JANGIPUR COLLEGE

CROSS-CUTTING ISSUES IN SYLLABUS

Biswas

Principal Jangipur College RO.- Jangipur, Dist.- Murshidabad Pin- 742213



Syllabus portions for Arabic CBCS crosscutting issues_

B.A. General Course in Arabic

Semester -I

CC- 1A : History of Arabic Literature-(Pre- Islamic to Umayyad Period 500-750 A. D.), Gram. & Translation

A. History of Arabic Lit.

1) Introduction of Pre-Islamic Period-(500-622 A.D.)

Al-Muallagat with special reference to Imraul Qais, Zuhair bin Abi Sulma and Labid bin Rabia.

2) Islamic Period & Umayyad Period (622 -750 A.D.)

(a) Al-Quran (b) Al-Hadith (c) Poetry with special reference to-Al-Khansa , Hassan bin Thabit , Al-Akhtal , Al-Farazdaq, Jarir.

B. Grammar & Translation: The following topics-

(۱) الكلمة و أقسامها: اسم ، فعل ، حرف	(ح)الفعل الثلاثي المجرد و أبواب والمزيد فيه
(ب) الأداة : النكرة و المعرفة	(خ) الضمير وأقسامه
(ت) الجنس: المذكر والمؤنث	(د) المضاف و المضاف اليه
(ث) العدد : الواحد، النَثْنية ، الجمع	(ذ) المبتدأ والخبر
(ج) الفعل : الماضيي ، المضارع ، الأمر ،النهى	(ر) الموصوف والصفة

N.B.- Translation (Arabic to English & vice versa) should be exercised on the prescribed Grammatical topics pointed out wherever in the whole syllabus. This type of exercises of the GRAMMAR-BASED-TRANSLATION should be strictly followed.

Semester -II

CC-1B: History of Arabic Literature-(Abbasid Period, 750-1258 A. D.), Gram. & Translation

- A. Abbasid Period
- (1) Prose Literature with special reference to :

Ibn-ul-Muqaffa, Al-Jahiz, Al-Hariri and Al-Hamadani

(2) Poetry with Special Reference to:

Bashar ibn Burd, Abu Nuas, Abul Atahiah, Abu Tammam, Al-Mutanabbi

B. Grammar & Translation. The following topics:

(۱) نواصب المضارع	(د)الحالة : رفع ، نصب ، جر
(ب) جوازم المضارع	(ذ) حروف الجر
(ت) اسم الإشارة	(ر) حروف الاستفهام
(ث) اسم الموصول	(ز) حروف الشرط
(ج) اسم الفاعل واسم المفعول	(س) المعرب والمبني
(ح) إعراب المثنى	(ش) الحال وذو الحال
(خ) إعراب الجمع السالم	(ص) التمييز

Semester-III

CC-1C Prose : (Islamic, medieval, & Modern Period)

1) سورة الحجرات	القرآن الكريم
 الجامع الصحيح (أحاديث منتخبة) 	الإمام مسلم بن الحجاج
3) سلمان الفارسي	عبد الرحمن رأفت الباشا
(4) أصحاب الفيل	سیرة ابن هشام
(5) الدين الصناعي	أحمد أمين

Semester -IV

CC- 1D : Poetry : (Islamic, medieval, & Modern Period)

1) حسان بن ثابت	وقال يرثي النبي صلى الله عليه وسلم
2) أبو العناهية	وله في الوعظ
3) حافظ ابر اهیم	ح <mark>ال لسان اللغة العربية</mark>
4) أحمد شوقي	أيا صوفيا
5) الحماسة	العباس بن مرداس السلمي
6) أبو العلاء المعري	ألا في سبيل المجد

Note: GE-1,2,3,4 (Honors) and CC-1A,1B,1C,1D (General) are common

Skill Enhancement Courses

Semester-III

SEC-1: Grammar, Translation & Letter Writing

- قواعد النحو والترجمة على أساس المواد التالية (on the basis of Following Grammatical rules): الجملة الاسمية , الجملة الفعلية الجملة الشرطية, حروف المشبه بالفعل ، الأفعال الناقصة ، مواضيع تقديم المبتدأ على الخبر ، مواضيع تقديم الخبر على المبتدأ وفعلا التعجب
 - Letter Writing (Official, Educational, Personal and etc.) (2

Semester -IV

SEC-2: Grammar, Translation & Essay Writing:

- a) قواعد النحو والترجمة على أساس المواد التالية (on the basis of Following Grammatical rules):
 الاستثناء ، لا لنفي الجنس ، خاصية أبواب: افعال ، تفعيل ، استفعال ، مفاعلة وافتعال
- b) كتابة المقال (Essay Writing): (يارة المدينة المشهورة ، زيارة المكتبة الشهيرة ، زيارة حديقة الحيوانات ، شخصية تحبه كثيرا ((لأدب العربي)

Note : Sec-1 & 2 (General) and Sec-1&2 are common

Semester-V

SEC-3: Specific literary feature of Modern Arabic Literature

বিবারিত পাঠক্রম : UG-CBCS SYLLABUS – BENGALI HONOURS

	SEMESTER I		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H- CC-T-1	ৰাংলা সাহিত্যের ইতিহাস (প্রাচীন ও মধ্যযুগ) ও ৰাংলা ভাষাতত্ত্ব (১মভাগ)	CORE	6
পৰ্ব : ১ ৰাংলা সাহিত্যে	র ইতিহাস (প্রাচীন)		

Scanned by TapScanne

ব্ৰাৰনা ও প্ৰাথমিক আলোচনা : সামাজিক ও ৰাজনৈতিক পটভায়িৰ	গয় বাংলা ভাষা, জাতি ও সাহিত্যের সংক্ষিপ্ত পরিচয়, চর্যাপন (দেশ-
চাল-ডাম্বা-সাহিত্য-সমাজ-সংস্কৃতির চিত্র) তুর্কি আরুমণ ও প্রতিক্রিয়া (স	মোজ ও সাহিত্যে)।
A . A attent stifferenze Bernin enument .	
14 : 2 41(7) 7)12(0)# 210217 (N4)37)	
বড়ু চন্ডীদাস ও শ্রীকৃষ্ণকীর্তন।	
অনুৰাদ সাহিত্য : ডাগৰত (মালাধর ৰসু), রামায়ণ (কৃতিৰাস ওকা) ও মহ	হাডারত (কাশীরাম দাস)
ৰৈষ্ণৰ পদাৰলী: বিদ্যাপতি, চন্তীদাস, জ্ঞানদাস ও গোবিন্দদাস	
প্রীচৈডন্যজীবন ও জীবনী সাহিত্য: শ্রীচৈডন্য জীবনকথা, সাহিত্য ও	সমাজে শ্রীচৈতন্য প্রভাব, চৈতন্যজীবনীসাহিত্য (বিশেষ গুরুত্বসহ
বৃন্দাবনদাসের 'চৈতন্যভাগবত' ও কৃষ্ণদাস কবিরাজের 'শ্রীচৈতন্যচরি	তামৃত' সম্পর্কে আলোচনা)
পৰ্ব: ৩ বাংলা সাহিত্যের ইতিহাস (মধ্যযুগ)	
মঙ্গলকাব্যের উদ্ভব ও বিবর্তন : (মনসামঙ্গল, চন্দ্রীমঙ্গল, ধর্মমঙ্গল, অন্তদ	নামঙ্গল) সংজ্ঞা, বৈশিষ্টা, কাহিনি আলোচনা ও কৰিদের আলোচনা (
নারায়ণদেব, বিজয়গুপ্ত, কবিকঙ্গণ মুক্রন্দরাম চক্রবর্তী, রূপরাম চক্রবর্তী	, ঘনরাম চক্রবর্তী, ডারতচন্দ্র রায়)।
মধ্যযুগের মুসলিম কবি ও কাৰ্য্য: দৌলত কাজী ও সৈয়দ আলাওল l	
ণাক্তপদাবলী – রামপ্রসাদ সেন ও কমলাকান্ত ডট্টাচার্য।	
গৰ্ব: ৪ বাংলা ভাষাতত্ত্ব	
. ডাষার সংজ্ঞা ও বৈশিষ্ট্য।	
২. প্রাচীন ভারতীয় আর্যভাষা-মধ্য ভারতীয় আর্যভাষা-নব্য ভারতীয় আর্য	ভাষা৷
০. ৰাংলা ভাষার জন্ম ও ইতিহাস ।	
3. প্ৰাচীন ৰাংলা–সধ্য ৰাংলা-আধুনিক বাংলা। (নিদৰ্শন, সময়কাল, ৰৈশিষ্ট	T)
 ধ্বনির বর্গীকরণ- স্বরধ্বনি ও ব্যঞ্জনধ্বনি। 	
১. ৰাংলা লিপির উদ্ধৰ ও বিকাশ।	
৭, আন্তৰ্জাতিক ধ্বনিমলক কশ্মালা (আই.পি.এ) নিয়মাবলী ও জিলাৰেব	

	SEMESTER II		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-4	অলঙ্কার, শাক্ত পদাবলী, অন্নদামঙ্গল	CORE	6
পৰ্ব-১ অলকার			
	-leis i i ind		
শব্দালঙ্কার : অনুপ্রাস, শ্লেষ, অর্থালঙ্কার : উপমা, রূপক, পর্ব-২ শাক্ত পদাবলী	ৰক্লোক্তি, যসক। সমাসোক্তি, উৎপ্ৰেক্ষা, সম্দেহ, ব্যতিরেক, বিরোধাডাস, ব্যজ্ব	ন্তুতি, অপস্কুতি, অতিশয়োস্তি।	,

Scanned by TapScann

৬. মা আমায় ঘুরাবি কত- রামপ্রসাদ সেন

৭. দোষ কারো নয় গো মা- দাশরথি রায়

পর্ব- ও অৱদামলল (১ম তাগ) (নির্বাচিত অংশ)

ডারতচন্দ্রের অন্নদামঙ্গল (১ম ডাগ): কাব্য পাঠ (গ্রন্থসূচনা, কৃষ্ণচন্দ্রের সভাকনি, শিবের দক্ষালয় থাত্রা, শিববিবাহের সম্বন্ধ, শিবের বিবাহ থাত্রা, শিববিবাহ, কন্দল ও শিবনিন্দা, হরগৌরীর কথোপকখন, হরগৌরীর বিবাদসূচনা, হরগৌরীর কন্দল, শিবের ডিক্ষায় গমনোদ্যোগ, শিবের ডিক্ষাযাত্রা, অন্নপূর্ণার অধিষ্ঠান, শিবব্যাসে কথোপকখন, অন্নদার জরতীবেশে ব্যাসছলনা, ব্যাসের প্রতি দৈববাশী, বসুন্ধরের মর্ত্যলোকে জন্ম, হরিহোড়ের বৃত্তান্ত, ভবানন্দের জন্মবৃত্তান্ত, অন্রদার ভবানন্দ ভবনে যাত্রা) বিল্লেষণ ও কবি প্রতিভার পরিচয়।

	SEMESTER III		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-5	কথাসাহিত্যের রূপভেদ ও বাংলা ছোটগন্ন	CORE	6
44-5			
ক) ছোটগল্পের রূপজ্যে কার্ন্সাল্যের রূপজ্যে	ৰ সংজ্ঞা, ৰৈশিষ্ট্য ও শ্ৰেণি ৰিডাগ। এন্টেডাসিক, সামাজিক, রাজনৈতিক, আঞ্চলিক, মনস্তাত্মিক।		

