6. Patterns of urbanisation in developed and developing countries		**Rabin Das**
	DSE-4: Urban Geography: DSE4T-II:		**NAME OF THE TEACHERS**
II	1. Ecological processes of urban growth; Urban fringe; City- Region		**Sumitra Rani Jana**

	2. Theories of city structure-concentric zone theory, sector theory, multiple nucleitheory		**Sikha Kar**		
	3. Urban Issues: problems of housing, slums, civic amenities (water and transport)		**Mintu Jana**		
	4. Policies on urbanization. Urban change/landscape in post-liberalized period inIndia		**Mintu Jana**		
	5. Patterns and trends of urbanization in India		**Rabin Das**		
	6. Case studies of Delhi, Kolkata, and Chandigarh with reference to land use		**Mintu Jana**		

Teaching Plan: Department of Geography: UG. SEMESTER-I (GENERAL)

UNITS	PAPER: DSC-1A/2A/3A: Physical Geography: DSC1AT: Physical Geography	FULL MARKS	NAME OF THE TEACHERS	MONTHS OF TEACHING	REMARKS
	1. Physical Geography – Definition and Scope, Components of Earth System.	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Dr. Debashis Manna**	**01.10.2021-24.02.2022**	**1st Internal Assessment: 4th Week of December,2022 2nd Internal Assessment: 2nd Week of March,2022**
	2. Atmosphere – Heat Balance, Global Circulation Pattern, Tropical Cyclones, Monsoon, Climatic Classification (Koppen).		**Goutam Kumar Das**		
	3. Lithosphere – Internal Structure of Earth based on Seismic Evidence, Plate Tectonics and its Associated Features.		**Suman Pahari**		
	4. Fluvial Cycle of Erosion – Davis and Penck.		**Dr.Baikuntha Behari Josh**		
	5. Hydrosphere – Hydrological Cycle, Ocean Bottom Relief Features, Tides and Currents.		**Susmita Maiti & Sikha Kar**		

Teaching Plan: Department of Geography: UG. SEMESTER-II (GENERAL)

UNITS	PAPER: DSC-1B/2B/3B: Human Geography: DSC1BT: Human Geography	FULL MARKS	NAME OF THE TEACHERS	MONTHS OF TEACHING	REMARKS

	1. Definition, Nature, Major Subfields, Contemporary Relevance.	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Class Attendance (CA)=05**	**Dr. Debashis Manna**	**01.04.2022-09.07.2022**	**1st Internal Assessment: 2nd Week of May , 2022 2nd Internal Assessment: 2nd Week of July, 2022**
	2. Space and Society: Cultural Regions; Race; Religion and Language		**Pranati Manna**		
	3. Population: Population Growth and Demographic Transition Theory.		**Susmita Maiti**		
	4. World Population Distribution and Composition (Age, Gender and Literacy).		**Pranati Manna**		
	5. Settlements: Types and Patterns of Rural Settlements; Classification of UrbanSettlements; Trends and Patterns of World Urbanization		**Sikha Kar**		
Teaching Plan: Department of Geography: UG. SEMESTER-III (GENERAL)					
UNITS	**PAPER: DSC-1C/2C/3C: Cartographic Techniques: DSC1CT: Maps & Diagrams: Scale & Cartograms**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**REMARKS**
I	1. Maps – Types, Elements and Uses	**Total (T) =75 Theory=40 Practical=20 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Goutam Kumar Das**	**01.10.2021-05.02.2022**	**1st Internal Assessment: 4th Week of November , 2021 2nd Internal Assessment: 1st Week of January, 2022**
	2. Map Scale – Types and Application, Reading Distances on a Map.		**Suman Pahari**		
	3. Construction of Linear and Comparative (Unit)		**Suman Pahari**		
	4. Cartograms: Circle, Square and Pie graph		**Suman Pahari**		
	5. Age-Sex Pyramid, Dependency Ratio		**Pranati Manna**		
	6. Population Maps and Diagrams: Population Density by Choropleth, Distribution by Dot and Sphere.		**Susmita Maiti**		

	7. Representation of Data – Symbols, Dots, Choropleth, Isopleth and Flow Diagrams, Interpretation of Thematic Maps.	**Sikha Kar/ Sumitra Rani Jana**
II	1. Map Projections: Nature and Classification	**Bikash Bhunia**
	2. Principles, Theories, Criteria for Choice of Projections; Construction and Properties of select Map Projections: Conical projection with two standard parallel, Cylindrical Equal Area, Polar Zenithal Stereographic, Zenithal Gnomonic Polar Case, Mercator's Projection, Bonne's Projection	**Bikash Bhunia**
III	1. Concepts and Principles: Angles, Bearing and Azimuths, Traversing, Radiation, Intersection	**Suman Pahari**
	2. Prismatic Compass: Preparation of landuse maps by open and closed traverse; computations of compass traverse- Included Angle, Area of traverse	**Suman Pahari**
	3. Levelling by Dumpy Level: Profile	**Goutam Kumar Das**
	A. Project File	**NAME OF THE TEACHERS**
I	1. Graphical construction of scales: Plain, comparative	**Suman Pahari**
	2. Construction of projections: Polar Zenithal Stereographic, Simple conic with one standard parallel and Cylindrical Equal Area	**Bikash Bhunia**

	3. Preparation of land use maps by open and closed traverse; computations of compass traverse- Included Angle, Area of traverse		**Rabin Das & Suman Pahari**		
	4. Leveling by Dumpy Level: Profile		**Goutam Kumar Das**		
II	Report should be written with the following Tentative Chapter Schemes: ❖ Preface & Acknowledgement ❖ Introduction: Objective, Extent and Space Relations, Data sources and Methodology ❖ Physical Environment: Lithology, Drainage, Slope, Climate, Soil, Vegetation etc. Socio Economic Environment: Population Characteristics, Occupational Structure, Ethnic and Religions Composition, Per- Capita income, any other aspects. ❖ Problems and Prospects, Bibliography if any ❖ Appendix: Survey Questionnaire(s), Additional Tables, if any Word Limit: 3000 (Excluding Tables and Appendix). ❖ A copy of the bound report, duly signed by the concerned teacher, should be submitted.		**Susanta Ban & Goutam Kumar Das**		
Teaching Plan: Department of Geography: UG. SEMESTER-IV (GENERAL)					
UNITS	**PAPER: DSC-1D/2D/3D (CC-4): Environmental Geography: DSCIDT4: Environmental Geography**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**REMARKS**
I	1. Environmental Geography: Concepts and Approaches; Ecosystem – Concept andStructure; Ecosystem Functions.	**Total (T) =75 Theory=60**	**Susmita Maiti**	**15.03.2022-25.06.2022**	**1st Internal Assessment:**

	2. Human-Environment Relationship in Equatorial, Desert, Mountain and CoastalRegions.	**Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Sikha Kar**		**4th Week of April , 2022**
	3. Environmental Problems and Management: Air Pollution; Biodiversity Loss; Solidand Liquid Waste.		**Sikha Kar**		
	4. Environmental Programmes and Policies: Developed Countries; DevelopingCountries.		**Dr. Baikuntha Behari Josh**		**2nd Internal Assessment: 3rd Week of June, 2022**
	5. New Environmental Policy of India; Government Initiatives.		**Dr. Baikuntha Behari Josh**		**REMARKS**
UNITS	**PAPER: SEC-2: Regional Planning & Development: SEC2T: Regional Planning & Development**	**FULL MARKS**	**NAME OF THE TEACHERS**		
I	1. Concept, Need and Types of regional Planning.	**Total (T) =50 Theory=40 Internal Assessment (IA) =05 Claaa Attendance (CA)=05**	**Suman Pahari**		
	2. Characteristics and Delineation of Planning Region.		**Susanta Ban**		
	3. Regionalization of India for Planning (Agro Ecological Zones).		**Sikha Kar**		
	4. Models for Regional Planning: Growth Pole Theory; Core Periphery Model andGrowth Foci Concept in Indian Context.		**Sumitra Rani Jana**		
	5. Backward Regions and Regional Plans- Special Area Development Plans in India;DVC-The Success Story and the Failures; NITI Aayog.		**Taniya Roy**		
Teaching Plan: Department of Geography: UG. SEMESTER-V (GENERAL)					
UNITS	**PAPER: DSE-1A/2A/3A: Soil & Biogeography: DSE1T: Soil & Biogeography**	**FULL MARKS**	**NAME OF THE TEACHERS**	**MONTHS OF TEACHING**	**REMARKS**
I	1. Factors or soil formation. Man as an active agent of soil transformation.	**Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05**	**Sikha Kar**	**14.09.2021-18.01.2022**	**1st Internal Assessment: 1st Week of April , 2022**
	2. Soil profile. Origin and profile characteristics of Laterite and Podzol soils		**Susmita Maiti**		
	3. Definition and significance of soil properties: Texture and structure		**Dr. Debashis Manna**		

	4. Definition and significance of soil properties: pH and organic matter		**Dr. Debashis Manna**		**2nd Internal Assessment: 1st Week of June, 2022**
	5. Soil erosion and degradation: Factors, processes and mitigation measures		**Dr. Baikuntha Behari Josh**		
	6. Concepts of biosphere, ecosystem, biome, Eco tone, community and ecology		**Dr. Baikuntha Behari Josh**		
	7. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems		**Mintu Jana**		
	8. Geographical extent and characteristic features of: Tropical rain forest, Taiga andGrassland biomes		**Mintu Jana**		
	9. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen		**Pranati Manna**		
	10. Deforestation: Causes, consequences and management		**Pranati Manna**		
UNITS	**PAPER: SEC-3: Remote Sensing & GPS Based Project Work: SEC3T: Content Course**	**FULL MARKS**	**NAME OF THE TEACHERS**		
I	1. Remote Sensing: Definition, Development, Platforms and Types.	**Total (T) =50 Theory=40 Internal Assessment (IA) =05 Claaa Attendance (CA)=05**	**Bikash Bhunia**		
	2. Aerial Photography: Principles, Types and Geometry.		**Susanta Ban**		
	3. Satellite Remote Sensing: Principles, EMR Interaction with Atmosphere and EarthSurface; Satellites (Landsat and IRS) and Sensors.		**Goutam Kumar Das**		
	PAPER: SEC-3: Remote Sensing & GPS Based Project Work:: SEC3P: Practical		**NAME OF THE TEACHERS**		
II	1. Interpretation and Application of Remote Sensing: Land use/ Land Cover.		**Bikash Bhunia, Susanta Ban &**		
	2. Global Positioning System (GPS) – Principles and Uses		**Goutam Kumar Das**		
Teaching Plan: Department of Geography: UG. SEMESTER-VI (GENERAL)					

UNITS	PAPER: DSE-1B/2B/3B: Economic Geography: DSE2T: Economic Geography	FULL MARKS	NAME OF THE TEACHERS	MONTHS OF TEACHING	REMARKS
I	1. Definition, Approaches and Fundamental Concepts of Economic Geography;Patterns of Development.	Total (T) =75 Theory=60 Internal Assessment (IA) =10 Claaa Attendance (CA)=05	**Dr. Baikuntha Behari Josh**	21.02.2022-10.06.2022	1st Internal Assessment: 1st Week of April , 2022 2nd Internal Assessment: 1st Week of June, 2022
	2. Locational Theories – Agriculture (Von Thunen) and Industrial (Weber).		**Pranati Manna**		
	3. Primary Activities – Intensive Subsistence Farming, Commercial Grain Farming, Plantation, Commercial Dairy Farming, Commercial Fishing, and Mining (ironore, coal and petroleum).		**Susmita Maiti**		
	4. Secondary Activities – Cotton Textile Industry, Petro-Chemical Industry, Major Manufacturing Regions.		**Sikha Kar**		
	5. Tertiary and Quaternary Activities – Modes of Transportation, Patterns of International Trade, and Information and Communication Technology Industry.		**Taniya Roy**		
UNITS	**PAPER: SEC-4: Field Technique and Survey Based Project Report: SEC4T: Field Technique and Survey Based Project Report**	**FULL MARKS**	**NAME OF THE TEACHERS**		
I	1. Field Work in Geographical Studies – Role, Value and Ethics of Field-Work.	Total (T) =50 Theory=40 Practical=10	**Suman Pahari**		
	2. Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental.		**Taniya Roy**		
	3. Field Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant).		**Mintu Jana**		

	4. Questionnaires (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a sketch).		**Rabin Das**		
UNITS	**PAPER: SEC-4: Field Technique and Survey Based Project Report: SEC4P: Practical**		**NAME OF THE TEACHERS**		
II	1. Designing the Field Report – Aims and Objectives, Methodology, Analysis,Interpretation and Writing the Report.		**Mintu Jana**		
	1. Each student will prepare an individual report based on primary and secondarydata collected during field work.		**Rabin Das**		

Zoology

1st Semester (Hons.)

Unit	Topics	FULL MARKS	Teachers	Month of Teaching	Remarks
	C1T1 (Nonchordates):				
Unit 1:	**Basics of Animal Classification** Definitions: Classification, Systematics and Taxonomy; Taxonomic Hierarchy, Taxonomic types. Codes of Zoological Nomenclature; Principle of priority; Synonymy and Homonymy; Six kingdoms. concept of classification (Card Woese)	40 Credits 4	Dipanjan Ray	01.10.2021to 24.02.2022	1st internal 4th week of December, 2021
Unit 2:	**Protista and Metazoa** **Protozoa:** General characteristics and Classification up to phylum (according to Levine et. al., 1981) Locomotion. in *Euglena*, *Paramoecium* and *Amoeba*; Conjugation in *Paramoecium*. Life cycle and pathogenicity of *Plasmodium vivax* and *Entamoeba histolytica*. **Metazoa** Evolution of symmetry and segmentation of Metazoa		Habibullah Mallick		2nd Internal 2nd week of March, 2022
Unit 3:	**Porifera** General characteristics and Classification up to classes Canal system and spicules in sponges		Bapan Santra		
Unit 4:	**Cnidaria** General characteristics and Classification up to classes Metagenesis in *Obelia* and *Aurelia* Polymorphism in Cnidaria Corals and coral reefs		Urmita Chandra Chowdhury		
Unit 5:	**Ctenophora** General characteristics and Evolutionary significance		Nabanita Das		
Unit 6:	**Platyhelminthes** General characteristics and Classification up to classes Life cycle and pathogenicity and control measure of *Fasciola hepatica* and *Taenia solium*		Sandip Jana		
Unit 7:	**Nemathelminthes**		Nabanita Das		

	General characteristics and Classification up to classes Life cycle, and pathogenicity and control measure of *Ascaris lumbricoides* and *Wuchereria bancrofti* Parasitic adaptations in helminthes				
C1P: NON-CHORDATES I: PRACTICALS:					
	1. Study of whole mount of *Euglena, Amoeba* and *Paramecium*. **2.** Identification of *Amoeba, Euglena, Entamoeba, Opalina, Paramoecium, Plasmodium vivax* and *Plasmodium falciparum* (from the prepare slides). ***3.*** Identification of *Sycon*, Neptune's Cup, *Obelia, Physalia, Millepora, Aurelia, Tubipora, Corallium, Alcyonium, Gorgonia, Metridium, Pennatula, Fungia, Meandrina, Madrepora.* ***4.*** Identification and significance of adult *Fasciola hepatica, Taenia solium* and *Ascaris lumbricoides.* **5.** Staining/mounting of any protozoa/helminth from the gut cockroach.	20 Credits 2	Dipanjan Ray & Urmita Chandra Chowdhury	01.10.2021to 24.02.2022	
	C2T2 (Principle of Ecology)				
Unit 1:	**Introduction to Ecology** History of ecology, Autecology and synecology, Levels of organization, Laws of limiting factors, Study of Physical factors, The Biosphere.	40 Credits 4	Habibullah Mallick	01.10.2021 to 24.02.2022	
Unit 2:	**Population** Unitary and Modular populations Unique and group attributes of population: Density, natality, mortality, life tables, fecundity tables, survivorship curves, dispersal and dispersion. Exponential and logistic growth, equation and patterns, r and K strategiesPopulation regulation - density-dependent and independent factors Population interactions, Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition and Predation.		Sudipta Bera		
Unit 3:	**Community** Community characteristics: species richness, dominance, diversity, abundance, vertical stratification, Ecotone and edge effect; Ecological succession with one		Atanu Das		

		example. Theories pertaining to climax community				
	Unit 4:	**Ecosystem** Types of ecosystems with one example in detail, Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow through the ecosystem, Ecological pyramids and Ecological efficiencies Nutrient and biogeochemical cycle with one example of Nitrogen cycle Human modified ecosystem		Sandip Jana		
	Unit 5:	**Applied Ecology** Ecology in Wildlife Conservation (in-situ and ex-situ conservation) and Management strategies for tiger conservation; Wild life protection act (1972)		Dipanjan Ray		
		CIIP: ECOLOGY: PRACTICALS				
		1. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided. 2. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community. 3. Study of an aquatic ecosystem: Phytoplankton and zooplankton, Measurement of area, temperature, turbidity/penetration of light, determination of pH, and Dissolved Oxygen content (Winkler's method), Chemical Oxygen Demand and free CO2. 4. Report on a visit to National Park/Biodiversity Park/Wild life sanctuary.	20 Credits 2	Bapan Santra & Habibullah Mallick	01.10.2021to 24.02.2022	

	Generic Elective (GE 1): Animal Cell biotechnology				
Unit	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Remarks**
UNIT 1:	**Introduction** Concept and Scope of Biotechnology	40	Bapan Santra		
UNIT2:	**Techniques in Gene manipulation** Outline process of genetic engineering and recombinant DNA technology, Isolation of genes, Concept of restriction and modification: Restriction endonucleases, DNA modifying enzymes		Bapan Santra		

	Cloning Vectors: Plasmids, Phage vectors, Cosmids, Phagemids, BAC, YAC, HAC. Shuttle and Expression Vectors. Construction of Genomic libraries and cDNA libraries Transformation techniques: microbial, plants and animals: Cloning in mammalian cells, Integration of DNA into mammalian genome-Electroporation and Calcium Phosphate Precipitation method.	Credits 4		01.10.2021 to 24.02.2022	
UNIT 3:	**Animal cell Culture** Basic techniques in animal cell culture and organ culture, Primary Culture and Cell lines, Culture media- Natural and Synthetic, Stem cells, Cryopreservation of cultures. Agarose and Polyacrylamide Gel Electrophoresis, Southern, Northern and Western blotting, DNA sequencing: Sanger method, Polymerase chain reaction, DNA Fingerprinting and DNA microarrays.		Sandip Jana		
UNIT 4:	**Fermentation** Different types of Fermentation: Submerged & Solid state; batch, Fed batch &Continuous; Stirred tank, Air Lift, Fixed Bed and Fluidized. Downstream Processing: Filtration, centrifugation, extraction, chromatography, spray drying and lyophilization.		Sudipta Bera		
UNIT 5:	**Transgenic Animal Technology** Production of transgenic animals: nuclear transplantation, Retroviral method, DNA microinjection method, Dolly and Polly.		Sandip Jana		
UNIT 6:	**Application in Health** Development of recombinant Vaccines, Hybridoma technology, Gene Therapy. Production of recombinant Proteins: Insulin and growth hormones.		Bapan Santra		
UNIT 7:	**Bio safety Physical and Biological containment.** Bio safety Physical and Biological containment.		Sandip Jana		

GE 1 PRACTICAL					
	1. Packing and sterilization of glass and plastic wares for cell culture. 2. Preparation of culture media. 3. Preparation of genomic DNA from E. coli/animals/ human. 4. Plasmid DNA isolation (pUC 18/19) and DNA quantitation using agarose gel electrophoresis (by using lambda DNA as standard). 5. Restriction digestion of lambda (λ) DNA using EcoR1 and Hind III. 6. Preparation of competent cells and Transformation of E. coli with plasmid DNA using CaCl2, Selection of transformants on X-gal and IPTG (Optional). 7. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting, PCR, DNA Microarrays.	20 Credits 2	Habibullah Mallick	01.10.2021 to 24.02.2022	

1st Semester General

DSC-1A (CC-1): Animal diversity
DSC1AT: Animal diversity

		FULL MARKS			
Unit	**Topics**		**Teachers**	**Month of Teaching**	**Internal Assesment**
Unit 1:	Kingdom Protista General characters and classification up to classes; Locomotory Organelles and locomotion in Protozoa	**40** **CREDITS 4**	Urmita Chandra Chowdhury		1st internal 4th week of December, 2021 2nd Internal
Unit 2:	Phylum Porifera General characters and classification up to classes; Canal System in Sycon		Urmita Chandra Chowdhury		
Unit 3:	Phylum Cnidaria General characters and classification up to classes; Polymorphism in Hydrozoa		Urmita Chandra Chowdhury		
Unit 4:	Phylum Platyhelminthes General characters and classification up to classes; Life history of Taenia solium		Nabanita Das		