Scanned by TapScanne

-২ রবীন্দ্রনাথের ছোটগল্প – গলপেন্দ্	
াবিত ও সৃত, নিশীথে, অনধিকার প্রবেশ, অভিথি, ক্লির পর।	
ৰ-ও আধুনিক বাংলা ছোটগন্ধ	
) প্রাক্ চল্লিশ বাংলা গন্ধ : বাংলা গন্ধ ও সমালোচনা সঞ্চয়ন, (কল্যালী বিশ্ববিদ্যালয় প্রকাশিত) ঘকর্ণ–পরশুরাম, দেবী-প্রভাত কুমার মুম্বোপাধ্যায়, নারী ও নাগিনী- তারাশচ্চর বন্দ্যোপাধ্যায়।	

	SEMESTER III		T
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-6	উপন্যাস	CORE	6
পর্ব-১ কৃষ্ণকান্তের উইন	শ- ৰক্ষিমচন্দ্ৰ চট্টোপাখ্যায়।		
পৰ-২ খনে ৰাহনে - ব্ৰ পৰ-৩ শ্ৰীকান্ত (প্ৰথম প	জিনাথ ঠাকুর। ব)- পরৎচন্দ্র চট্টোপাধ্যায়।		

পৰ-২ রবীন্দ্রনাথের ছোটগর - গরওন্দ্

ধীবিত ও সৃত, নিশীখে, অনথিকার প্রবেশ, অতিথি, ক্লি পর।

পৰ-৩ আধুনিক বাংলা ছোটগন্ব

ক) প্রাক্ চল্লিশ বাংলা গন্ধ : বাংলা গন্ধ ও সমালোচনা সঞ্চয়ন, (কল্যালী বিশ্ববিদ্যালয় প্রকাশিত) লম্বকর্ণ—পরশুরাম, দেবী-প্রভাত কুমার মুম্বোপাধ্যায়, নারী ও নাগিনী- তারালন্ধর বন্দ্যোপাধ্যায়।

খ) উত্তর-চল্লিশ বাংলা ছোটগন্ধ : বাংলা গন্ধ ও সমালোচনা সঞ্চয়ন, (কল্যালী বিশ্ববিদ্যালয় প্রকাশিত)

হারাশের নাডজ্ঞামাই - মানিক ৰন্দ্যোপাখ্যায়, পোনাঘাট পেরিয়ে- প্রেমেন্দ্র মির, বান- মহান্বেডা দেবী।

	SEMESTER III		T
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-6	উপন্যাস	CORE	6
পৰ্ব-১ ব্যৱকাল্যে উই	ল- ৰন্ধিমচন্দ্ৰ চট্টোপাধ্যায়৷ জন্মখ হাজ		1
etz.o. Bata conta			

	SEMESTER III		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-7	প্ৰবন্ধ নিৰক্ষের রূপডেদ, জীবনী, প্রবন্ধ পাঠ	CORE	6
74-5			
শৰ -১ প্ৰবন্ধ নিৰজেৱ রূপভেদ	: প্রবন্ধ, রব্যরচনা, পরসাহিত্য, ডায়েরী, জীবনীসাহিত্য, ভ্রব	গ্যাহিত্য	
শৰ -১ প্ৰবন্ধ নিৰব্বের রূপতেদ পর্ব-২	: প্রবন্ধ, রব্যরচনা, পরসাহিত্য, ডায়েরী, জীবনীসাহিত্য, ভ্রম	গসাহিত্য	
শৰ -১ প্ৰবন্ধ নিৰজেৱ রূপতেদ পৰ্ব-২ আমার জীবন- রাসসুন্দরী (: প্রবন্ধ, রস্যরচনা, পরসাহিত্য, ডায়েরী, জীবনীসাহিত্য, ভ্রস নবী	দ্যাহিড্য	
শৰ -১ প্ৰবন্ধ নিৰক্ষের রূপভেদ পর্ব-২ আসার জীবন- রাসসুদরী (দর্ব-৩	: প্রবন্ধ, রস্যরচনা, পরসাহিত্য, ডায়েরী, জীবনীসাহিত্য, ভ্রমণ ব্যবি	ধসাহিত্য	
শৰ -১ প্ৰবন্ধ নিৰক্ষের রূপতেদ পর্ব-২ আসার জীবন- রাসসুদরী (পর্ব-৩ চসলাকান্তের দপ্তর – বর্ষি	: প্রবন্ধ, রস্যরচনা, পরসাহিত্য, ডায়েরী, জীবনীসাহিত্য, ভ্রস ব্যব্ধি মচন্দ্র চট্টোপাখ্যায়	দসাহিত্য	

41-2	
ৰীরালনা- (নিৰ্বাচিত অংশ) মাইকেল	মধুসুদন দত্ত : দুমতের প্রতি শকুন্তলা, সোমের প্রতি তারা, গলরখের প্রতি কেকয়ি, নীলখাজের প্র

Scanned by TapScanne

COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-9	কাব্যের রূপডেদ, কাব্য ও কবিতাপাঠ	CORE	6
পৰ্ব-১ কাব্যের সংজ্ঞা ও	রপরেন		

	SEMESTER IV		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-8	ৰাংলা সমালোচনা সাহিত্য ও প্ৰবন্ধ	CORE	6
গৰ্ব-১ ৰাংলা পন্ন ও সমাত	। লাচনা সংকলন (কল্যাণী বিশ্ববিদ্যালয় প্ৰকালিত)	
গমালোচনা মূলক প্ৰবন্ধ:			
মাহিতলাল মন্ধুমদার- আধু	নিক ৰাংলা সাহিত্যে রোমান্টিক ভাৰধারা		
নরোজ বন্দ্যোপাধ্যায়- উপ-	ন্যাসে মৃত্যু।		
াৰ্ব-২ বাংলা কবিতা ও প্ৰ	ৰন্ধ সংকলন (কল্যাণী বিশ্ববিদ্যালয় প্ৰকাশিত)		
ৰন্ধ : ৰৰ্তমান সমাজ ও স	ংশ্বতি –শ্রীনীরদচন্দ্র চৌধুরী		
ৰাঙালির আন্ধলরিচয়-	আনিস্ব্যামান		
রবীন্দ্রনাব ও বাংলাদেশ	- সন্জিদা খাতুন		
াৰ্ব-৩ রবীন্দ্রনাথের প্রবন্ধ (নিৰ্বাচিত)		
ৰাচিত প্ৰবন্ধ : সাহিত্যের য	চাৎপর্য (সাহিড্যের পথে), নরনারী (পঞ্চভূড), লাইব্রের	ী (ৰিচিত্ৰ প্ৰবন্ধ)।	

SEMESTER IV			
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-10	ৰাংলা কৰিডা	CORE	6
পৰ্ব-১ সঞ্চয়িতা (নিৰ্বাচিত)	– রবীন্দ্রনাথ ঠাকুর		_
জীৰনদেৰতা (চিয়া), প্ৰাৰ্থনা (ট	নৰেদ্য) ভারততীৰ্শ (গীতাঞ্চলি), ঐকতান ((জন্মদিনে)।	
পৰ্ব ২ প্ৰাক্ চল্লিশ পৰ্ব			
কাজী নজৰুল ইসলাম : আমা	। কো ক য়ৎ		
মোহিতলাল মন্ধুমদার : কালাশ	নহাড়		
সত্যেন্দ্রনাথ দন্ত : স্বগাঁদাপ গর	। अ भ		
ষতীন্দ্রনাথ সেনগুর্ত্ত : দুঃখবাদ			
and a long plant at			

Scanned by TapScanne

আধুনিক বাংলা কৰিতা : 'বাংলা কবিতা ও প্ৰবন্ধ সংকলন' (কল্যানী বিশ্ববিদ্যালয় প্ৰকাশিত)

১. সুচেতনা - জীবনানন্দ দাশ।

২. ডোমাকে পাওয়ার জন্য হে বাধীনতা - পামসুর রাহমান।

ও, সংসারে সহ্যাসী লোকটা - শক্তি চট্টোপাধ্যায়।

৪. মুখ চেকে যায় বিজ্ঞাপনে - পথ ঘোষ।

৫. সেই নারী- কবিতা সিংহ।

৬. পৃথিৰী ৰাজুক রোজ - নবনীডা দেবসেন।

৭. দেবী - সল্লিকা সেনগুণ্ডা

	SEMESTER IV		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-SEC-T-2	প্রতিবেদন, বিজ্ঞাপন রচনা, গবেষণার রীতি পদ্ধতি ও ব্যবহারিক প্রয়োগ	SEC	2
পৰ্ব-১ প্ৰতিৰেদন, বিজ্ঞা	भन तत्रना ।		
পর্ব-২ গবেষণার রীতি প	ছটি।		
পৰ্ব-৩ সাহিত্য বিষয়ক	প্ৰবন্ধ রচনা		
পৰ্ব-৪ সঞ্চালনা, সংবাদ	শাঠ৷		

এটি ব্যবহারিক পত্র। অন্য কলেজের অধ্যাপক বহিরাগত পরীক্ষক হিসেবে থাকবেন।

S	EMESTER V		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-11	ৰাংলা উপন্যাস	CORE	6
14-J			
হীসুলি বাঁকের উ পকথা - তারাশ	ক্ষের বন্দ্যোপাধ্যায়।	-	
পৰ্ব-২			
পথের পাঁচালী- বিভূতিভূষণ ব	শ্যাপাধ্যায়।		

Scanned by TapScann

	SEMESTER V		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T-12	নাটকের রুপডেদ, বলরসমঞ্চ ও বাংলা নাটক	CORE	6
44-5			
নাটকের রূপভেদ: ট্র্যানে	ন্ধডি, কমেডি, প্রহসন, পৌরাণিক নাটক, ঐতিহাসিক নাটক, স	ামাজিক নাটক, একাছ নাটক, রূপ	4
সাংকেতিক, পথনাটক 			
সাংকেতিক,পথনাটক। পৰ্ব-২ বছৰছয়ক ও জিয়েটাবে	Miai . (mrarurus caus) Grutta - So ava Grutta	জেলাছিয়া নাটলোলা ছোডাসীয	হা নাটাশালা
সাংকেতিক,পথনাটক। পৰ্ব-২ ৰঙ্গরঙ্গসক্ষ ও থিয়েটারের ন্যাশনাল থিয়েটার।	ন ধারা : লেবেদেফের বেঙ্গলী থিয়েটার, নবীন বসুর থিয়েটার,	ৰেলগাছিয়া নাট্যশালা, জোড়াসীৰে	কা নাট্য শালা ,
সাংকেতিক,পথনাটক। পৰ্ব-২ বঙ্গরঙ্গসমঞ্চ ও থিয়েটারের ন্যাশনাল থিয়েটার। পর্ব-৩	ন ধারা : লেবেদেফের বেঙ্গলী থিয়েটার, নবীন বসুর থিয়েটার,	ৰেলগাছিয়া নাট্যশালা, জোড়াসীৰে	কা নাট্য শালা ,
সাংকেতিক,পথনাটক। পৰ্ব-২ ৰঙ্গরঙ্গ ও থিয়েটারের ন্যাশনাল থিয়েটার। পর্ব-৩ নীলদর্শন- দীনবন্ধু মির	ন ধারা : লেবেদেফের বেঙ্গলী থিয়েটার, নবীন বসুর থিয়েটার,	ৰেলগাছিয়া নাট্যশালা, জেড়াসীৰে	কা নাট্য শালা ,