Unit 5:	Phylum Nemathelminthes General characters and classification up to classes; Life history of Ascaris lumbricoides and its parasitic adaptation			Nabanita Das		2nd week of March, 2022
Unit 6:	Phylum Annelida General characters and classification up to classes; Metamerism in Annelida			Nabanita Das	01.10.2021 to 24.02.2022	
Unit 7:	Phylum Arthropoda General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects			Urmita Chandra Chowdhury		
Unit 8:	Phylum Mollusca General characters and classification up to classes; Torsion in gastropods			Urmita Chandra Chowdhury		
Unit 9:	Phylum Echinodermata General characters and classification up to classes; Water-vascular system in Asteroidea			Urmita Chandra Chowdhury		
Unit 10:	Protochordates General features and Phylogeny of Protochordata			Nabanita Das		
Unit 11:	Agnatha General features of Agnatha and classification of cyclostomes up to classe			Nabanita Das		
Unit 12:	Pisces General features and Classification up to orders; Osmoregulation in Fishes			Nabanita Das		
Unit 13:	Amphibia General features and Classification up to orders; Parental care			Urmita Chandra Chowdhury		
Unit 14:	Reptiles General features and Classification up to orders; Poisonous and non-poisonous snakes, Biting mechanism in snakes			Urmita Chandra Chowdhury		
Unit 15:	Aves General features and Classification up to orders; Flight adaptations in birds			Nabanita Das		
Unit 16:	Mammals Classification up to orders; Origin of mammals			Nabanita Das		
	DSC1AP: Animal diversity Practical					
Unit	**Topics**		**FULL MARKS**	**Teachers**		**Remarks**

Unit 1	1. Study of the following specimens: Amoeba, Euglena, Plasmodium, Paramecium, Sycon, Hyalonema, and Euplectella, Obelia, Physalia, Aurelia, Tubipora, Metridium, Taenia solium, Male and female Ascaris lumbricoides, Aphrodite, Nereis, Pheretima, Hirudinaria, Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Julus, Periplaneta, Apis, Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus, Pentaceros, Ophiura, Echinus, Cucumaria and Antedon, Balanoglossus, Herdmania, Branchiostoma, Petromyzon, Sphyrna, Pristis, Torpedo, Labeo, Exocoetus, Anguilla, Ichthyophis/Ureotyphlus, Salamandra, Bufo, Hyla, Chelone, Hemidactylus, Chamaeleon, Draco, Vipera, Naja, Crocodylus, Gavialis, Any six common birds from different orders, Sorex, Bat, Funambulus, Loris	20 CREDITS 2	Atanu Das		
Unit 2	Study of the following permanent slides: 1. T.S. and L.S. of Sycon, 2. Study of life history stages of Taenia, 3. T.S. of male and female Ascaris		Atanu Das		
Unit 3	Key for identification of poisonous and non-poisonous snakes An "animal album" containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.		Atanu Das		

Semester-II (Hons.)

	CIII T(Non-Chordate II)				
Sl. No.	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Remarks**
Unit 1:	**Unit 1: Introduction to Coelomates** Evolution of coelom and metamerism	40 CREDITS 4	Atanu Das	01.04.2022 to 09.07.2022	1st internal 2nd week of May, 2022 2nd Internal 2nd week of July, 2022
Unit 2:	**Unit 2: Annelida** General characteristics and Classification up to classes Excretion in Annelida through nephridia. Metamerism in Annelida.		Sudipta Bera		
Unit 3:	**Arthropoda** General characteristics and Classification up to classes Vision and Respiration (Gills in prawn and trachea in cockroach) in Arthropoda. Metamorphosis in Lepidopteran Insects Social life in termites		Dipanjan Ray		

Unit 4:	**Onychophora** General characteristics and Evolutionary significance		Atanu Das		
Unit 5:	**Mollusca** General characteristics and Classification up to classes Respiration in Mollusca Torsion in Gastropoda Feeding and respiration in *Pila* sp		Urmita Chandra Chowdhury		
Unit 6:	**Echinodermata** General characteristics and Classification up to classes Water-vascular system in Asteroidea Larval forms in Echinodermata Affinities with Chordates		Atanu Das		
Unit 7:	**Hemichordata** General characteristics of phylum Hemichordata. Relationship with non-chordates and chordates.		Sudipta Bera		
Practical C3 T		**FULL MARKS**			
	4. Protochordata Balanoglossus, Herdmania, Branchiostoma, 2. Agnatha Petromyzon, Myxine 3. Fishes Scoliodon, Sphyrna, Pristis, Torpedo, Chimaera, Mystus, Heteropneustes, Labeo, Exocoetus, Echeneis, Anguilla, Hippocampus, Tetrodon/ Diodon, Anabas, Flat fish 4. Amphibia Ichthyophis/Ureotyphlus, Necturus, Bufo, Hyla, Alytes, Salamandra 4. Reptilia Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Zamenis, Crocodylus Key for Identification of poisonous and non-poisonous snakes 4. Aves	20 CREDITS 2	Dipanjan Ray Bapan Santra	01.04.2022 to 09.07.2022	

	Study of six common birds from different orders. Types of beaks and claws 4. Mammalia Bat (Insectivorous and Frugivorous), Funambulus, Loris, Herpestes, pecten from Fowl head. Dissections of brain and pituitary of Tilapia. Dissection of Fowl head (Dissections and mounts subject to permission) Power point presentation on study of any two animals from two different classes by students (may be included if dissections not given permission)				
	C4T (Cell Biology)	FULL MARKS			
Unit 1:	**Overview of Cells** Prokaryotic and Eukaryotic cells, Virus, Viroids, Mycoplasma, Prions	40 CREDITS 4	Atanu Das	01.04.2022 to 09.07.2022	
Unit 2:	**Plasma Membrane** Various models of plasma membrane structure Transport across membranes: Active and Passive transport, Facilitated transport Cell junctions: Tight junctions, Desmosomes, Gap junctions		Sandip Jana		
Unit 3:	**Cytoplasmic organelles I** Structure and Functions: Endoplasmic Reticulum, Golgi Apparatus, Lysosome. Protein sorting and mechanisms of vesicular transport		Sudipta Bera		
Unit 4:	**Cytoplasmic organelles II** Mitochondria: Structure, Semi-autonomous nature, Endosymbiotic hypothesis Mitochondrial Respiratory Chain, Chemi-osmotic hypothesis. Peroxisomes: Structure and Functions Centrosome: Structure and Functions		Habibullah Mallick		
Unit 5:	**Cytoskeleton** Type, structure and functions of cytoskeleton. Accessory proteins of microfilament & microtubule A brief idea about molecular motors		Sandip Jana		
Unit 6:	**Nucleus**		Soumen Patra		

	Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleolus. Chromatin: Euchromatin and Hetrochromatin and packaging (nucleosome)				
Unit 7:	**Cell Division** Cell cycle and its regulation, Cancer (Concept of oncogenes and tumor suppressor genes with special reference to p53, Retinoblastoma and Ras and APC. Mitosis and Meiosis: Basic process and their significance		Dipanjan Ray		
Unit 8:	**Cell Signaling** Cell signalling transduction pathways; Types of signaling molecules and receptors GPCR and Role of second messenger (cAMP) Extracellular matrix-Cell interactions Apoptosis and Necrosis		Soumen Patra		
	CELL BIOLOGY PRACTICAL				
	1. Preparation of temporary stained squash of onion root tip to study various stages of mitosis 2. Study of various stages of meiosis. 3. Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells. 4. Preparation of permanent slide to demonstrate: a) DNA by Feulgen reaction. b) Cell viability study by Trypan blue staining. c) Mitochondria identification through vital stain.	20 CREDITS 2	Atanu Das / Dipanjan Ray	01.04.2022 to 09.07.2022	

Generic Elective (GE 2)

GE 2 T (Animal Diversity)					
Unit	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Internal Assesment**
Unit 1.	Protista General characters of Protozoa; Life cycle of Plasmodium	40	Sudipta Bera		1st internal 2nd week of May, 2022
Unit 2.	Porifera General characters and canal system in Porifera		Sudipta Bera		
Unit 3.	Radiata General characters of Cnidarians and polymorphism		Atanu Das		

Unit 4.	Unit 4. Aceolomates General characters of Helminthes; Life cycle of *Taenia solium*	CREDITS 4	Sudipta Bera	01.04.2022 to 09.07.2022	2nd Internal 2nd week of July, 2022
Unit 5.	Pseudocoelomates General characters of Nemeto-helminthes; Parasitic adaptations		Bapan Santra		
Unit 6.	Coelomate Protostomes General characters of Annelida ; Metamerism.		Nabanita Das		
Unit 7.	Arthropoda General characters. Social life in insects.		Atanu Das		
Unit 8.	Mollusca General characters of 849ollusca; Pearl Formation		Nabanita Das		
Unit 9	Coelomate Deuterostomes General characters of Echinodermata, Water Vascular system in Starfish		Urmita Chandra Chowdhury		
Unit 10.	Protochordata Salient features		Atanu Das		
Unit 11.	Pisces Osmoregulation, Migration of Fishes		Urmita Chandra Chowdhury		
Unit 12.	Amphibia General characters, Adaptations for terrestrial life, Parental care in Amphibia.		Atanu Das		
Unit 13.	Amniotes; Origin of reptiles. Terrestrial adaptations in reptiles.		Urmita Chandra Chowdhury		
Unit 14.	Aves: The origin of birds; Flight adaptations		Atanu Das		
Unit 15.	Mammalia Early evolution of mammals; Primates; Dentition in mammals.		Nabanita Das		
Generic Elective (GE 2) PRACTICAL		**FULL MARKS**			
	4. Study of following specimens: **Non Chordates:** *Euglena, Noctiluca, Paramecium, Sycon, , Physalia, Tubipora, Metridium, Taenia, Ascaris, Nereis, Aphrodite, Leech, Peripatus, Limulus, ,* Hermitcrab*, Daphnia,* Millipede, Centipede, Beetle*, Chiton, Dentalium, Octopus, Asterias, and* *Antedon.*	20 CREDITS 2	Urmita Chandra Chowdhury	01.04.2022 to 09.07.2022	
	Chordates*: Balanoglossus, Amphioxus, Petromyzon, Pristis, Hippocampus, Labeo, Icthyophis/Uraeotyphlus, Salamander, Rhacophorus Draco, Uromastix, Naja,*		Bapan Santra		

	Viper, model of Archaeopteryx, any three common birds-*(Crow, duck, Owl),* Squirrel and Bat. 2. Study of following Permanent Slides: BS Cross section of Sycon, Sea anemone and *Ascaris(*male and female*)*. T. S. of Earthworm passing through pharynx, gizzard, and typhlosolar intestine. Bipinnaria and Pluteus larva. 3. Temporary mounts of Septal & pharyngeal nephridia of earthworm. Unstained mounts of Placoid, cycloid and ctenoid scales. 4. Dissections of Digestive and nervous system of Cockroach. Urinogenital system of Rat.		& Nabanita Das		