SEMESTER V			
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-DSE-T-1	কাৰ্যতত্ত্ব, সাহিত্যতত্ত্ব, সাহিত্য সমালোচনা	CORE	6
পৰ্ব-১ কাব্যজিজ্ঞাসা–অতুলচন্দ্ৰ	। ওওা (ধ্বনি ও রস)		
পৰ্ব-২ সাহিত্যতত্ত্ব- ক্লাসিসিজম,	, রোমান্টিসিজম, রিয়ালিজম, ন্যাচারালিজম, সুররিয়ালিজম।		
পৰ্ব-৩ সাহিত্য সমালোচনামূল	ৰু প্ৰবন্ধ (কল্যাণী বিশ্ববিদ্যালয় প্ৰকালিত 'ৰাংলা গন্ধ ও স	ৰালোচনা সংকলন' এর নির্বাচিত প্র	(4 5)

	SEMESTER V		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-DSE-T-2	ৰাংলাদেশ ও ৰহিৰ্বদে ৰাংলা ভাষায় রচিত সাহিত্য	CORE	6
পৰ্ব-১ বাংলাদেশ ও ৰহিৰ্ব	। ঙ্গ বাংলা ডাষায় রচিত সাহিত্যের রূপরেখা		L
ক) কাৰতা ১. মানুৰ- নিৰ্মলেন্দু ওপ (ৰ ২. একটি সন্ধ্যা- অশোক ৰি ৩. আজও কী বটি হবে না-	াংলাদেশ) জয় রাহা (আসাম) বন্দন সেনগুপ্ত (ত্রিপরা)		
খ) ছোটগন্ন- ১. জননী- হাসান আজিজুল ২. গুলি আর গুলির শব্দ –	হক (ৰাংলাদেশ) দীপক দেব (আসাম) কিংবা		
94-2 246	ter Tur)		
১. ভাষা সংক্ষার ও বাঙালি ২. বাংলা সাহিত্যের তৃতীয় ৩. একুশের চিস্তা – বিশ্বজিপ	চেতনার ৰিকৃতি – আহমদ শরীফ (বাংলাদেশ) ভূবন- ৰিজিত কুমার ডট্টাচার্য (আসাম) ২ চৌধুরী (ত্রিপুরা)		
পর্ব-৩ নাটক কবর- সুনীর চৌধুরী (বাংলায	(M . M)		

	SEMESTER VI		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
DUC U CC T 13	পৱিৰেশ ভাৰনা ও ৰাংলা সাহিত্য	CORE	6
14.2			
F. ৰাংলা সাহিত্য ও সং	হুতিতে পরিবেশ ভাবনা ক্রিয়ালন দান পাছ- অসিয় চক্রবর্তী, আগানী-সুকার	র ডট্টাচার্য, ছায়ার জন্য- সুনীল গঙ্গোপা	UTIN



	SEMESTER VI		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-CC-T 14	সংস্কৃত সাহিত্যের ইতিহাস, ইংরাজী সাহিত্যের ইতিহাস ও লোকসাহিত্য	CORE	6
পৰ্ব-১ সংস্কৃত সাহিত্যের	। ইতিহাস		
কালিদাস, ভবভৃতি, ৰাণভ	ট, শূদ্ৰক, জয়দেৰ৷		
পৰ্ব-২ ইংরাজী সাহিত্যে	র ইতিহাস		
শেহসীয়র (নাটক), ওয়ার্থ	চস্ওয়ার্থ, শেলী, কিট্স, চার্লস্ ডিকেন্স, এলিয়ট, বার্লার্ড শ।		
পৰ্ব-৩ লোকসাহিত্য			
লোকনীতি, নীতিকা, ছড়া,	, প্রবাদ-প্রবচন, ধীধা।		

চুউপা আদালত চলছে- বিষয় তেন্ডুলকর।

পৰ-৩ নাটক

পৰ- ২ মাটির মানুৰ (ওড়িয়া) কালিন্দীচরণ পাশিগ্রাহী (অনুবাদ- সুখলতা রাও)

টোৰাটেক সিং (উদু)- সাদাত হাসান মান্টো অনুৰাদ- (অনুৰাদক অনুৰাধা কুছু)।

পালোয়ানের ঢোলক- ফনীশ্বরনাথ রেণু, (ফনীশ্বরনাথ রেণুর শ্রেষ্ঠ গন্ধ) ডারত যাযাবর সম্পাদিত, অনুবাদ- প্রসূন মিত্র, এন.বি.ট জঞ্জাল বুড়ো- কৃশন চন্দর, (কথাডারতী, উর্দু গন্ব সংকলন, প্রথম খন্ড- ড. অরুণ কুমার মুখোপাধ্যায়(অনুদিত), এন. বি.ট।

পৰ ২ ছোটপন্ন ডেন্ন(হিন্দি গন্ধ)–সুন্দী প্রেমচন্দ (কথাডারতী: হিন্দী গন্ধগুল্ছ- ড. নামবর সিং(সম্পা), অনুবাদ-ইন্দ্রাণী সরকার, এন.বি.ট

পর্ব- ১ প্রাদেশিক সাহিত্যের সংক্ষিপ্ত পরিচয়

	SEMESTER VI		
COURSE CODE	COURSE TITLE	COURSE NATURE	CREDIT
BNG-H-DSE-T-4	ৰাংলা ও প্ৰাদেশিক সাহিত্য	CORE	6

 গোয়েন্দা বরদাচরণ- শীর্ষেন্দু মুঝোপাধ্যায় ৫. রহস্যভেদ- আশালতা সিংহ |

৩. গোলকথাম রহস্য- সত্যজিৎ রায়।

২. তদন্ত- নারায়ণ গঙ্গোপাধ্যায়

গোয়েন্দা সাহিত্য – ১. অচিন পাখি- শরদিন্দু বন্দ্যোপাধ্যায় l

94.0

মিচুড়ি, খুড়োর কল, গন্ধবিচার, একুলে আইন। শ) পদিপিসির বর্মীবাল্প : শীলা মতুমদার

ক) আৰোল তাৰোল (নিৰ্বাচিত) সুকুমার রায়

94-2

টুনটুনি ও রাজার কথা- উপেন্দ্রকিশোর রায় চৌধুরী ৰাম্বাদিত্য- অবনীন্দ্রনাথ ঠাকুর লালু আর ভুলু- সুখলতা রাও ইচ্ছামতী- নৰনীতা দেবসেন

ৰাংলা রূপকথা ও উপকথা

নীলকমল আর লালকমল, ২০০৮ - দক্ষিণারন্তন মিত্র মজুমদার

Syllabus portions for Botany CBCS crosscutting issues_

University of Kalvani CRCS Curriculum of B.Sc. in Botany (Honours) effective from 2018-19

- identify different types of Intellectual Properties (IPs), right of ownership, scope of
 protection of IP and ways to create and extract value from IP;
 recognize the role of IP in different sectors for promoting product and technology
 development;
 identify activities that constitute IP infringements and the remedies available to the IP
 owner and describe the steps to be taken to prevent infringement of such rights in
 products and technology development;
 discuts the processes and various approaches of Intellectual Property Management
 (IPM).

COURSE CONTENT (THEORY) - UG-H-BOT-SEC-T-02:

Unit 1: Introduction to intellectual property rights (IPR) (2) Concept and kinds. Economic importance. IPR in India and World. Genesis and scope, some important examples. IPR and WTO (TRIPS, WIPO).

Unit 2: Patents Unit 2: Patents (3) Objectives, Rights, Patent Act 1970 and its amendments. Procedure of obtaining patents, Working of pat ents. Infringement

Unit 3: Copyrights (3) Introduction, works protected under copyright law, rights, transfer of copyright, Inifringement. Unit 4: Trademarks (3)

Objectives, types, rights, protection of goodwill, infringement, passing off, defences, domain

name. (3) Unit 5: Geographical Indications (3) Objectives, justification, international position, multilateral treaties, national level, Indian

(4) Unit 6: Protection of Traditional Knowledge (4) Unit 6: Protection of Traditional Knowledge, holders, issues concerning, bio-prospecting and bio-piracy, alternative ways, protectability, need for a *Sul-Generis* regime, traditional knowledge on the International arena, at WTO, at national level, Traditional Knowledge (5) and (5) are supported by the support of the support of

Digital Library. Unit 7: Industrial Designs

 Objectives, rights, assignments, infringements, defences of design infringement.
 (2)

 Objectives, rights, assignments, infringements, defences of design infringement.
 (2)

 Unit 8: Protection of Plant Varieties
 (2)

 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.
 (2)

 Unit 9: Information Technology related Intellectual Property Rights
 (4)

 Computer Software and Intellectual Property Rights
 (4)

 Patenting Blotech Inventions: objectives, upilications, concept of novelty, concept of inventions: objective, applications, concept of novelty, concept of inventions: objective, applications, concept of novelty, concept of inventions.

environmental management,	
 communicate effectively in the form of written reports and spoken pres 	entations.
COURSE CONTENT (THEORY) - UG-H-BOT-DSE-T-03:	
Unit 1: Natural resources	(2)
Definition, types and distribution.	
Unit 2: Sustainable utilization	(8)
Concept, approaches (economic, ecological and socio-cultural).	
Unit 3: Land	(8)
Utilization (agricultural, pastoral, horticultural, silvicultural); Soil degrada conservation and management.	ation, restoration
Unit 4: Water	(8)
Fresh water (rivers, lakes, groundwater, aquifers, watershed); Marine; Estu Threats and management strategies.	arine; Wetlands;
Unit 5: Biological Resources	(10)
Biodiversity- definition and types; Significance; Threats; Manage	ment strategies
Bioprospecting: Intellectual Property Regime (IPR); Convention on Biologic	al Diversity (CBD):
National Biodiversity Action Plan.	
Unit 6: Forests	(6)
Definition Course and the classificance (with special enforcement to testic)	Adalam and miles

translate theoretical aspects of contemporary practices to recommendations for

Definition, Cover and its significance (with spec forest products; Depletion; Management. Unit 7: Energy Renewable and non-renewable sources of energy Page Under Graduate Board of Studies (UGBOS) in Botany 54 University of Kalyani, Kalyani 741235, West Bengal

Prepared by: Convright

of Kalvani CBCS Curriculum of B.Sc. in Botary

Unit 8: Contemporary practices in resource management. (9) Environmental Impact. Assessment. (8):A. Geographical Information System (GS). Participatory Resource Apenals. Local Cooperational Cooperation System (GS). Participatory Resource Apenals. Local Cooperation Activity (1990) Case Indirect National and International Effects in resource management and concervation (4) National legislations: The Biological Diversity Act. 2002: Forest Conservation Act, 1980: Case Uniter National and International Effects in accounce and the QW off Heritage Sites (Natural)/ Sacred Groves/ Biodiversity Heritage Sites/ Protection of Plant Varieties.

COURSE CONTENT (PRACTICAL) - UG-H-BOT-DSE-P-03:

Collection of data (qualitative and quantitative) on a local forest/ sacred grove cover (field visit).

-), ction of data (qualitative and quantitative) on a designated area under Protected Network (field visit), ection of data (qualitative and quantitative) on a specific area exhibiting urban with (field wide). 2. Col

- 3. Col

Course title: A. Biodiversity and Conservation Core Course; Credit - 6 [4 (Theory) + 2 (Practical)]; Full Points - 75 (50 + 25) COLIRSE OR IECTIVES:

Prepared by: Copyright

(2)

- After completion of the course the learners will be able to: of emonstrate an advanced understanding of the application of fundamental principles of ecological studies to the conservation of biodiversity. of discuss and citle theories and case studies as prerequisites for success in sustainable utilization and effective species conservation: translate theoretical aspects of contemporary practices to recommendations for environmental management. After completion of the course the learners will be able to

- vironmental management; mmunicate effectively in the form of written reports and spoken presentations.

COURSE CONTENT (THEORY) - UG-H-BOT-DSE-T-03: Unit 1: Natural resources Definition, types and distribution. Unit 2: Sustainable utilization (2) wn с. - алыканабе utilization (8) Concept, approaches (economic, ecological and socio-cultura)). (8) Utili 3: Land (9) Utilization (ggicultural, pastoral, horticultural, silvicultural): Soli degradation, restoration, conservation and management. (8) Unit 4: Water (8) Fresh water (rivers, lakes, groundwater, aquifers, watershed); Marine; Estuarine; Wetlands; Threats and management strateoies Fresh water (Irvers, lakes, groundwater, aquifers, watershed): Marine: Estuarine: Wetlands: Threats and management strategies.
(10)
Biodiversity- definition and types: Significance: Threats. Management strategies: Bioprospecting: Intellectual Property Regime (IPR): Convention on Biological Diversity (CBD): National Biodiversity- definition. And types: Significance: Threats. Management strategies: Bioprospecting: Intellectual Property Regime (IPR): Convention on Biological Diversity (CBD): National Biodiversity- definition.
(6)
Definition. Cover: and its significance (with special reference to India): Major and minor forest products: Depletion: Management.
(7) forest products, see Unit 7: Energy Renewable and non-renewable sources of energy (6)

Page Under Graduate Board of Studies (UGBOS) in Botany 54 University of Kalyani, Kalyani 741235, West Bengal

University of Kalvani CBCS Curriculum of B Sc. in Rotany (Honours) effective from 2018-19

 Unit 8: Contemporary practices in resource management
 (8)

 Environmental Impact Assessment (EIA), Geographical Information System (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 (4)

 National legislations: The Biological Diversity Act, 2002; Forest Conservation Act, 1980; Case studies relevant to resource management and conservation (4)

 Naturaly/Sacred Groves/ Biodiversity Heritage Sites/ Protection of Plant Varieties.

COURSE CONTENT (PRACTICAL) - UG-H-BOT-DSE-P-03:

 Collection of data (qualitative and quantitative) on a local forest/ sacred grove cover (field visit). Collection of data (qualitative and quantitative) on a designated area under Protected Area Maturative (field uset)



University of Kalvani CBCS Curriculum of B.Sc. in Botany (Honours) effective from 2018-19

Tortora, G.J., Funke, B.R., Case, C.L. (2007). Microbiology. 9th edition, Pearson Benjamin Cummings, San Francisco. USA.

Course title: B. Stress Biology Core Course; Credit – 6 [4 (Theory) + 2 (Practical)]; Full Points – 75 (50 + 25)

COURSE OBJECTIVES:

- COURS UBJECTIVES: After completion of the course the learners will be able to: describe stress sensing and signaling pathways in plants: give an overview of reactive express pacies (ROS) production and plant's antioxidant defense mechanism: compression developmental and physiological mechanisms of environmental stress ubridestand the underlying mechanisms of phytoremediation.

COURSE CONTENT (THEORY) - UG-H-BOT-DSE-T-02:

COURSE CONTENT (FHEORY)-UG-H-BOT-DSE-T-02: Whit 1: Defining plant stress: (9) Plant stress, Plant responses to abalic and blotic stresses: acclimatization and adaptation. Secondary metabolities and glant defines: (10) Poroght: Fooding, Salinity, Temperature, Heavy metals stress and potential blotic stress: Hypersensitive reaction: Pathogenesis-related (PB) proteins: System: acquired resistance. (10) Role of Ga² and mitogen-activated protein kinase (MAPG) in stress sensing and signaling uncertainties (MAPG). There radicals chemistry, Oxidative stress. Mitochondia as a source for reactive congen prior radicals chemistry, Oxidative stress. Mitochondia as a source (or reactive congen prior radicals chemistry, Oxidative stress. Mitochondia as a source (or reactive congen prior radicals chemistry, Oxidative stress. Mitochondia as a source (or reactive congen prior activate hermistry, Oxidative stress. Mitochondia as a source (or reactive congen prior activate hermistry, Oxidative stress. Mitochondia as a source (or reactive congen prior activate hermistry, Oxidative stress. Mitochondia as a source (or reactive congen prior activate hermistry, Oxidative stress. Mitochondia as a source (or reactive congen prior activate hermistry, Oxidative stress. Mitochondia as a source (or reactive). (10) Adaptation in plante: Charges in root: shoot ratio. Flooding stress and aerenchyma development: Consolite adjustment: Charges in tradit. Naturally occurring plants for Phytoremediation, Reif elica about different mechanisms con St Phytoremediation, Transperie approach of Phytoremediation. Transperie approach for Phytoremediation. Transperie

COURSE CONTENT (PRACTICAL) - UG-H-BOT-DSE-P-02:

Estimation of tissue proline level.
 Estimation of peroxidase activity in the seedlings grown in the absence and presence of salt stress.

Course: UG-H-BOT-DSE-T-02 & UG-H-BOT-DSE-P-02

Course: UG-H-BOT-DSE-T-01 & UG-H-BOT-DSE-P-01 Course title: B. Industrial and Environmental Microbiology Course title: 6 [4 (Theory) + 2 (Practical)); Full Points – 75 (50 + 25)

COURSE OBJECTIVES:

- COURS OWERCIVES: 4 apply the basics of microarus the learners will be able to: 5 apply the basics of microarus in industry to manufactures food or products in large quantifies; 6 introduce microbial processo of environmental and yoothemical significance; 9 ultime introorganities as tools in environmental and yoothemical significance;

COURSE CONTERT (THEORY) - UG-H80T-DSE-T-01: Unit 1: Scope of microbas in industry and environment. (6) General concepts of industrial and environmental microbiology, principles of exploration of microarganisms of their products: Microbes in different habitats with special reference to extermorphiles.

 Propared by:
 Page
 Under Graduate Board of Studies (UGBOS) in Botary

 Copyright
 46
 University of Kalyani, Kalyan

University of Kalyani GBCS Curriculum of B.Sc. in Botany (Honours) effective from 2018-19

becardpart dataset data Carciaum et dats. In Reading descond ender the read of the sector of reamments and formantial long sector of the secto

CHEMHS-1B		Basic Analytical Chemistry	2 Credit
1.	Introducti Strategies of of sampling experiment	on of Analytical Chemistry and its interdisciplinary g. Variability and validity of analytical measure tal data and results, from the point of view of sig	(2L) applicability. Protoco ements. Presentation o nificant figures
2.	Complexor Complexor Estimation complexon Soil Analy Composition	metry metric titrations, Chelation, Chelating agent of Calcium and Magnesium ions as C netric titration. sis n pH of soil complex estimation of soloium approximation	(4L) (4L) (5, use of indicators (alcium carbonate by d meansium content
3.	Analysis of Definition sampling n Determinat	of pure water, sources responsible for conta tethods, water purification methods. ion of pH, acidity and alkalinity of a water samp ion of Biological Oxygen Demand (BOD).	(4L) (4L) (4L) (4L) (4L) (4L) (4L) (4L)
4.	Analysis o Nutritional adulteration Identificati asafoetida, Analysis of	f food products value of foods, idea about food processing and a. on of adulterants in some common food iten chilli powder, turmeric powder, coriander powd f preservatives and colouring matter.	(4L) food preservations an ns like coffee powder ler and pulses, etc.
5.	Chromato Definition, chromatogr	graphy general introduction on principles of cl raphy TLC etc.	(4L) hromatography, pape

Prepared by UGBOS (Chemistry)

	D	с	315
	To compare	matographic separation of mixture of metal ion (Fe and A)	i j.
6	lon-exchar	nge	(41)
0.	Column ic	on-exchange chromatography etc. ? Determination of jo	n exchange
	capacity of	f anion / cation exchange resin (using batch procedure if use	e of column
	is not feasil	ble).	
7.	Analysis of	f cosmetics	(3L)
	Major and	minor constituents and their function	in the second second
	Analysis of	f deodorants and antiperspirants, Al, Zn, boric acid, chloride	, sulphate.
	Determinat	tion of constituents of talcum powder: Magnesium oxid	e, Calcium
	oxide, Zinc	e oxide and Calcium carbonate by complexometric titration	
8.	Suggested	Applications (Any one)	(2L)
	To study th	he use of phenolphthalein in trap cases.	
	To analyse	arson accelerants.	
	To carry ou	at analysis of gasoline.	//10/01/01
9.	Suggested	Instrumental demonstrations	(3L)
	Estimation	1 of macro nutrients: Potassium, Calcium, Magnesium in s	oil samples
	by flame pl	hotometry.	
	Spectropho	otometric determination of Iron in Vitamin / Dietary Tablets.	•
	Spectropho	btometric Identification and Determination of Caffeine and	nd Benzoic
-	Acid in Sof	ft Drinks	
Refere	nce Books		
I. Willa	ard, H.H., Me	erritt, L.L., Dean, J. & Settoe, F.A. Instrumental Methods of A	Analysis, /th
Ed. wa	EL & Co	Hisning Company Ltd., Belmont, California, USA, 1988. 2. S	skoog, D.A.,
Edition	F.J. & CIO	Skoog DA: West DM & Holler EI Applytical Ch	amistry: An
Introdu	ction 6th E	d Saunders College Publishing Fort Worth Philadelphia	(1994) 4
Harris	D C Quant	titative Chemical Analysis 9th ed Macmillan Education, 2010	6 5 Dean
J. A. A	nalytical Che	emistry Handbook, McGraw Hill, 2004, 6, Day, R. A. & Un	derwood, A.
L. Oua	intitative An	alvsis, Prentice Hall of India, 1992. 7. Freifelder, D.	M. Physical
Biocher	mistry 2nd E	d., W.H. Freeman & Co., N.Y. USA (1982). 8. Cooper, T.C	i. The Tools
of Bio	chemistry, Jo	ohn Wiley & Sons, N.Y. USA. 16 (1977). 9. Vogel, A	. I. Vogel's
Qualita	tive Inorgani	ic Analysis 7th Ed., Prentice Hall, 1996. 10. Mendham, J., A	A. I. Vogel's
Quantit	ative Chemic	cal Analysis 6th Ed., Pearson, 2009. 11. Robinson, J.W. Ur	ndergraduate
Instrum	ental Analys	sis 5th Ed., Marcel Dekker, Inc., New York (1995). 12. Ch	ristian, G.D.
Analyti	cal Chemistr	y, 6th Ed. John Wiley & Sons, New York, 2004.	_
		Semester - IV	
CHEM	IHT-8	Theory: Application of Thermodynamics - II,	4 Credit
		Electrical Properties of molecules, Quantum	
		Chemistry,	
		Physical Chemistry – III	
1. A	pplication o	of Thermodynamics – II	20 L
C	olligative pr	coperties: Vapour pressure of solution; Ideal solutions, ide	eally dilute
so	lutions and	colligative properties; Raoult's law; Thermodynamic deriv-	ation using
ch	iemical pote	ential to derive relations between the four colligative pro	perties [(i)
re	lative lower	ing of vapour pressure, (ii) elevation of boiling point, (iii)	Depression
of	treezing po	oint, (iv) Osmotic pressure] and amount of solute. Appl	ications in
ca	loulating mo	olar masses of normal, dissociated and associated solutes i	in solution;
A	onormal coll	ligative properties.	
Ph	hase rule: De	etimitions of phase, component and degrees of freedom; Phase	se rule and
its	derivations	; Definition of phase diagram; Phase diagram for water, CO	2, Sulphur.
FI	rst order pha	ase transition and Clapeyron equation; Clausius-Clapeyron	equation -