2nd Semester General

DSC1BT: Comparative Anatomy and Developmental Biology of Vertebrates					
Unit	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Internal assesment**
Unit 1:	Integumentary System Derivatives of integument w.r.t. glands and digital tips	40 CREDITS 4	Nabanita Das	01.04.2022 to 09.07.2022	1st internal 2nd week of May, 2022 2nd Internal 2nd week of July, 2022
Unit 2:	Skeletal System Evolution of visceral arches		Nabanita Das		
Unit 3:	Digestive System Brief account of alimentary canal and digestive glands		Atanu Das		
Unit 4:	Respiratory System Brief account of gills, lungs, air sacs and swim bladder		Bapan Santra		
Unit 5:	Circulatory System Evolution of heart and aortic arches		Bapan Santra		
Unit 6:	Urinogenital System Succession of kidney, Evolution of urinogenital ducts		Sandip Jana		
Unit 7:	Nervous System Comparative account of brain		Sandip Jana		
Unit 8:	Sense Organs Receptors and its types.		Sudipta Bera		
Unit 9:	Early Embryonic Development Gametogenesis: Spermatogenesis and oogenesis w.r.t. mammals, vitellogenesis in birds; Fertilization: external (amphibians), internal (mammals), blocks to polyspermy; Early development of frog and humans (structure of mature egg and its membranes, patterns of cleavage, fate map, up to formation of gastrula);types of morphogenetic movements; Fate of germ layers; Neurulation in frog embryo.		Sudipta Bera		

Unit 10:	Late Embryonic Development Implantation of embryo in humans, Formation of human placenta and functions, other types of placenta on the basis of histology; Metamorphic events in frog life cycle and its hormonal regulation.		Urmita Chandra Chowdhury		
Unit 11:	Control of Development Fundamental processes in development (brief idea) – Gene activation, determination, induction, Differentiation, morphogenesis, intercellular communication, cell movements and cell death		Urmita Chandra Chowdhury		

DSC1BP: Comparative Anatomy and Developmental Biology of Vertebrates (Practical)

Unit	Topics	FULL MARKS	Teachers	Month of Teaching	Internal assesment
1	Osteology: a) Disarticulated skeleton of fowl and rabbit b) Carapace and plastron of turtle /tortoise c) Mammalian skulls: One herbivorous and one carnivorous animal.	20 CREDITS 2	Atanu Das	01.04.2022 to 09.07.2022	
2	Frog - Study of developmental stages - whole mounts and sections through permanent slides – cleavage stages, blastula, gastrula neurula, tail bud stage, tadpole external and internal gill stages.		Atanu Das		
3	Study of the different types of placenta- histological sections through permanent slides or photomicrographs.		Sudipta Bera		
4	Study of placental development in humans by ultrasound scans.		Sudipta Bera		
5	Examination of gametes - frog/rat - sperm and ova through permanent slides or photomicrographs.		Sudipta Bera		

Semester-III (Hons.)

CC V T (DIVERSITY OF CHORDATA)

Unit	Topics	FULL MARKS	Teachers	Month of Teaching	Internal assesment
Unit 1:	**Introduction to Chordates** General characteristics and outline classification		Atanu Das		1st Internal

Unit 2:	**Protochordata** General characteristics and classification of sub-phylum Urochordata and Cephalochordata up to Classes. Retrogressive metamorphosis in Ascidia. Chordate Features and Feeding in Branchiostoma	40 CREDITS 4	Atanu Das	01.10.2021 – to-05.02.2022	4th week of November, 2021 2nd Internal: 1st week of January, 2022.
Unit 3:	**Origin of Chordata** Dipleurula concept and the Echinoderm theory of origin of chordates Advanced features of vertebrates over Protochordata		Urmita Chandra Chowdhury		
Unit 4:	**Agnatha** General characteristics and classification of cyclostomes up to order		Bapan Santra		
Unit 5:	**Pisces** General characteristics and classification of Chondrichthyes and Osteichthyes up to Subclasses Accessory respiratory organ, migration and parental care in fishes Swim bladder in fishes. Classification up to Sub-Classes		Nabanita Das		
Unit 6:	**Amphibia** General characteristics and classification up to living Orders. Metamorphosis and parental care in Amphibia		Dipanjan Ray		
Unit 7:	**Reptilia** General characteristics and classification up to living Orders. Poison apparatus and Biting mechanism in Snake		Dipanjan Ray		
Unit 8:	**Aves** General characteristics and classification up to Sub-Classes Exoskeleton and migration in Birds Principles and aerodynamics of flight		Sudipta Bera		
Unit 9:	**Mammals** General characters and classification up to living orders Affinities of Prototheria Exoskeleton derivatives of mammals Adaptive radiation in mammals with reference to locomotory appendages Echolocation in Micro chiropterans and Cetaceans		Habibullah Mallick		

Unit 10:	**Zoogeography** Zoogeographical realms, Plate tectonic and Continental drift theory, distribution of birds and mammals in different realms		Sandip Jana		
C5: PRACTICAL					
	1. Protochordata Balanoglossus, Herdmania, Branchiostoma, 2. Agnatha Petromyzon, Myxine 3. Fishes Scoliodon, Sphyrna, Pristis, Torpedo, Chimaera, Mystus, Heteropneustes, Labeo, Exocoetus, Echeneis, Anguilla, Hippocampus, Tetrodon/ Diodon, Anabas, Flat fish 4. Amphibia Ichthyophis/Ureotyphlus, Necturus, Bufo, Hyla, Alytes, Salamandra 5. Reptilia Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Zamenis, Crocodylus Key for Identification of poisonous and non-poisonous snakes 6. Aves Study of six common birds from different orders. Types of beaks and claws 7. Mammalia Bat (Insectivorous and Frugivorous), Funambulus, Loris, Herpestes, pecten from Fowl head. Dissections of brain and pituitary of Tilapia. Dissection of Fowl head (Dissections and mounts subject to permission) Power point presentation on study of any two animals from two different classes by students (may be included if dissections not given permission)	20 CREDITS 2	Dipanjan Ray /Bapan Santra/Nabanita Das	01.10.2021 – to-05.02.2022	

	Classification from Young, J. Z. (2004) to be followed				
C6T Animal Physiology: Controlling & Coordinating Systems					
Unit 1:	**Tissues** Structure, location, classification and functions of epithelial tissue, connective tissue, muscular tissue and nervous tissue and, fixation and staining of tissues.	40 CREDITS 4	Sandip Jana	01.10.2021 – to-05.02.2022	
Unit 2:	**Bone and Cartilage** Structure and types of bones and cartilages, Ossification		Urmita Chandra Chowdhury		
Unit 3:	**Nervous System** Structure of neuron, resting membrane potential, Origin of action potential and its propagation across the myelinated and unmyelinated nerve fibers; Types of synapse, Synaptic transmission and Neuromuscular junction; Reflex action and its types		Dipanjan Ray		
Unit 4:	**Muscle** Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle fibre		Soumen Patra		
Unit 5:	**Reproductive System** Histology of testis and ovary Physiology of Reproduction		Bapan Santra		
Unit 6:	**Endocrine System** Histology and function of pituitary, thyroid, pancreas and adrenal Classification of hormones; Mechanism of Hormone action Signal transduction pathways for Steroidal and Non steroidal hormones Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary and endocrine system Placental hormones		Soumen Patra		
C6P	**PRACTICALS**				
	1. Recording of simple muscle twitch with electrical stimulation (or Virtual) 2. Demonstration of the unconditioned reflex action (Deep tendon reflex such as	20	Sandip Jana/ Dipanjan Ray	01.10.2021 – to-05.02.2022	

	knee jerk reflex) 3. Preparation of temporary mounts: Squamous epithelium, Striated muscle fibers and nerve cells 4. Study of permanent slides of Mammalian skin, Cartilage, Bone, Spinal cord, Nerve cell, Pituitary, Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid 5. Microtomy: Preparation of permanent slide of any five mammalian (Goat/white rat) tissues.	CREDITS 2			
CC7T	**Fundamentals of Biochemistry**				
Unit 1:	**Carbohydrates** Structure and Biological importance: Monosaccharides, Disaccharides, Polysaccharides; Derivatives of Monosachharides. Carbohydrate metabolism: Glycolysis, Citric acid cycle, Pentose phosphate pathway, Gluconeogenesis	40	Soumen Patra	01.10.2021 – to-05.02.2022	
Unit 2:	**Lipids** Structure and Significance: Physiologically important saturated and unsaturated fatty acids, Tri-acylglycerols, Phospholipids, Sphingolipid, Glycolipids, Steroids, Eicosanoids and terpinoids. Lipid metabolism: β-oxidation of fatty acids; Fatty acid biosynthesis	CREDITS 4	Dipanjan Ray		
Unit 3:	**Proteins** Amino acids. Structure, Classification, General and Electro chemical properties of α-amino acids; Physiological importance of essential and non-essential amino acids Proteins. Bonds stabilizing protein structure; Levels of organization. Protein metabolism: Transamination, Deamination, Urea cycle, Fate of C-skeleton of Glucogenic and Ketogenic amino acids		Sandip Jana		
Unit 4:	**Nucleic Acids** Structure: Purines and pyrimidines, Nucleosides, Nucleotides, Nucleic acids		Sandip Jana		

	Types of DNA and RNA, Complementarity of DNA, Hpyo- Hyperchromaticity of DNA Basic concept of nucleotide metabolism				
Unit 5:	**Enzymes** Nomenclature and classification; Cofactors; Specificity of enzyme action; Isozymes; Mechanism of enzyme action; Enzyme kinetics; Derivation of Michaelis-Menten equation, Lineweaver-Burk plot; Factors affecting rate of enzyme-catalyzed reactions; Enzyme inhibition; Allosteric enzymes and their kinetics; Strategy of enzyme action- Catalytic and Regulatory (Basic concept with one example each)		Dipanjan Ray		
Unit 6:	**Oxidative Phosphorylation** Redox systems; Review of mitochondrial respiratory chain, Inhibitors and un-couplers of Electron Transport System		Soumen Patra		
C7P	**PRACTICAL**				
	1. Qualitative tests of functional groups in carbohydrates, proteins and lipids. 2. Paper chromatography of amino acids. 3. Quantitative estimation of Lowry Method. 4. Study of enzyme activity of Trypsin and Lypase.. 5. Demonstration of proteins separation by SDS-PAGE.	20 CREDITS 2	Sudipta Bera/ Dipanjan Ray	01.10.2021 – to-05.02.2022	

Skill Enhancement Course (SEC)

SEC1T: Apiculture					
Unit	**Topics:**	**FULL MARKS**	**Teacher**	**Month of Teaching**	**Internal assesment**
Unit 1:	**Biology of Bees** History, Classification and Biology of Honey Bees Social Organization of Bee Colony	40	Nabanita Das		1st Internal 4th week of November, 2021
Unit 2:	**Rearing of Bees** Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth Bee Pasturage	CREDITS 2	Nabanita Das		2nd Internal:

	Selection of Bee Species for Apiculture Bee Keeping Equipment Methods of Extraction of Honey (Indigenous and Modern)			01.10.2021 – to-05.02.2022	1st week of January, 2022.
Unit 3:	**Diseases and Enemies** Bee Diseases and Enemies Control and Preventive measures		Urmita Chandra Chowdhury		
Unit 4:	**Bee Economy** Products of Apiculture Industry and its Uses (Honey, Bees Wax, Propolis), Pollen etc		Urmita Chandra Chowdhury		
Unit 5:	**Entrepreneurship in Apiculture** Bee Keeping Industry – Recent Efforts, Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens		Nabanita Das		

General elective : GE 3

AQUATIC BIOLOGY					
Unit	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Internal assesment**
UNIT 1:	Aquatic Biomes Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs.	40 CREDITS 4	Dipanjan Ray	01.10.2021 – to-05.02.2022	1st Internal 4th week of November, 2021
UNIT 2:	Freshwater Biology Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico–chemical Characteristics: Light, Temperature, Thermal stratification, Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity; dissolved gases (Oxygen, Carbon dioxide). Nutrient Cycles in Lakes-Nitrogen, Sulphur and Phosphorous. Streams: Different stages of stream development, Physico-chemical		Soumen Patra		2nd Internal: 1st week of January, 2022.

	environment, Adaptation of hill-stream fishes.				
UNIT 3:	Marine Biology Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Coral reefs, Sea weeds.		Dipanjan Ray		
UNIT 4:	Management of Aquatic Resources Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD.		Soumen Patra		
PRACTICAL GE3					
	1. Determine the area of a lake using graphimetric and gravimetric method. 2. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem. 3. Determine the amount of Turbidity/transparency, Dissolved Oxygen, Free Carbon dioxide, Alkalinity (carbonates & bicarbonates) in water collected from a nearby lake/ water body. 4. Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler) and their significance. 5. A Project Report on a visit to a Sewage treatment plant/Marine bioreserve/ Fisheries Institutes	20 CREDITS 2	Soumen Patra/ Urmita Chandra Chowdhury	01.10.2021 – to-05.02.2022	

3rd Semester General
DSC-1C (CC-3)

DSC1CT: Physiology and Biochemistry					
Unit	**Topic**	**FULL MARKS**	**TEACHER**	**MONTH OF TEACHING**	**Internal assesment**

Unit 1:	**Nerve and muscle** Structure of a neuron, Resting membrane potential, Graded potential, Origin of Action potential and its propagation in myelinated and non-myelinated nerve fibres, Ultrastructure of skeletal muscle, Molecular and chemical basis of muscle contraction	40 CREDITS 4	Bapan Santra	01.10.2021 – to-05.02.2022	1st Internal 4th week of November, 2021 2nd Internal: 1st week of January, 2022.
Unit 2:	**Digestion** Physiology of digestion in the alimentary canal; Absorption of carbohydrates, proteins, lipids		Soumen Patra		
Unit 3:	**Respiration** Pulmonary ventilation, Respiratory volumes and capacities, Transport of oxygen and carbon dioxide in blood		Urmita Chandra Chowdhury		
Unit 4:	**Excretion** Structure of nephron, Mechanism of Urine formation, Counter-current Mechanism		Habibullah Mallick		
Unit 5:	**Cardiovascular system** Composition of blood, Hemostasis, Structure of Heart, Origin and conduction of the cardiac impulse,Cardiac cycle		Sudipta Bera		
Unit 6:	**Reproduction and Endocrine Glands** Physiology of male reproduction: Hormonal control of spermatogenesis; Physiology of female reproduction: hormonal control of menstrual cycle Structure and function of pituitary, thyroid, parathyroid, pancreas and adrenal		Nabanita Das		
Unit 7:	**Carbohydrate Metabolism** Glycolysis, Krebs Cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogen metabolism, Review of electron transport chain		Urmita Chandra Chowdhury		
Unit 8:	**Lipid Metabolism** Biosynthesis and β oxidation of palmitic acid		Sandip Jana		

Unit 9:	**Protein metabolism** Transamination, Deamination and Urea cycle		Soumen Patra		
Unit 10:	**Enzymes** Introduction, Mechanism of action, Enzyme kinetics, inhibition and regulation		Urmita Chandra Chowdhury		

DSC1CP (Practical) : Physiology and Biochemistry

DSC1CP: Physiology and Biochemistry					
Unit	TOPIC	**FULL MARKS**	**TEACHER**	**MONTH OF TEACHING**	**Remarks**
1	Preparation of hemin and hemochromogen crystals.	20 CREDEITS 2	Sandip Jana	01.10.2021 – to-05.02.2022	
2	Study of permanent histological sections of mammalian pituitary, thyroid, pancreas, adrenal gland.		Nabanita Das		
3	Study of permanent slides of spinal cord, duodenum, liver, lung, kidney, bone, cartilage.		Bapan Santra		
4	Qualitative tests to identify functional groups of carbohydrates in given solutions (Glucose, Fructose, Sucrose, Lactose).		Sandip Jana		
5	Estimation of total protein in given solutions by Lowry's method		Habibullah Mallick		
6	Study of activity of salivary amylase under optimum conditions		Habibullah Mallick		

Semester: IV (Hons.)

C6T: Comparative anatomy of Vertebrates					
Unit	**Topics**	**FULL MARKS**	**Teacher**	**Month of Teaching**	**Internal assessment**
Unit 1:	**Integumentary System -** Structure, functions and derivatives of integument in amphibian, birds and mammals	40 CREDITS 4	Urmita Chandra Chowdhury		1st Internal: 4th week of April, 2022
Unit 2:	**Skeletal System -** Overview of axial and appendicular skeleton, Jaw suspensorium, Visceral arches.		Nabanita Das		
Unit 3:	**Digestive System** - Comparative anatomy of stomach; dentition in mammals		Dipanjan Ray		2nd Internal:

Unit 4:	**Respiratory System** - Respiratory organs in fish, amphibian, birds and mammals		Urmita Chandra Chowdhury	15.03.2022 -25.06.2022	3rd week of July, 2022
Unit 5:	**Circulatory System** General plan of circulation, Comparative account of heart and aortic arches.		Dipanjan Ray		
Unit 6:	**Urinogenital System** - Succession of kidney, Evolution of urinogenital ducts, Types of mammalian uteri		Sudipta Bera		
Unit 7:	**Nervous System** - Comparative account of brain, Cranial nerves in mammals		Bapan Santra		
Unit 8:	**Sense Organs** - Classification of receptors, Brief account of olfactory and auditory receptors in vertebrate.		Soumen Patra		
C6P	**Practical**				
	1) Study of Placoid, Cycloid and Ctenoid scales through permanent slides/photographs. 2) Study of Disarticulated skeleton of toad, Pigeon and Guineapig. 3) Demonstrations of Carapace and Plastron of turtle. 4) Identification of Mammalian skulls: one herbivores (Guineapig) and one carnivores (Dog) animals. 5) Dissection of Tilapia: Circulatory system, Brain, Pituitary, Urinogenital system.	20 CREDITS 2	Bapan Santra / Sudipta Bera	15.03.2022 -25.06.2022	

C9T: Animal Physiology: Life sustaining system					
Unit	**Topics**	**FULL MARKS**	**Teacher**	**Month of Teaching**	**Internal assessment**
Unit 1:	**Physiology of Digestion Structural** organisation and functions of Gastrointestinal tract and Associated glands; Mechanical and chemical digestion of food, absorption of Carbohydrates, Lipids, Proteins and Nucleic Acids; Digestive enzymes	40 CREDITS 4	Urmita Chandra Chowdhury		1st Internal: 4th week of April, 2022
Unit 2:	**Physiology of Respiration -** Mechanism of Respiration, Respiratory volumes and capacities, transport of Oxygen and Carbon dioxide in		Sandip Jana		2nd Internal:

	blood, Dissociation curves and the factors influencing it, respiratory pigments; Carbon monoxide poisoning			15.03.2022 -25.06.2022	3rd week of July, 2022
Unit 4:	**Physiology of circulation-** Components of Blood and their functions; Structure and functions of haemoglobin Haemostasis; Blood clotting system, Fibrinolytic system Haemopoiesis; Basic steps and its regulation Blood groups; ABO and Rh factor		Soumen Patra		
Unit 5:	**Physiology of Heart** Structure of mammalian heart, Coronary Circulation, Structure and working of conducting myocardial fibres, Origin and conduction of cardiac impulses Cardiac Cycle and cardiac output Blood pressure and its regulation		Bapan Santra		
Unit 5:	**Thermoregulation & Osmoregulation-** Physiological classification based on thermal biology. Thermal biology of endotherms Osmoregulation in aquatic vertebrates. Extrarenal osmoregulatory organs in vertebrates		Dipanjan Ray		
Unit 3:	**Renal Physiology-** Structure of Kidney and its functional unit, Mechanism of urine formation, Regulation of acid-base balance		Sudipta Bera		
C9P: (Practical) Animal Physiology: Life sustaining system					
Unit	Topics	FULL MARKS	Teacher	15.03.2022 -25.06.2022	
1	Determination of ABO Blood group.	20	Sandip Jana		
2	Enumeration of red blood cells and white blood cells using haemocytometer.	CREDITS 2	Sandip Jana		
3	Estimation of haemoglobin using Sahli's haemoglobinometer.		Soumen Patra		
4	Preparation of haemin and haemochromogen crystals.		Soumen Patra		
5	Recording of blood pressure using a sphygmomanometer.		Soumen Patra		

C10 T: Immunology					
Sl. No.	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Internal assesment**

Unit 1	**Overview of immune system:** Basic concepts of health and diseases, Historical perspective of Immunology, Cells and organs of the Immune system	40 CREDITS 4	Soumen Patra	15.03.2022 -25.06.2022	1st Internal: 4th week of April, 2022 2nd Internal: 3rd week of July, 2022
Unit 2	**Innate and adaptive immunity:** Anatomical barriers, Inflammation, Cell and molecules involved in innate immunity, Adaptive immunity (Cell mediated and humoral).		Soumen Patra		
Unit 3	**Antigens:** Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, B and T-Cell epitopes		Dipanjan Ray		
Unit 4	**Immunoglobulins:** Structure and functions of different classes of immunoglobulins, Antigen- antibody interactions, Immunoassays (ELISA and RIA), Hybridoma technology, Monoclonal antibody production		Sandip Jana		
Unit 5	**Major Histocompatibility Complex:** Structure and functions of MHC molecules. Structure of T cell Receptor and its signalling, T cell development & selection		Sandip Jana		
Unit 6	**Cytokines:** Types, properties and functions of cytokines.		Urmita Chandra Chowdhury		
Unit 7	**Complement system:** Components and pathways of complement activation.		Dipanjan Ray		
Unit 8	**Hypersensitivity:** Gell and Coombs' classification and brief description of various types of hypersensitivities.		Dipanjan Ray		
Unit 9	**Immunology of diseases:** Malaria, Filariasis, Dengue and Tuberculosis		Bapan Santra		
U10	**Vaccines**: Various types of vaccines. Active & passive immunization (Artificial and natural).		Soumen Patra		
C10P: Immunology					
Sl. No.	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Remarks**
	1 Demonstration of lymphoid organs. 2 Histological study of spleen, thymus and lymph nodes through slides/ photographs. 3 Preparation of stained blood film to study various types of blood cells. 4 ABO blood group determination.	20 CREDITS 2	Soumen Patra /Sandip Jana	15.03.2022 -25.06.2022	