Lщ. /.	Guitu, J. IN.	, Kapoor, K., Auvaneeu Experimental Chemisu y 5. Chanu o	CO. Lu.
CHEM	HT-9	Theory: Radioactivity and nuclear chemistry, Chemistry of s and p-block elements, Coordination Chemistry - I	4 Credit
		Inorganic Chemistry – III	
1.	Radioactiv Atomic nu defect, pao exchange t Fission, fu elements a Application reaction m measures.	vity and nuclear chemistry : cleus – nuclear stability, n/p ratio and different modes of de cking fraction and nuclear binding energy. Nuclear force theory, elementary idea of nuclear shell model and magic usion and spallation reactions, artificial radioactivity, su and their IUPAC nomenclature. Moderators, slow and fast ns of radio-isotopes in: determination of structures, estable nechanisms and radio-carbon dating, hazards of radiation	(15L) ecay, mass es: Meson e numbers. per heavy t neutrons, ishment of and safety
2.	Chemistry	of s and p-block elements :	(30L)
	Diagonal re each group Study of t structure an nitride, bor oxyacids of sulphur; te fluorides a Synthesis,	elationship (Li-Mg; B-Si) and anomalous behaviour of first r p, Allotropy and catenation (examples of C, P and S co the following compounds with emphasis on preparation, nd bonding: Berylium hydrides and halides; diborane; boraz ric acid, borax, fluorocarbons (with environmental effect); of nitrogen, phosphorous, sulphur and chlorine; Peroxo etrasulphur trtranitride; interhalogens, pseudohalogens, p and oxides of xenon. Noble gas clathrates; basic properties structural aspects and applications of silicones and pho	member of mpounds). properties, zine; boron oxides and o acids of olyhalides, of iodine. osphazines;

27

Prepared by UGBOS (Chemistry)

Structural properties of various silicates.

3. Coordination Chemistry - I :

(15L)

Idea about double salts and complex salts, Werner's theory, EAN rule, classification of ligands and their binding modes, IUPAC nomenclature of coordination compounds (up to two metal centres), overall and stepwise stability constants, chelates, innermetallic complexes, Stereochemistry and isomerism (constitutional and stereo) of complexes with coordination no. 4 and 6.

Reference Books

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).

CHEM	IHTDSE-1B	Theory: S	Silicate Indu	ustries,	Fertilize	rs, Surface	4 Credit
		explosives	batteries,	Anoy	ys, Cat	alysis and	
]	Inorganic M	aterials of I	Industria	l Import	ance	N.
1.	Silicate Indu	stries					(9L)
i.	Glass: Glass	y state and	its propertie	es, classi	fication	(silicate and	non-silicate
	glasses). Mai	nufacture and	l processing	of glass.	Compos	ition and prop	perties of the
	following typ	pes of glasse	s: Soda lim	ie glass, l	lead glas	s, armoured	glass, safety
	glass, borosil	icate glass, f	luorosilicate	, coloured	d glass, p	hotosensitive	glass.
11.	Ceramics: In	iportant clay	's and felds	par, cerai	mic, then	r types and r	nanufacture.
	semiconducti	ng oxides fu	illerenes car	hon nano	tubes and	s, supercond	lucting and
iii.	Cements: Cla	assification of	of cement. i	ingredien	ts and th	eir role. Ma	nufacture of
	cement and th	he setting pro	cess, quick	setting ce	ments.		
2.	Fertilizers	0.		C			(9L)
	Different typ	bes of fertili	zers. Manut	facture o	f the fo	llowing fertil	izers: Urea,
	ammonium	nitrate, cal	cium amm	ionium i	nitrate,	ammonium	phosphates;
	polyphosphat	e, superpho	sphate, con	npound a	and mix	ed fertilizers	, potassium
3	chloride, pota	issium sulph:	ate.				(01.)
2.	Objectives o	f coatings st	urfaces preli	iminary t	reatment	of surface of	lassification
	of surface co	patings. Pain	ts and pign	ients-forn	nulation,	composition	and related
	properties. P	igments, tor	ners and lal	ker pigm	ents, Fil	lers, Thinner	s, Enamels,
	emulsifying a	agents. Spec	ial paints (I	Heat retai	dant, Fii	e retardant,	Eco-friendly
	paint, Plasti	c paint), V	vater and	Oil pain	its, addi	tives, Metal	lic coatings
	(electrolytic a	and electroles	ss),				(01)
4.	Batteries	d secondar	/ hattarias	hattan	00000	monte and	(9L)
	Characteristic	s of Battery	Working	of follow	ing hatte	ries: Ph acid	Li-Battery
	Solid state el	ectrolyte batt	erv. Fuel ce	lls, Solar	cell and	polymer cell.	, Di Duitery,
5.	Alloys						(9L)
	Classification	ı of alloys,	ferrous and	non-ferre	ous alloy	vs, Specific p	roperties of
	elements in	alloys. Manu	ifacture of	Steel (rei	moval of	silicon deca	rbonization,
	demanganiza	tion, desul	phurization	dephos	phorisatic	on) Compo	osition and
6	properties of	different typ	es of steels.				(01)
0.	General prin	ciples and p	roperties of	catalysts	homog	enous catalys	is (catalytic
	steps and ex	amples) and	heterogeno	us catalys	sis (catal	vtic steps an	d examples)
	and their ind	ustrial applic	ations, Dead	ctivation	or regene	ration of cata	lysts. Phase
	transfer catal	ysts, applicat	ion of zeolit	tes as cata	lysts.		M. President
7.	Chemical ex	plosives					(6L)

Prepared by UGBOS (Chemistry)

Origin of explosive properties in organic compounds, preparation and explosive properties of lead azide, PETN, cyclonite (RDX). Introduction to rocket propellants.

37

Reference Books

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, Goel Publishing House, Meerut (1996)

 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.

 CHEMHTDSE-2C
 Theory: Introduction to Green Chemistry, Principles of Green Chemistry and Designing a Chemical synthesis, Examples, Future Trends

-	Chemical synthesis, Examples, Future Frends
	Green Chemistry
1.	Introduction to Green Chemistry: (4L)
	What is Green Chemistry? Need for Green Chemistry. Goals of Green
	Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green
	Chemistry
2.	Principles of Green Chemistry and Designing a Chemical synthesis:
	(26L)
	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
	Descention / minimization of hogostano/ taxis meduate advaire taxisity
	Prevention/ minimization of nazardous/ toxic products reducing toxicity.
	nsk = (nunction) nazard × 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
	out of entry the reagenes (interview probable) in preference to

Prepared by UGBOS (Chemistry)

1



Prepared by UGBOS (Chemistry)

2010.	,,, _,	
CHEMHPDSE-2C	Practical :	2 Credit
	Green Chemistry	

43

Prepared by UGBOS (Chemistry)



Semester - V

64

Prepared by UGBOS (Chemistry)

CHEMGTDSE-1	Theory:	Analytical,	Environmental	and	4 Credit	
	Industria	l Chemistry				
Analytical and Environmental Chemistry						
1. Chemical Analysis	5				(14L)	
a. Gravimetric analys	is: solubility	product and c	common ion effect; re	quireme	nts of gravimetry	
gravimetric estimation	1 of chloride,	sulphate, lead	, barium, nickel, copp	er and zi	nc.	
5. Volumetric analys	is: primary	and secondary	standard substances	s; princi	ples of acid-base	
oxidation –reduction	and complex	ometric titratio	ons; indicators: acid-l	base, red	ox and metal ion	
orinciples of estimat	ion of mixt	ures: NaHCO	$_3$ and Na ₂ CO ₃ (by a	acidimeti	ry); iron, copper	
nanganese and chroi	nium (by re	dox turation);	zinc, aluminum, cal	cium an	d magnesium (by	
Chromatography	A titration).	nhia mathada	of analysis, ashumn	ahramat	agraphy and this	
c. Chromatography:	_nromatogra	phic methods	of analysis: column	chromat	ography and this	
ayer chromatography					(161)	
The Atmosphere	<u>composition</u>	and structure	of the atmosphere:	troposal	(IOL)	
name Autosphere:	composition	and structure	its role; maior sin sell	utopospi	TO SO NO	
nesosphere and them	nosphere; oz	one layer and l	its role; major air pol	lutants: C	O, SO_2, NO_x and	
barticulate matters –	uneir origin a	homical smooth	air pollution on oz	one laye	r depiedon, gree	
solution control mon	r and photoe	a collector clo	, all pollution episode	s. all qu	anty standard, a	
The Hudroenhere	sures: cyclon	tel role of we	tor natural water or	, cataryti	e converter.	
industrial domostia	and laborate	tal role of wa	r pollutante: action	of soon	ater treatment it	
nhoanhataa industrii	and laborato	ny uses, wate	r polititants, action	or soap	s and detergent	
phosphates, industria	and their off	agricultural	and plant life water	astes, u	nermai ponution	
nollution control mea	and then en	water treatme	nt: chemical treatmer	t and mi	crobial treatment	
water quality standar	de: DO BO	D COD TDS	and hardness paran	and m	esalination of se	
water ' reverse osmos	is electrodia	lveie	and naroness paran	leters, u	esamaton or se	
c The Lithosphere:	water and	air in soil	waste matters and	nollutan	ts in soil wast	
classification treatme	nt and dispos	sal: soil polluti	on and control measu	res	is in son, was	
	An	alvtical Indus	trial Chemistry			
1. Error Analysis an	d Computer	Applications			(12L)	
a. Error analysis: acc	uracy and p	recision of au	antitative analysis, d	etermina	te, indeterminate	
systematic and randor	n errors; met	hods of least so	quares and standard d	eviations		
b. Computer applica	ations: gener	cal introductio	n to computers, di	fferent	components of	
computer: hardware	and software	e: input and o	utput devices: binary	number	s and arithmetic	
introduction to compu	iter language	s; programmin	g and operating system	ms.		
2. Industrial Chemis	try		e , e,		(18L)	
a. Fuels: classification	n of fuel; he	eating values;	origin of coal, carbo	nization	of coal, coal gas	
producer gas, water g	as, coal base	d chemicals; o	origin and compositio	n of peti	oleum, petroleur	
refining, cracking, 1	cnocking, of	ctane number	, antiknock compou	inds, ke	rosene, liquefie	
petroleum gas (LPG)	, liquefied n	atural gas (LN	G); petrochemicals (C1 to C	3 compounds an	
their uses).						
b. Fertilizers: manufac	cture of amm	onia and amme	onium salts, urea, sup	erphosph	nate, biofertilizers	
c. Glass and ceramics	s: definition	and manufactu	ire of glasses, optical	glass ar	nd coloured glass	
clay and feldspar, glaz	zing and vitri	fication, glaze	d porcelein, enamel.			
d. Cement: portland c	ement: comp	osition and set	ting of cement, white	cement.		
10	14		85 B			
Reference Books						
1. Baneriee, S. P.	A Text Bo	ook of Analy	tical Chemistry, Th	e New	Book Stall.	

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. 5. Gangopadhyay, P. K. Application Oriented Chemistry, Book Syndicate. 6. Mondal, A. K & Mondal, S. Degree Applied Chemistry,

13:40 🔞 🗖

← Chemistry-Hons-Prog.-C... [] ≪

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. 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. 5. Ghosal, Mahapatra & Nad, An Advanced Course in Practical Chemistry, New Central Book Agency.

CHEMGIDSE-2	Theory: Advanced Organic Chemistry and 4 Credit Industrial Chemistry
	Advanced Organic Chemistry
Functional group app	roach for the following reactions (preparations & reactions) to be studied
context to their struct	ures.
1. Carboxylic Acids:	and Their Derivatives (10L)
a. Carboxylic acids (aliphatic and aromatic): strength of organic acids: comparative study w
emphasis on factors	affecting pK values; Preparation: acidic and alkaline hydrolysis of est
(BAC2 and AAC2 med	chanisms only) and from Grignard reagents; Reactions: Hell - Vohlard
Zelinsky reaction and	Claisen condensation; Perkin reaction.
b. Carboxylic acid	derivatives (aliphatic): (up to 5 carbons). Preparation: acid chlorid
anhydrides, asters an	d amides from acids; Reactions: Comparative study of nucleophilicity
acyl derivatives; inter	conversion among acid derivatives.
2. Amines and Diazo	onium Salts (10L)
	()
a. Amines (aliphatic	and aromatic): strength of organic bases; Preparation: from alkyl halid
 a. Amines (aliphatic Gabriel's phthalimid 	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun-
a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun- D_2 (distinction of 1°-, 2°- and 3°- amines), Schotten – Baumann reaction
a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC Diazo coupling reaction	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compound D_2 (distinction of 1°-, 2°- and 3°- amines), Schotten – Baumann reaction on (with mechanism).
 a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC Diazo coupling reactions. b. Diazonium salts: 	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun. D_2 (distinction of 1°-, 2°- and 3°- amines), Schotten – Baumann reactio on (with mechanism). Preparation: from aromatic amines; Reactions: conversion to benze
 a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC Diazo coupling reaction b. Diazonium salts: phenol, benzoic acid a 	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun D_2 (distinction of 1°-, 2°- and 3°- amines), Schotten – Baumann reactio on (with mechanism). Preparation: from aromatic amines; Reactions: conversion to benze and nitrobenzene.
 a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNCO Diazo coupling reacti b. Diazonium salts: phenol, benzoic acid a c. Nitro compounds 	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun J ₂ (distinction of 1°, 2°- and 3°- amines), Schotten – Baumann reactio on (with mechanism). Preparation: from aromatic amines; Reactions: conversion to benze and nitrobenzene. (aromatic): reduction under different conditions (acidic, neutral a
a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC Diazo coupling reacti b. Diazonium salts: phenol, benzoic acid a c. Nitro compounds alkaline).	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun- b_2 (distinction of 1°-, 2°- and 3°- amines), Schotten – Baumann reactio on (with mechanism). Preparation: from aromatic amines; Reactions: conversion to benze and nitrobenzene. (aromatic): reduction under different conditions (acidic, neutral a
 a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC Diazo coupling reactib. b. Diazonium salts: phenol, benzoic acid t c. Nitro compounds alkaline). 3. <u>Amino Acids and</u> 	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compound 0 ₂ (distinction of 1°-, 2°- and 3°- amines), Schotten – Baumann reaction on (with mechanism). Preparation: from aromatic amines; Reactions: conversion to benze and nitrobenzene. (aromatic): reduction under different conditions (acidic, neutral a Carbohvdrates (10L)
a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC Diazo coupling reacti b. Diazonium salts: phenol, benzoic acid t c. Nitro compounds alkaline). 3. <u>Amino Acids and</u> a. <u>Amino Acids: P</u>	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun. 0 ₂ (distinction of 1°-, 2°- and 3°- amines), Schotten – Baumann reaction on (with mechanism). Preparation: from aromatic amines; Reactions: conversion to benze and nitrobenzene. (aromatic): reduction under different conditions (acidic, neutral a <u>Carbohydrates</u> (10L) Preparations (glycine and alanine only): Strecker synthesis, Gabrie
a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC Diazo coupling reacti b. Diazonium salts: phenol, benzoic acid a c. Nitro compounds alkaline). 3. <u>Amino Acids and</u> a. Amino Acids: P	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun 0 ₂ (distinction of 1°-, 2°- and 3°- amines), Schotten – Baumann reactio on (with mechanism). Preparation: from aromatic amines; Reactions: conversion to benze and nitrobenzene. (aromatic): reduction under different conditions (acidic, neutral a <u>Carbohvdrates</u> (10L) reparations (glycine and alanine only): Strecker synthesis, Gabrie ; general properties; zwitterion, isoelectric point; ninhydrin reaction.
a. Amines (aliphatic Gabriel's phthalimid Reactions: with HNC Diazo coupling reacti b. Diazonium salts: phenol, benzoic acid a c. Nitro compounds alkaline). 3. <u>Amino Acids and</u> a. Amino Acids: P phthalimide synthesis b. Carbohydrates: cl	and aromatic): strength of organic bases; Preparation: from alkyl halid e synthesis, Hofmann degradation, by reduction of nitro compoun- 2 ₂ (distinction of 1°, 2°- and 3°- amines), Schotten – Baumann reactio on (with mechanism). Preparation: from aromatic amines; Reactions: conversion to benze and nitrobenzene. (aromatic): reduction under different conditions (acidic, neutral a Carbohvdrates (10L) Preparations (glycine and alanine only): Strecker synthesis, Gabrie ; general properties; zwitterion, isoelectric point; ninhydrin reaction. lassification and general properties; glucose and fructose: constitution

Prepared by UGBOS (Chemistry)

Industrial Chamber	
1 Polymore:	y (41)
Basic concept, structure and types of plastics, polythen PVC; manufacture, physical properties and uses of natt rubber; synthetic fibres, nylon-66, polyester, terylene, ra stabilizers.	e, polystyrene, phenolformaldehyde: iral rubber, synthetic rubber, silicon yon; foaming agents, plasticizers an
2. Paints:	(3L)
Primary constituents; formulation of paints; binders and latex paints, alkyd resin paint.	solvents for paints; oil based paint:
3. Varnishes:	(2L)
Constituents of varnishes; formulation of varnishes.	
4. Synthetic dyes:	(2L)
Synthesis of methyl orange, congo red, malachite green, cr	ystal violet.
5. Drugs and pharmaceuticals:	(3L)
Concept and necessity of drugs and pharmaceuticals; prep sulphadiazine, quinine, chloroquine, phenobarbital, metror	aration and uses: aspirin, paracetamo iidazole.
6. Fermentation chemicals:	(3L)
Production and purification of ethyl alcohol, citric acid Industrial Chemistry.	, lactic acid, vitamin B12, penicilli
7. Fats and oils:	(3L)
Natural fat, edible and inedible oil of vegetable orig hydrogenation of unsaturated oil, production of vanaspati a	in; common fatty acids; glyceride and margarine.
8. Soaps and detergents:	(3L)
Production of toilet and washing soaps; enzyme-based	detergents, detergent powder; hqu
soaps.	
9. Pesticides:	(3L)
Common pesticides: production, applications and resignation, malathion, DDT, paraquat, decamethrin.	dual toxicity of gammaxane, aldri
10. Food additives:	(4L)
Food flavour, food colour, food preservatives, artificial s	sweeteners, acidulants, alkalies, edib
emulsifiers and edible foaming agents, sequesterants - u	ses and abuses of these substances
food beverages.	
Defense a Deale	
1 Sathi A Concentual Organic Chemistry, New Ace Int.	amational Publisher 2 Damas V
A Text Book of Organic Chemistry, S. Chand & Song 3	Madan B I Organia Chamister
Chand & Sons 4 Elembaram & Conard Chamister D.	arcon 5 Wada I C Singh M C
Organic Chamistry, C. Einer, J. L. Organic Chamistry, P.	(alson, J. Wade, L. G., Singh, M. S
Diganic Chemistry, 6. Finar, I. L. Organic Chemistry (V	volume 1), Doring Kindersley (Indi
Kindersley (India) Pyt Ltd (Pearson Education) & Bah	al A & Bahl B S Advanced Organ
Chemistry S Chand 2010 9 Gangonadhyay P K A	Application Oriented Chemistry Boy
Sundicate 10 Mondal & K & Mondal S Degree App	lied Chemistry Sreedhar Publication
11 Banerice S P A Text Book of Analytical Chemistry	The New Book Stall
The Danages, o. I. A Text book of Analytical Chemistry,	The right DOOK Stall.

-

i. Estir	mation of Fe(II) and Fe(III) in a given mixture using K ₂ Cr ₂ O ₇ solution
ii. Estin	nation of Fe(III) and Cu(II) in a given mixture using K ₂ Cr ₂ O ₇ solution
iii. Estin	nation of Cr(VI) and Mn(II) in a given mixture using K2Cr2O2 solution
iv. Estin	nation of Fe(III) and Cr(VI) in a given mixture using K ₂ Cr ₂ O ₇ solution
v. Estin	nation of Fe(II) and Mn(II) in a given mixture using KMnO ₄ solution
vi. Estin	nation of Fe(III) and Ca(II) in a given mixture using KMnO ₄ solution
Reference Book	s
1 Mendham I	A L Vogel's Quantitative Chemical Analysis 6th Ed. Pearson, 2009
CHEMHT-7	Theory: Chemistry of alkenes and alkynes. Aromatic 4Cre
	Substitution, Carbonyl and Related Compounds,
	Organometallics
	Organic Chemistry – III
L Chemist	Organic Chemistry – III Irv of alkenes and alkynes: (161
1. Chemist	Organic Chemistry – III try of alkenes and alkynes: (16L try of alkenes and alkynes: applicable try of alkenes and alkynes (16L)
1. Chemist Additio	Organie Chemistry – III try of alkenes and alkynes: (16L n to C=C: mechanism (with evidence wherever applicable)
1. Chemist Addition reactivit	Organic Chemistry – III Try of alkenes and alkynes: (161. n to C=C: mechanism (with evidence wherever applicably y, regioselectivity (Markownikoff and anti-Markowniko
1. Chemist Addition reactivit addition	Organic Chemistry – III (10L n to C=C: mechanism (with evidence wherever applicably y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation
1. Chemist Addition reactivit addition iodolacte	Organic Chemistry – III try of alkenes and alkynes: (16L n to C=C: mechanism (with evidence wherever applicable) y, regioselectivity (Markownikoff and anti-Markownikofs) s) and stereoselectivity; reactions: hydrogenation, halogenation bydrobalogenation, hydration, oxymercuration
1. Chemist Addition reactivit addition iodolacte	Organic Chemistry – III try of alkenes and alkynes: (16L n to C=C: mechanism (with evidence wherever applicably y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration
1. Chemist Addition reactivit addition iodolacte demercu	Organic Chemistry – III (16L n to C=C: mechanism (with evidence wherever applicable y, regioselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration ration, hydroboration-oxidation, epoxidation, syn and an
 Chemist Addition reactivit addition iodolacto demercu hydroxy 	Organic Chemistry – III (10L n to C=C: mechanism (with evidence wherever applicable y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration ration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carbend
 Chemist Addition reactivit addition iodolacte demercu hydroxy electropl 	Organic Chemistry – III try of alkenes and alkynes: (16L n to C=C: mechanism (with evidence wherever applicably y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration ration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carbenn hilic addition to diene (conjugated dienes and allene); radie
1. Chemist Addition reactivit addition iodolacte demercu hydroxy electropl addition	Organic Chemistry – III (16L n to C=C: mechanism (with evidence wherever applicable y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration iration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carbenn hilic addition to diene (conjugated dienes and allene); radic HBr addition; mechanism of allylic and henzylic hromination
1. Chemist Addition reactivit addition iodolacto demercu hydroxy electropl addition	Organic Chemistry – III (10L try of alkenes and alkynes: (10L n to C=C: mechanism (with evidence wherever applicably y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration ration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carben hilic addition to diene (conjugated dienes and allene); radio : HBr addition; mechanism of allylic and benzylic bromination
1. Chemist Addition reactivit addition iodolact demercu hydroxy electropi addition competit	Organic Chemistry – III try of alkenes and alkynes: (16L n to C=C: mechanism (with evidence wherever applicably y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration ration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carben hilic addition to diene (conjugated dienes and allene); radic : HBr addition; mechanism of allylic and benzylic bromination tion with brominations across C=C; use of NBS; dissolving me
1. Chemist Addition reactivit addition iodolacte demercu hydroxy electropl addition competin reduction	Organic Chemistry – III (16L n to C=C: mechanism (with evidence wherever applicable y, regioselectivity; matching (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration iration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carbend hilic addition to diene (conjugated dienes and allene); radic i HBr addition; mechanism of allylic and benzylic bromination tion with brominations across C=C; use of NBS; dissolving me n of alkenes; interconversion of E - and Z - alkenes; contri
1. Chemist Addition reactivit addition iodolacte demercu hydroxy electropl addition competit reduction thermod	Organic Chemistry – III (10L try of alkenes and alkynes: (10L n to C=C: mechanism (with evidence wherever applicable y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration ration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carbene hilic addition to diene (conjugated dienes and allene); radio : HBr addition; mechanism of allylic and benzylic bromination tion with brominations across C=C; use of NBS; dissolving me n of alkenes; interconversion of E - and Z - alkenes; contri- ynamic isomerization of internal alkenes.
1. Chemist Addition reactivit addition iodolactt demercu hydroxy electropl addition competir reduction thermod Addition	Organic Chemistry - III try of alkenes and alkynes: (16L n to C=C: mechanism (with evidence wherever applicably y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydrohalogenation, hydration, oxymercuration ration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carbenn hilic addition to diene (conjugated dienes and allene); radic : HBr addition; mechanism of allylic and benzylic bromination tion with brominations across C=C; use of NBS; dissolving me n of alkenes; interconversion of E - and Z - alkenes; contu ynamic isomerization of internal alkenes. n to C=C (in comparison to C=C); mechanism, reactivity
1. Chemist Addition reactivit addition iodolact demercu hydroxy electropl addition competin reduction thermod Addition reduction	Organic Chemistry – III try of alkenes and alkynes: (16L n to C=C: mechanism (with evidence wherever applicable y, regioselectivity (Markownikoff and anti-Markowniko s) and stereoselectivity; reactions: hydrogenation, halogenation onisation, hydroboration-oxidation, epoxidation, oxymercuratio iration, hydroboration-oxidation, epoxidation, syn and an lation, ozonolysis, addition of singlet and triplet carbent hilic addition to diene (conjugated dienes and allene); radio tilto addition; mechanism of allylic and benzylic bromination tion with brominations across C=C; use of NBS; dissolving me n of alkenes; interconversion of E - and Z - alkenes; contri ynamic isomerization of internal alkenes. n to C=C (in comparison to C=C): mechanism, reactivity estivity. (Markoumikoff and anti-Markoumikoff addition) activity