	5 Demonstration of : ELISA				

Skill Enhancement Course-2 (SEC-2): Sericulture

SEC-2					
Unit	**Topics: Sericulture**	FULL MARKS	Teachers	**Month of Teaching**	**Internal assesment**
Unit 1:	**Introduction** Sericulture: Definition, history and present status; Silk route Types of silkworms, Distribution and Races Exotic and indigenous races Mulberry and non-mulberry Sericulture	40 CREDITS 2	Urmita Chandra Chowdhury	15.03.2022 -25.06.2022	1st Internal: 4th week of April, 2022
Unit 2:	**Biology of Silkworm** Life cycle of Bombyx mori Structure of silk gland and secretion of silk		Atanu Das		2nd Internal: 3rd week of July, 2022
Unit 3:	**Rearing of Silkworms** Selection of mulberry variety and establishment of mulberry garden Rearing house and rearing appliances. Disinfectants: Formalin, bleaching powder, RKO Silkworm rearing technology: Early age and Late age rearing Types of mountages Spinning, harvesting and storage of cocoons		Urmita Chandra Chowdhury		
Unit 4:	**Pests and Diseases** Pests of silkworm: Uzi fly, dermestid beetles and vertebrates Pathogenesis of silkworm diseases: Protozoan, viral, fungal and bacterial Control and prevention of pests and diseases		Atanu Das		
Unit 5:	**Entrepreneurship in Sericulture** Prospectus of Sericulture in India: Sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture Visit to various sericulture centres.		Urmita Chandra Chowdhury		

GE-4T: General elective 4: Environment and Public Health					
Unit	**Topics**	**FULL MARKS**	**Teacher**	**Month of Teaching**	**Internal assessment**
UNIT I:	Introduction : Sources of Environmental hazards, hazard identification and accounting, fate of toxic and persistent substances in the environment, dose Response Evaluation, exposure Assessment	40 CREDITS 4	Sudipta Bera	15.03.2022 -25.06.2022	1st Internal: 4th week of April, 2022
Unit III	Climate Change : Greenhouse gases and global warming, Acid rain, Ozone layer destruction, Effect of climate change on public health		Sandip Jana		2nd Internal: 3rd week of July, 2022
Unit 3	Pollution Air, water, noise pollution sources and effects, Pollution control		Sudipta Bera		
Unit 4	Waste Management Technologies: Sources of waste, types and characteristics, Sewage disposal and its management, Solid waste disposal, Biomedical waste handling and disposal, Nuclear waste handling and disposal, Waste from thermal power plants.		Sandip Jana		
Unit 5	Diseases : Causes, symptoms and control of tuberculosis, Asthma, Cholera, Minamata disease, typhoid, Filariasis.		Sudipta Bera		
GE 4P: Practical :Environment and Public Health Lab		**FULL MARKS**			
	To determine P^H, Cl, SO_4, NO_3 in the soil and water sample from different locations.	20 CREDITS 2	Sandip Jana	15.03.2022 -25.06.2022	

4th SEMESTER GENERAL

DSC1DT					
Sl. No.	**Topics**	**FULL MARKS**	**Teacher**	**Month of Teaching**	**Internal assessment**
Unit 1:	**Introduction to Genetics**	40	Sandip Jana		1st Internal:

	Mendel's work on transmission of traits, Genetic Variation, Molecular basis of genetic information	CREDITS 4			4th week of April, 2022
Unit 2:	**Mendelian Genetics and its Extension** Principles of Inheritance, Chromosome theory of inheritance, Incomplete dominance and codominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, sex linked inheritance, extra-chromosomal inheritance		Soumen Patra		2nd Internal: 3rd week of July, 2022
Unit 3:	**Linkage, Crossing Over and Chromosomal Mapping** Linkage and crossing over, Recombination frequency as a measure of linkage intensity, two factor and three factor crosses, Interference and coincidence, Somatic cell genetics – an alternative approach to gene mapping		Urmita Chandra Chowdhury	15.03.2022 -25.06.2022	
Unit 4:	**Mutations** Chromosomal Mutations: Deletion; Duplication; Inversion; Translocation; Aneuploidy and Polyploidy; Gene mutations: Induced versus Spontaneous mutations, Back versus Suppressor mutations,		Soumen Patra		
Unit 5:	**Sex Determination** Chromosomal mechanisms, dosage compensation		Nabanita Das		
Unit 6:	**History of Life** Major Events in History of Life		Sandip Jana		
Unit 7:	**Introduction to Evolutionary Theories** Lamarckism, Darwinism, Neo-Darwinism		Nabanita Das		
Unit 8:	**Direct Evidences of Evolution** Types of fossils, Incompleteness of fossil record, Dating of fossils, Phylogeny of horse		Sandip Jana		
Unit 9:	**Processes of Evolutionary Change** Organic variations; Isolating Mechanisms; Natural selection (Example: Industrial melanism); Types of natural selection (Directional, Stabilizing, Disruptive), Artificial selection		Soumen Patra		

Unit 10:	**Species Concept** Biological species concept (Advantages and Limitations); Modes of speciation (Allopatric, Sympatric)		Sudipta Bera		
Unit 11:	**Macro-evolution** Macro-evolutionary Principles (example: Darwin's Finches)		Urmita Chandra Chowdhury		
Unit 12:	**Extinction** Mass extinction (Causes, Names of five major extinctions, K-T extinction in detail), Role of extinction in evolution		Urmita Chandra Chowdhury		
DSC1DP: Genetics and Evolutionary Biology (Practical)					
	1. Study of Mendelian inheritance and gene interactions (Non- Mendelian inheritance) using suitable examples. Verify the results using Chi-square test. 2. Study of Linkage, recombination, gene mapping using the data. 3. Study of Human Karyotypes (normal and abnormal). 4. Study of fossil evidences from plaster cast models and pictures 5. Study of homology and analogy from suitable specimens/ pictures 6. Charts: a. Phylogeny of horse with diagrams/ cut outs of limbs and teeth of horse ancestors b. Darwin's Finches with diagrams/ cut outs of beaks of different species 7. Visit to Natural History Museum and submission of report	20 CREDITS 2	Sandip Jana/ Bapan Santra	15.03.2022 -25.06.2022	

SEC2T: Aquarium Fish Keeping					
Unit	**Topics**	**FULL MARKS**	**Teacher**	**Month of Teaching**	**Internal assesment**
Unit1:	**Introduction to Aquarium Fish Keeping** The potential scope of Aquarium Fish Industry as a Cottage Industry, Exotic and Endemic species of Aquarium Fishes	40 CREDITS 2	Bapan Santra	15.03.2022 -25.06.2022	1st Internal: 4th week of April, 2022 2nd Internal: 3rd week of July, 2022
Unit 2:	**Biology of Aquarium Fishes** Common characters and sexual dimorphism of Fresh water and Marine Aquarium fishes such as Guppy, Molly, Sword tail, Gold fish, Angel fish, Blue morph, Anemone fish and Butterfly fish		Nabanita Das		
Unit 3:	**Food and feeding of Aquarium fishes** Use of live fish feed organisms. Preparation and composition of formulated fish feeds		Bapan Santra		
Unit 4:	**Fish Transportation** Live fish transport - Fish handling, packing and forwarding techniques		Soumen Patra		
Unit 5:	**Maintenance of Aquarium** General Aquarium maintenance – budget for setting up an Aquarium Fish Farm as a Cottage Industry		Atanu Das		

Semester: V (Hons.)

CXI					
Unit	**Topics: Molecular Biology**	FULL MARKS	Teachers	**Month of Teaching**	**Internal assessment**
Unit 1	**Unit 1: Nucleic Acids** Salient features of DNA and RNA. Watson and Crick Model of DNA	40	Sandip Jana		1st Internal: 1st week of November, 2021 2nd Internal: 2nd week of December, 2021
Unit 2	**Unit 2: DNA Replication** Mechanism of DNA Replication in Prokaryotes, Semi-conservative, bidirectional and discontinuous Replication, RNA priming, Replication of telomeres.		Sandip Jana		
Unit 3	**Unit 3: Transcription**		Dipanjan Ray		

	Mechanism of Transcription in prokaryotes and eukaryotes, Transcription factors, Difference between prokaryotic and eukaryotic transcription.	CREDITS 4		14.09.2021 – 18.01.2022	
Unit 4	**Unit 4: Translation** Mechanism of protein synthesis in prokaryotes, Ribosome structure and assembly in prokaryotes, fidelity of protein synthesis, aminoacyl tRNA synthetases and charging of tRNA; Proteins involved in initiation, elongation and termination of polypeptide chain; Genetic code, Degeneracy of the genetic code and Wobble Hypothesis; Inhibitors of protein synthesis; Difference between prokaryotic and eukaryotic translation		Habibullah Mallick		
Unit 5	**Unit 5: Post Transcriptional Modifications and Processing of Eukaryotic RNA** Capping and Poly A tail formation in mRNA; Split genes: concept of introns and exons, splicing mechanism, alternative splicing, exon shuffling, and RNA editing, Processing of tRNA		Dipanjan Ray		
Unit 6	**Unit 6: Gene Regulation** Regulation of Transcription in prokaryotes: lac operon and trp operon; Regulation of Transcription in eukaryotes: Activators, enhancers, silencer, repressors, miRNA mediated gene silencing, Genetic imprinting		Sandip Jana		
Unit 7	**Unit 7: DNA Repair Mechanisms** Types of DNA repair mechanisms, RecBCD model in prokaryotes, nucleotide and base excision repair, SOS repair		Soumen Patra		
Unit 8	**Molecular Techniques** PCR, Western and Southern blot, Northern Blot, Sanger DNA sequencing		Sudipta Bera		
List of Practical		FULL MARKS			
	1. Demonstration of polytene and lampbrush chromosome from photograph. 2. Isolation and quantification of genomic DNA using spectrophotometer (A260 measurement). 3. Agarose gel electrophoresis for DNA.	20 CREDITS 2	Atanu Das / Habibullah Mallick	14.09.2021 – 18.01.2022	

Semester: V: CXII

Unit	Topics: Genetics	FULL MARKS	Teachers	Month of Teaching	Internal assessment
Unit 1	**Mendelian Genetics and its Extension** Principles of inheritance, Incomplete dominance and co-dominance, Epistasis Multiple alleles, Lethal alleles, Pleiotropy, Sex-linked, sex- influenced and sex-limited inheritance, Polygenic Inheritance.	40 CREDITS 4	Urmita Chandra Chowdhury	14.09.2021 – 18.01.2022	1st Internal: 1st week of November, 2021 2nd Internal: 2nd week of December, 2021
Unit 2	**Linkage, Crossing Over and Chromosomal Mapping** Linkage and Crossing Over, molecular basis of crossing over, Measuring Recombination frequency and linkage intensity using three factor crosses, Interference and coincidence		Atanu Das		
Unit 3	**Mutations** Types of gene mutations (Classification), Types of chromosomal aberrations (Classification with one suitable example of each), Non-disjunction and variation in chromosome number; Molecular basis of mutations in relation to UV light and chemical mutagens		Bapan Santra		
Unit 4	**Sex Determination** Mechanisms of sex determination in Drosophila Sex determination in mammals Dosage compensation in Drosophila & Human		Dipanjan Ray		
Unit 5	**Extra-chromosomal Inheritance** Criteria for extra chromosomal inheritance, Antibiotic resistance in Chlamyadomonas, Kappa particle in Paramoecium Shell spiralling in snail		Soumen Patra		
Unit 6	**Recombination in Bacteria and Viruses** Conjugation, Transformation, Transduction, Complementation test in Bacteriophage		Habibullah Mallick		
Unit 7	**Transposable Genetic Elements** Transposons in bacteria, Ac-Ds elements in maize and P elements in Drosophila, LINE, SINE, Alu elements in humans		Sudipta era		
Practical					

	1. Chi-square analyses 2. Linkage maps based on conjugation 3. Identification of chromosomal aberration in Drosophila and man from photograph 4. Pedigree analysis of some human inherited traits	20 CREDITS 2	Sandip Kr. Jana /Atanu Das	14.09.2021 – 18.01.2022	

DSE1					
Unit	**Topics: DSE1T: Fish and Fisheries**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Internal assessment**
Unit 1	**Introduction and Classification** General description of fish Feeding habit, habitat and manner of reproduction Classification of fish (up to Subclasses)	40 CREDITS 4	Nabanita Das	14.09.2021 – 18.01.2022	1st Internal: 1st week of November, 2021 2nd Internal: 2nd week of December, 2021
Unit 2	**Morphology and Physiology** Types of fins and their modifications; Locomotion in fish; Hydrodynamics; Types of Scales, Use of scales in Classification and determination of age of fish; Gills and gas exchange; Swim Bladder: Types and role in Respiration, buoyancy; Osmoregulation in Elasmobranchs; Reproductive strategies (special reference to Indian fish); Electric organ, Bioluminescence		Dipanjan Ray		
Unit 3	**Fisheries** Inland Fisheries; Marine Fisheries; Environmental factors influencing the seasonal variations in fish catches in the Arabian Sea and the Bay of Bengal; Fishing crafts and Gears; Depletion of fisheries resources; Application of remote sensing and GIS in fisheries; Fisheries law and regulations		Nabanita Das		
Unit 4	**Aquaculture** Sustainable Aquaculture; Extensive, semi-intensive and intensive culture of fish; Pen and cage culture; Polyculture; Composite fish culture; Brood stock management; Induced breeding of fish; Management of finfish hatcheries; Preparation and maintenance of fish aquarium; Preparation of compound diets for fish; Role of water quality in aquaculture; Fish diseases:		Urmita Chandra Chowdhury		

	Bacterial, viral and parasitic; Preservation and processing of harvested fish, Fishery by-products				
Unit 5	**Fish in research** Transgenic fish Zebrafish as a model organism in research		Sudipta Bera		
Practical		FULL MARKS			
	1. Morphometric and meristic characters of fishes 2. Study of *Petromyzon*, *Myxine*, *Pristis*, *Chimaera*, *Exocoetus*, *Hippocampus*, *Gambusia*, *Labeo*, *Heteropneustes*, *Anabas* 3. Study of different types of scales (through permanent slides/ photographs). 4. Study of crafts and gears used in Fisheries 5. Water quality criteria for Aquaculture: Assessment of pH, conductivity, Total solids, Total dissolved solids . 6. Study of air breathing organs in *Channa*, *Heteropneustes*, *Anabas* and *Clarias* 7. Project Report on a visit to any fish farm/ pisciculture unit/Zebrafish rearing Lab.	20 CREDITS 2	Dipanjan Ray / Sudipta Bera	14.09.2021 – 18.01.2022	

DSE2					
Unit	**Topics: DSE2T: Animal Biotechnology**	FULL MARKS	Teachers	**Month of Teaching**	**Internal assessment**
Unit 1	**Introduction** Organization of prokaryotic and eukaryotic genome, Concept of genomics	40 CREDITS 4	Atanu Das		1st Internal: 1st week of November, 2021
Unit 2	**Molecular Techniques in Gene manipulation** Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors (characteristics).Restriction enzymes: Nomenclature, detailed study of Type II. Transformation techniques: Calcium chloride method and electroporation. Construction of genomic and cDNA libraries and screening by colony and plaque hybridization		Bapan Santra & Dipanjan Ray	14.09.2021 – 18.01.2022	2nd Internal: 2nd week of December, 2021

	Southern, Northern and Western blotting DNA sequencing: Sanger method Polymerase Chain Reaction, DNA Finger Printing and DNA micro array.				
Unit 3	**Genetically Modified Organisms** Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection. Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knock out mice		Soumen Patra		
Unit 4	**Culture Techniques and Applications** Animal cell culture, expressing cloned genes in mammalian cells, Molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anemia)		Atanu Das		
	Practical				
	1. Genomic DNA isolation from E. coli 2. Plasmid DNA isolation (pUC 18/19) from E. coli 3. Restriction digestion of plasmid DNA. 4. Construction of circular and linear restriction map from the data provided. 5. Calculation of transformation efficiency from the data provided. 6. To study following techniques through photographs a. Southern Blotting b. Northern Blotting c. Western Blotting d. DNA Sequencing (Sanger's Method) e. PCR f. DNA fingerprinting 7. Project report on animal cell culture	20 CREDITS 2	Dipanjan Ray & Habibullah Mallick & Atanu Das	14.09.2021 – 18.01.2022	

5th SEMESTER GENERAL

	5TH SEM DSE-1T Immunology				
Unit	TOPIC	FULL MARKS	TEACHER	MONTH OF TEACHING	**Internal assessment**
Unit 1.	**Overview of the Immune System**	40	Sudipta Bera		1st Internal:

	Introduction to basic concepts in immunology, components of immune system, principles of innate and adaptive immune system	CREDITS 4		14.09.2021 – 18.01.2022	1st week of November, 2021 2nd Internal: 2nd week of December, 2021
Unit 2	**Cells and Organs of the Immune System** Haematopoeisis, Cells of immune system and organs (primary and secondary lymphoid organs) of the immune system		Urmita Chandra Chowdhury		
Unit 3	**Antigens** Basic properties of antigens, B and T cell epitopes, haptens and adjuvants		Soumen Patra		
Unit 4	**Antibodies** Structure, classes and function of antibodies, monoclonal antibodies, antigen antibody interactions as tools for research and diagnosis		Sandip Jana		
Unit 5	**Working of the immune system** Structure and functions of MHC, exogenous and endogenous pathways of antigen presentation and processing, Basic properties and functions of cytokines, Complement system: Components and pathways.		Bapan Santra		
Unit 6	**Immune system in health and disease** Gell and Coombs' classification and brief description of various types of hypersensitivities, Introduction to concepts of autoimmunity and immunodeficiency		Urmita Chandra Chowdhury		
Unit 7	**Vaccines** General introduction to vaccines, Various types of vaccines		Nabanita Das		
PRACTICAL					
	Demonstration of lymphoid organs	20 CREDITS 2	Urmita Chandra Chowdhury	14.09.2021 – 18.01.2022	
	Histological study of spleen, thymus and lymph nodes through slides/ photographs		Urmita Chandra Chowdhury		
	Preparation of stained blood film to study various types of blood cells		Urmita Chandra Chowdhury		

	Ouchterlony's double immuno-diffusion method		Habibullah Mallick		
	ABO blood group determination		Urmita Chandra Chowdhury		
	Cell counting and viability test from splenocytes of farm bred animals/cell lines		Habibullah Mallick		
	Demonstration of • ELISA • Immunoelectrophoresis		Habibullah Mallick		

	SEC-3: Medical Diagnostics				
Unit	TOPICS	FULL MARKS	TEACHER	MONTH OF TEACHING	**Internal assessment**
Unit 1	Introduction to Medical Diagnostics and its Importance	40 CREDITS 2	Urmita Chandra Chowdhury	14.09.2021 – 18.01.2022	1st Internal: 1st week of November, 2021 2nd Internal: 2nd week of December, 2021
Unit 2	Diagnostics Methods Used for Analysis of Blood Blood composition, Preparation of blood smear and Differential Count (D.C) using Leishman's stain, Platelet count using haemocytometer, Erythrocyte Sedimentary Rate (E.S.R), Packed Cell Volume (P.C.V.)		Nabanita Das		
Unit 3	Diagnostic Methods Used for Urine Analysis Urine Analysis: Physical characteristics; Abnormal constituents		Soumen Patra		
Unit 4	Non-infectious Diseases Causes, types, symptoms, complications, diagnosis and prevention of Diabetes (Type I and Type II), Hypertension (Primary and secondary), Testing of blood glucose using Glucometer/KiT		Urmita Chandra Chowdhury		
Unit 5	Infectious Diseases Causes, types, symptoms, diagnosis and prevention of Tuberculosis and Hepatitis		Nabanita Das		
Unit 6	Tumours Types (Benign/Malignant), Detection and metastasis; Medical imaging: X-Ray of Bone		Soumen Patra		

	fracture, PET, MRI and CT Scan (using photographs).				

Semester-VI (Hons.)