20

Prepared by UGBOS (Chemistry)

	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
2	Aromatic Substitution: (91)
Σ.	Floateen bills are motion what it utions may have and as identical in foregoing
	of it; orientation and reactivity; reactions: nitration, nitration, 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: SyAr mechanism: cine substitution (benzyne
	mechanism) structure of benzyne
3	Carbonyl and Related Compounds: (301)
	Addition to $C=\Omega$: structure reactivity and preparation of carbonyl
	compounds: mechanism (with evidence) reactivity equilibrium and
	kinetic control: Burgi-Dunitz trajectory in nucleophilic additions:
	formation of hydrates gyano hydrins and hisulahite adduct: nucleonhilic
	addition-elimination reactions with alcohols thiols and nitrogen, based
	nucleophiles: reactions: benzoin condensation. Campizzaro and Tischenko
	reactions, reactions, with ylides: Wittig and Corey Chayloveky reactions
	Pupe rearrangement, avidations and reductions: Clammonson Wolff.
	Kishner LiAH, NaBH, MPV Oppenduer Bouweault Blanc, acyloin
	condensation: ovidation of alcohols with PDC and PCC: periodic acid and
	load tetracectate evidetion of 1.2 dials
	Exploitation of acidity of α H of $C=0$: formation of analy and analytics
	Exploration of acturity of u-H of C-O. formation of chois and choraces,
	halagenetics, of agreened compounds under goiding and basic conditions.
	Hall Valkard Zalingha (H. V. Z.) reaction mitraction So() (Bilay)
	avidation: aondenations (mashanism with avidance); Aldal Knowenegal
	Oxidation, condensations (incentation with evidence). Aldor, Knoevenager,
	reaction Darkin reaction Equarkii rearrangement alludation of active
	reaction, Ferkin reaction, Favorskii rearrangement, alkylation of active
	melanete compounds, preparation and synthetic applications of deciny
	maionate and ethyl aceloacetate, specific effor equivalents (numum
	cholates, chamines, aza-cholates and sityl chol ciners) in connection with
	arkylation, acylation and addi type reaction.
	Liementary ideas of Greek Chemistry: Twelve (12) principles of green
	chemistry; planning of green synthesis; common organic reactions and
	ineir counterparts: reactions: Aldoi, Friedel-Crafts, Michael, Knoevenagel,
	Cannizzaro, benzoin condensation and Dieckmann condensation.
	Nucleophilic addition to a,p-unsaturated carbonyl system: general
	principle and mechanism (with evidence); direct and conjugate addition,
	addition of enolates (Michael reaction), Stetter reaction, Robinson
	annulations. $(2, 1)$ (2, 0) is a set of the set of th
	Substitution at sp carbon (C=O system): mechanism (with evidence).
	BACZ, AACZ, AACI, AATI (in connection to acid and ester); acid derivatives

Prepared by UGBOS (Chemistry)

21

- amides, anhydrides & acyl halides (formation and hydrolysis including comparison). 4. Organometallics: (6L) Grignard reagent; Organolithiums; Gilman cuprates: preparation and reactions (mechanism with evidence); addition of Grignard and

SEMESTER-I

SEMESTER-I				
Course Code	Course Title	Course wise	Credit	
		Class (L+T+P)		
UG BCOM-H-CC-T-01	FINANCIAL ACCOUNTING - 1	L-5 + T-1=6	6	
UG BCOM-H-CC-T-02	PRINCIPLES OF MANAGEMENT	L-5 + T-1=6	6	
UG BCOM-H-GE-T-01	MICRO ECONOMICS	L-5 + T-1=6	6	
UG BCOM-H-AECC-T-01	ENVIRONMENTAL STUDIES	L-2=2	2	
Total	4 courses	Total- 20	20	

B.COM. (HONOURS) SEMESTER-I Course Code: UG BCOM-H-CC-T-01 Course Title: FINANCIAL ACCOUNTING - 1 Core Course; Credit-6; Full Marks-75

COURSE OBJECTIVE:

The objective of this paper is to provide conceptual knowledge of the financial accounting and to help students to acquire skills for recording various kinds of business transactions.

COURSE CONTENTS:

1. Introduction to Accounting

- (i) Meaning and objectives of Financial Accounting, Meaning of different types of accounting.
- (ii) Users of accounting information and their information needs.
- (iii) Accounting Concepts and Conventions: Entity, Money Measurement, Cost, Realisation, Periodicity, Going Concern, Accrual, Consistency, Conservatism, Materiality, Matching and Full Disclosures.
- (iv) Meaning of Accounting Theory, Relation of Accounting Theory with Practice, Generally Accepted Accounting Principles (GAAP).
- (v) Accounting Standards: Concept, Need, Benefits and Limitations of Accounting Standards, Types (Accounting Standards & Indian Accounting Standards) and names of Accounting Standards in India, Provision relating to mandatory application of Accounting Standards under Companies Act, 2013.
- (vi) Basic concept of IFRS.

2. Double entry book keeping system:

- (i) Basic Accounting Equation.
- (ii) Meaning and recognition of Assets, Liabilities, Equity, Income and Expenses (Framework for preparation and presentation of Financial Statements issued by the ICAI).
- (iii) Accounting Cycle Journal, Ledger, Trial Balance and Financial Statements.

3. Basic Principles of preparing Final Accounts

(i) Revenue recognition: Meaning of revenue and Revenue Recognition Criteria (AS 9).

B.COM. (HONOURS) SEMESTER-I Course Code: UG BCOM-H-CC-T-02 Course Title: PRINCIPLES OF MANAGEMENT Core Course; Credit-6; Full Marks-75

COURSE OBJECTIVE:

The objective of the course is to provide the student with an understanding of basic management concepts, principles and practices.

COURSE CONTENTS:

1. Introduction: Concept, Nature, Process and Significance of Management. Is Management a science or an Art or both?

2. Evolution of Management Thoughts: Contribution of Taylor, Fayol, Mayo, Follett, Weber, Neo-classical School, Modern School.

3. Planning: Concept, Importance, Process & Types; Forecasting – Meaning, Importance and Techniques; Decision Making- Concepts and Steps in decision making.

4. Organising: Concept, Nature, Process, Organisation Structure, Delegation of Authority, Span of Management, Line & Staff Authority.

5. Motivation: Concept, Importance of Motivation, Theories- Maslow, Herzberg, McGregor.

6. Leadership: Concept, Leadership Styles –Laissez-Faire, Autocratic, Participative, Transactional & Transformational; Leadership Models– Tannenbaum and Schmidt, Blake and Mouton.

7. Communication: Concept, Nature, Process, Types, Importance and Barriers.

8. Control: Concept, Importance, Features, Process, Tools & Techniques.

9. Co-ordination: Meaning, Importance, Principle & Techniques.

Suggested Readings:

1. Ravichandran, K. & Nakkiran, S., Principles of Management, Abhijeet Publication.

2. Tripathy, P. C. & Reddy, P.N., Principles of Management, McGraw Hill Education India Private Limited.

3. Kaul, Principles and Practice of Management, Vikash.

4. Koontz Weirich, Essentials of Management, TMH.

5. Mitra, J. & Somani, N., Principles of Management and Business Communication, Oxford.

SEMESTER-II

SEMESTER-II				
Course Code	Course Title	Course wise	Credit	
		Class		
UG BCOM-H-CC-T-03	MARKETING MANAGEMENT	L-5 + T-1=6	6	
UG BCOM-H-CC-T-04	BUSINESS LAWS	L-5 + T-1=6	6	
UG BCOM-H-GE-T-02	BUSINESS MATHEMATICS AND	L-5 + T-1=6	6	
	STATISTICS			
UG BCOM-H-AECC-T-02	MIL	L-2=2	2	
Total	4 courses	Total- 20	20	

B.COM. (HONOURS) SEMESTER-II Course Code: UG BCOM-H-CC-T-03 Course Title: MARKETING MANAGEMENT Core Course; Credit-6; Full Marks-75

COURSE OBJECTIVE:

The objective is to provide basic knowledge of various concepts, principles, tools and techniques of marketing.

COURSE CONTENTS:

1. Introduction: Nature and scope of marketing; Evolution of Marketing concepts; Selling vs. marketing; Marketing mix; Marketing environment.

2. Consumer Behaviour and Market Segmentation: Nature, scope and significance of consumer behaviour; Market segmentation – concept and importance; Bases for market segmentation.