C13T: Developmental Biology					
Unit	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Internal assessment**
Unit 1	**Introduction** Basic concepts: Phases of Development, Cell cell interaction, Differentiation and growth, Differential gene expression.	40 CREDITS 4	Soumen Patra	21.02.2022 – 10.06.2022	1st Internal: 1st week of April, 2022 2nd Internal: 2nd week of June, 2022.
Unit 2	**Early Embryonic Development** Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Changes in gametes, Blocks to polyspermy; Planes and patterns of cleavage; Types of Blastula; Fate		Dipanjan Ray		

	maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers.				
Unit 3	**Late Embryonic Development** Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta).		Habibullah Mallick		
Unit 4	**Post Embryonic Development** Development of brain and Eye in Vertebrate. Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each).		Sandip Jana		
Unit 5	**Implications of Developmental Biology** Teratogenesis: Teratogenic agents and their effects on embryonic development; In vitro fertilization, Stem cell (ESC), Amniocentesis.		Atanu Das		
	Practical				
	1. Study of whole mounts of developmental stages of chick through permanent slides: Primitive streak (13 and 18 hours), 21, 24, 28, 33, 36, 48, 72, and 96 hours of incubation (Hamilton and Hamburger stages). 2. Study of the developmental stages and life cycle of Drosophila from stock culture. 3. Study of different sections of placenta (photomicropgraph/ slides). 4. Project report on Drosophila culture/chick embryo development.	20 CREDITS 2	Sudipta Bera **&** Habibullah Mallick	21.02.2022 – 10.06.2022	

C14T: Evolutionary Biology					
Unit	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Internal assessment**
Unit 1	Life's Beginnings: Chemogeny, RNA world, Biogeny, Origin of photosynthesis, Evolution of eukaryotes.	40 CREDITS 4	Sandip Jana	21.02.2022 – 10.06.2022	1st Internal: 1st week of April, 2022 2nd Internal: 2nd week of June, 2022.
Unit 2	Historical review of Evolutionary concepts, Lamarkism, Darwinism and Neo Darwinism.		Nabanita Das		
Unit 3	Geological time scale, Fossil records of Hominids (from *Australopithacus* to *Homo sapiens*), evolution of horse. Neutral theory of molecular evolution, Molecular clock.		Urmita Chandra Chowdhury		
Unit 4	Sources of variations: Heritable variations and their role in evolution.		Bapan Santra		
Unit 5	Population genetics: Hardy-Weinberg Law (statement and derivation of equation, application Of law to biallelic Population); Evolutionary forces upsetting H-W equilibrium; Natural selection (concept of fitness, types of selection, selection coefficient, mode of selection heterozygous superiority).Genetic Drift mechanism (founder's effect, bottleneck phenomenon)**.** Role of Migration and Mutation in changing allele frequencies.		Habibullah Mallick		
Unit 6	Species concept, Isolating mechanisms, modes of speciation. Adaptive radiation /macroevolution (exemplified by Galapagos finches).		Dipanjan Ray		
Unit 7	Extinctions, Back ground and mass extinctions (causes and effects), detailed example of K-T extinction.		Atanu Das		

Unit 8	Origin and Evolution of Man, Unique Hominin characteristics contrasted with primate characteristic Molecular analysis of human origin.		Sudipta Bera		
Unit 9	Phylogenetic trees, Construction & interpretation of Phylogenetic tree using parsimony, Convergent & Divergent evolution.		Soumen Patra		
PRACTICAL		**FULL MARKS**			
	1. Study of fossils from models/ pictures 2. Study of homology and analogy from suitable specimens 3. Study and verification of Hardy-Weinberg Law by chi square analysis 4. Graphical representation and interpretation of data of height/ weight of a sample of 100 humans in relation to their age and sex.	20 CREDITS 2	Atanu Das / Habibullah Mallick	21.02.2022 – 10.06.2022	

DSE3T: Endocrinology

Unit	Topics	FULL MARKS	Teachers	Month of Teaching	Internal assessment
Unit 1	**Introduction to Endocrinology** General idea of Endocrine systems, Classification, Characteristic and Transport of Hormones, Neurosecretions and Neurohormones	40 CREDITS 4	Nabanita Das	21.02.2022 – 10.06.2022	1st Internal: 1st week of April, 2022 2nd Internal: 2nd week of June, 2022.
Unit 2	**Epiphysis, Hypothalamo-hypophysial Axis** Structure of pineal gland, Secretions and their functions in biological rhythms and reproduction. Structure and functions of hypothalamus and Hypothalamic nuclei, Regulation of neuroendocrine glands, Feedback mechanisms Structure of pituitary gland, Hormones and their functions, Hypothalamo-		Bapan Santra		

	hypophysial portal system, Disorders of pituitary gland.				
Unit 3	**Peripheral Endocrine Glands** Structure, Hormones, Functions and Regulation of Thyroid gland, Parathyroid, Thymus, Adrenal, Pancreas, Ovary and Testis. Hormones in homeostasis, Disorders of endocrine glands		Urmita Chandra Chowdhury		
Unit 4	**Regulation of Hormone Action** Mechanism of action of steroidal, non-steroidal hormones with receptors. Bioassays of hormones using RIA & ELISA. Estrous cycle in rat and menstrual cycle in human. Multifaceted role of Vasopressin & Oxytocin. Hormonal regulation of parturition.		Soumen Patra		
Practical		**FULL MARKS**			
	1. Dissect and display of Endocrine glands in laboratory bred rat. 2. Study of the permanent slides of all the endocrine glands 3. Tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland 4. Estimation of plasma level of any hormone using ELISA. 5. Designing of primers of any hormone.	20 CREDITS 2	Dipanjan Ray & Soumen Patra	21.02.2022 – 10.06.2022	

DSE4T: Wild Life Conservation and Management

Unit	Topics	FULL MARKS	Teachers	Month of Teaching	Internal assessment
Unit 1	**Introduction to Wild Life**	40	Nabanita Das		1st Internal:

	Values of wild life - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion; World conservation strategies.	CREDITS 4			1st week of April, 2022 2nd Internal: 2nd week of June, 2022.
Unit 2	**Evaluation and management of wild life** Habitat analysis, Physical parameters: Topography, Geology, Soil and water Biological Parameters: food, cover, forage, browse and cover estimation. Standard evaluation procedures: remote sensing and GIS.		Atanu Das		
Unit 3	**Management of habitats** Setting back succession; Grazing logging; Mechanical treatment; Advancing the successional process; Cover construction; Preservation of general genetic diversity Restoration of degraded habitats.		Habibullah Mallick	21.02.2022 – 10.06.2022	
Unit 4	**Population estimation** Population density, Natality, Birth rate, Mortality, fertility schedules and sex ratio computation; Faecal analysis of ungulates and carnivores; Pug marks and census method.		Dipanjan Ray		
Unit 5	**Aims and objectives of wildlife conservation** Wildlife conservation in India – through ages; different approaches of wildlife conservation; modes of conservation; in-situ conservation and ex-situ conservation: necessity for wildlife conservation.		Nabanita Das		
Unit 6	**Management planning of wild life in protected areas**		Dipanjan Ray		

	Estimation of carrying capacity; Eco tourism / wild life tourism in forests; Concept of climax persistence; Ecology of perturbence.				
Unit 7	**Man and Wildlife** Causes and consequences of human-wildlife conflicts; mitigation of conflict – an overview; Management of excess population.		Sandip Jana		
Unit 8	**Protected areas** National parks & sanctuaries, Community reserve; Important features of protected areas in India; Tiger conservation - Tiger reserves in India; Management challenges in Tiger reserve.		Urmita Chandra Chowdhury		
Practical					
	1. Identification of flora, mammalian fauna, avian fauna, herpeto-fauna. 2. Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System, Various types of Cameras and lenses). 3. Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers, etc. 4. Demonstration of different field techniques for flora and fauna. 5. PCQ, ten tree method, Circular, Square & rectangular plots, Parker's 2 Step and other methods for ground cover	20 CREDITS 2	Dipanjan Ray		

	assessment, Tree canopy cover assessment, Shrub cover assessment. 6. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences).				

Unit	Topics	FULL MARKS	Teachers	Month of Teaching	Internal assessment
Unit 1	**Introduction** Concept and scope of biotechnology	40 CREDITS 4	Nabanita Das		1st Internal: 1st week of April, 2022 2nd Internal: 2nd week of June, 2022.
Unit 2	**Molecular Techniques in Gene manipulation** Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors (characteristics) Restriction enzymes: nomenclature, detailed study of Type II. Transformation techniques: Calcium chloride method and electroporation. Construction of genomic and cDNA libraries and screening by colony and plaque hybridization Southern, Northern and Western blotting; DNA sequencing: Sanger method; Polymerase Chain Reaction, DNA Finger Printing and DNA micro array		Bapan Santra Atanu Das	21.02.2022 – 10.06.2022	
Unit 3	**Genetically Modified Organisms** Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection, Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knockout mice. Production of transgenic plants: *Agrobacterium* mediated transformation. Applications of transgenic plants: insect and herbicide resistant plants.		Urmita Chandra Chowdhury		
Unit 4	**Culture Techniques and Applications** Animal cell culture, Expressing cloned genes in mammalian cells, Molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anemia);		Soumen Patra		

	Recombinant DNA in medicines: Recombinant insulin and human growth hormone, Gene therapy				
DSE2P: Animal Biotechnology (Practical)		**FULL MARKS**			
	1. Genomic DNA isolation from *E. coli* 2. Plasmid DNA isolation (pUC 18/19) from *E. coli* 3. Restriction digestion of plasmid DNA. 4. Construction of circular and linear restriction map from the data provided. 5. Calculation of transformation efficiency from the data provided. 6. To study following techniques through photographs a) Southern Blotting b) Northern Blotting c) Western Blotting d) DNA Sequencing (Sanger's Method) e) PCR f) DNA fingerprinting **7.** Project report on animal cell culture	20 CREDITS 2	Sandip Kr. Jana /Sudipta Bera	21.02.2022 – 10.06.2022	

SEC4T: Sericulture					
Unit	**Topics**	**FULL MARKS**	**Teachers**	**Month of Teaching**	**Internal assessment**
Unit 1	**Introduction** Sericulture: Definition, history and present status; Silk route, Types of silkworms, Distribution and Races, Exotic and indigenous races, Mulberry and non-mulberry Sericulture	40 CREDITS 2	Bapan Santra	21.02.2022 – 10.06.2022	1st Internal: 1st week of April, 2022 2nd Internal: 2nd week of June, 2022.
Unit 2	**Biology of Silkworm** Life cycle of *Bombyx mori,* Structure of silk gland and secretion of silk		Urmita Chandra Chowdhury		
Unit 3	**Rearing of Silkworms** Selection of mulberry variety and establishment of mulberry garden, Rearing house and rearing appliances, Disinfectants: Formalin, bleaching powder, RKO, Silkworm rearing technology: Early age and Late age rearing, Types of mountages, Spinning, harvesting and storage of cocoons		Urmita Chandra Chowdhury		
Unit 4	**Pests and Diseases** Pests of silkworm: Uzi fly, dermestid beetles and vertebrates, Pathogenesis of silkworm diseases: Protozoan, viral, fungal and bacterial. Control and prevention of pests and diseases		Nabanita Das		
Unit 5	**Entrepreneurship in Sericulture** Prospectus of Sericulture in India: Sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture. Visit to various, sericulture centres.		Atanu Das		