3. Product: Concept of product, consumer, and industrial goods; Packaging and labeling; function, Product life cycle concept.

4. Price and Promotion: Importance of price in the marketing mix; Factors affecting price of a product. Pricing policies and strategies; Methods of promotion; Advertising, Personal selling; Sales Promotion.

5. Distribution and Retailing: Distribution channels – concept and role; Types of distribution channels; Types of retailing – store based and non-store based retailing, chain stores, specialty stores, supermarkets; Retailing in India.

Suggested Readings:

- 1. Kotler, Keller, Koshi and Jha, Marketing Management: A South Asian Perspective, Pearson Education.
- 2. Kotler, Armstrong, Agnihotri and Haque, Principles of Marketing: A South Asian Perspective, Pearson Education.
- 3. Ramaswamy and Namakumari, Marketing Management, McGraw-Hill.
- 4. Bhagwati, Pillai, Marketing Management, S.Chand.
- 5. Verma & Duggal, Marketing Management, Oxford.
- 6. Venugopal, P., Marketing Management, Sage.
- 7. Saxena, Marketing Management, McGraw Hill.

B.COM. (HONOURS) SEMESTER-III Course Code: UG BCOM-H-CC-T-06 Course Title: INCOME TAX LAW Core Course; Credit-6; Full Marks-75

COURSE OBJECTIVE:

The objective is to provide basic knowledge and equip students with application of principles and provisions of Income-tax Act, 1961 and the relevant Rules.

COURSE CONTENTS:

1. (a) Basic Concepts and Definitions under Income Tax Act, 1961: Person, Assessee, Previous year, Assessment year, Income, Sources of income, Heads of income, Gross total income, Total income, Tax evasion, Tax avoidance, Tax planning

(b) Residential Status of an individual and Incidence of Tax

(c) Fully Exempted income of an Individual

(d) Agricultural Income: Definition, determination of agricultural and non-agricultural Income, assessment of tax liability when there are both Agricultural and Non-agricultural income.

2. Heads of Income and Provisions governing Heads of Income:

(a) Income from Salaries

(b) Income from House Property

(c) Profits and Gains from Business or Profession: Special emphasis on section 28, 32, 35, 35D, 35DDA, 36, 37, 40A(2), 40A(3), 43B.

(d) Capital Gain: Meaning and types of Capital Assets, basic concept of Transfer, Cost of Acquisition, Cost of Improvement and Indexation, Computation of Short Term Capital Gain and Long Term Capital Gain, exemptions u/s 54, 54B, 54D, 54EC and 54F, Taxability of Short Term Capital Gain and Long Term Capital Gain.

(e) Income from Other Sources (excluding Dividend): Basic concepts.

3. (a) Income of other Persons included in Assessee's Total Income: Section 60 to 65

(b) Set off and Carry Forward of Losses: Mode of Set off and Carry Forward, Inter Source and Inter Head Adjustment, Carry forward and set off of losses u/s 71, 72, 73, 74, 74A.

(c) Deductions from Gross Total Income: Basic concepts -deductions u/s 80C, 80CCC, 80CCD, 80CCE, 80CCF, 80D, 80DD, 80DDB, 80E, 80G, 80GGG, 80GGA, 80GGC, 80QQB, 80RRB, 80TTA, 80U.

4. Computation of Total Income and Tax Liability of an Individual.

B.COM. (HONOURS) SEMESTER-III Course Code: UG BCOM-H-CC-T-07 Course Title: HUMAN RESOURCE MANAGEMENT Core Course; Credit-6; Full Marks-75

Module I

COURSE OBJECTIVE:

The objective is to provide basic knowledge of concepts and principles of managing human resource of an organization.

COURSE CONTENTS:

1. Nature and Scope: Concept and meaning of Human Resource Management, Understanding the Nature and Scope of HRM, Functions and importance.

2. Human Resource Planning: Definition, Need and Features of Human Resource Planning, factor affecting Human Resource Planning.

3. Recruitment and Selection: Definition of Recruitment, Sources, need and importance of Recruitment, Recruitment Policy – Process, sources of Recruitment. Definition of Selection, Steps of selection.

4. Training and Development: Training and Development-Meaning and purpose of training, Benefits of Training to organization and employees. Training methods.

5. Job Evaluation and Performance Appraisal: Job Evaluation – objective, scope, methods, Job analysis, Job description, Job Specification- basic concepts and significance. Performance Appraisal - Concept.

Suggested Readings:

- 1. Aswathapa K., Human Resource Management, McGraw-Hill.
- 2. Gupta, C. B., Human Resource Management, Sultan Chand & Sons.
- 3. Rao, V. S. P., Human Resource Management: Text and Cases, Excel Books.
- 4. Mahajan, Reeta, Human Resource Management, Vikash.
- 5. Haldar & Sarkar, Human Resource Management, Oxford.
- 6. Sinha, Sekhar & Bala, Human Resource Management, Cengage.
- 7. Jyothi & Venkatesh, Human Resource Management, Oxford.
- 8. Wilton, N., An Introduction to Human Resource Management, Sage.

for workers (Halsey, Rowan, Halsey-Weir), Measurement of Efficiency of a workers. Concept and treatment of idle time, over time, labour turnover and fringe benefits.

- 5. Overhead Costs: Classification, allocation, apportionment and absorption of overheads; Meaning, Concept & Reasons for Under- absorption and over-absorption of Overhead and treatment in Cost Accounting; Capacity Levels and Costs; Treatments of certain items in costing like interest on capital, packing expenses, bad debts, research and development expenses; Activity based cost allocation.
- 6. Contract Costing: Meaning, Features, Costing Procedure, Fixed Price Contract & Cost Plus Contract, Escalation & De-escalation Clause, Retention Money, Treatment of Profit and Loss on Incomplete Contract, Preparation of Contract Account.
- 7. **Process Costing:** Meaning, Features, Applicability, Preparation of Process Account, Treatment of Normal Loss, Abnormal Loss & Abnormal Gain, Loss of Income, etc. in Cost Accounting, Inter Process Profit, By-Product & Joint-Product (Meaning and Distinction).
- 8. **Operating Costing:** Meaning & Concepts, Areas of Application, Different Services and their Composite Units, Computation of Composite Unit Cost.
- 9. Cost Control Accounts (non-integrated systems only): Journal Entries, Ledger Account, Costing Profit & Loss Account; Reasons for Variation between Profit as per Cost Accounts & Profit as per Financial Accounts, Simple Problems on Reconciliation of the Two Profits.

Suggested Readings:

- 1. B.Banerjee Cost Accounting (PHI).
- 2. Horngren, Foster, Datar Cost Accounting A Managerial Emphasis, (Pearson).
- 3. A.K.Bhattacharya, Principles and Practice of Cost Accounting, PHI Learning Pvt. Ltd.
- 4. Ravi M Kishore Cost & Management Accounting, (Taxman).
- 5. M.Y.Khan & P.K.Jain Management Accounting, (TMH).
- 6. Colin Drury Management & Cost Accounting (Chapman & Hall).

7. Charles T. Horngren, Gary L. Sundem, Dave Burgstahler, Jeff O. Schwartzberg: Introduction to Management Accounting – Pearson Education.

8. Dr. S.N. Maheswari and S.N. Mittal: Management Accounting – Shree Mahavir Book Depot., New Delhi.

B.COM. (HONOURS) SEMESTER-IV Course Code: UG BCOM-H-GE-T-04 Course Title: INDIAN ECONOMICS Generic Course; Credit-6; Full Marks-75

COURSE OBJECTIVE:

This course seeks to enable the student to grasp the major economic problems in India and their solution.

COURSE CONTENTS:

1. Basic Issues of Economic Development: Concept and Measures of Development and Underdevelopment; Human Development Index; Human Capital-Meaning and Importance.

2. Basic Issues of Indian Economy: Features of Indian Economy; Sectoral distribution of National Income; Structural Change in Indian Economy; Problem of Poverty, Poverty alleviation measures; Problem of Unemployment and the policy measures; Population Growth and Economic Development.

3. Agricultural Sector: Problems of Indian agriculture; Land Reforms; Green Revolution and its impact; Problems of Rural Credit and Marketing; Co-operative Farming.

4. Industrial Sector: Industrial Labour; Industrial Sickness; Small Scale and Cottage Industry; Industrial Policy-Role of Public Sector; Its performance and issue of Disinvestment-Privatisation.

5. External Sector: Foreign Capital: Components; Need of Foreign Capital; Policy towards Foreign Capital; Foreign Investment since 1991; Globalisation- Meaning and Impact; International Institutions-WTO, World Bank, IMF.

Suggested Readings:

- 1. A. N. Agrawal, Indian Economy.
- 2. Dutt & Sundaram, Indian Economy.
- 3. Mishra & Puri, Indian Economy.
- 4. Uma Kapila, Indian Economy.
- 5. Ajay Kumar Nandi, Adhunik Bharatiya Arthanitir Ruprekha (Bengali).
- 6. Swapan Kumar Ray & Joydeb Sarkhel, Bharater Arthaniti (Bengali).
- 7. Jaydeb Sarkhel, Sekh Selim & Anindyo Bhukto, Economic Development- Institutions, Theory and Application.
- 8. Jaydeb Sarkhel, Sekh Selim & Anindyo Bhukto, Arthanoitik Unnoyan- Pratisthan, Tattwo O Prayog (Bengali).

B.COM. (HONOURS) SEMESTER-V Course Code: UG BCOM-H-DSE-T-01A Course Title: BUSINESS COMMUNICATION AND ENTREPRENEURSHIP DEVELOPMENT Discipline Specific Course; Credit-6; Full Marks-75 Module I BUSINESS COMMUNICATION

COURSE OBJECTIVE:

The objective is to equip students to acquire skills in reading, writing, comprehension and communication, as also to use electronic media for business communication.

COURSE CONTENTS:

- 1. Business Communication: Introduction, Definition, Objectives, Importance, Elements, Types of Communication – Formal and informal, Level of Analysis of Business Communication, Principles of Effective Communication.
- **2.** Significance of Communication, Business Productivity, Inter Group and Intra-Group Conflict, Conflict Resolution and Group Cohesiveness.
- **3. Management Information System (MIS):** Definition, Elements, Need, Function, Use of IT in MIS (Conceptual), Role of MIS in Decision Making, Decision Support System (DSS).
- **4. Tools of Communication:** Emergence of Communication Technology, Modern forms of Communication, Fax, E-Mail, and Video Conferencing.
- 5. **Practice in Effective Communication:** Drafting Notice, Circular, Minute, Resolution, Report, CV writing, Business Letter Writing, Office Letter, Status Enquiry, Quotation Order Confirmation, Execution, Refusal and Cancellation of Order, Recommendation, Credit Collection, Claim, Bank Loan.

Module II ENTREPRENEURSHIP DEVELOPMENT

COURSE OBJECTIVE:

The objective is to orient the learner toward entrepreneurship as a career option and creative thinking and behaviour.

COURSE CONTENTS:

- 1. Introduction: Meaning and Concept of Entrepreneurship, Elements, Determinants and Importance of Entrepreneurship, Role and Creativity, Characteristics, Function and Qualities of Entrepreneur.
- 2. Entrepreneurship Roles in Different Business Environment: Small, Micro & Medium Business Enterprises, Family Venture, Corporate Entrepreneurship, Role of Government as Entrepreneur.
- **3. Entrepreneur and Law:** Legal protection of innovations-Patents, Trademarks and Copyrights-Intellectual Property Right.
- **4. Financing of New Ventures:** Methods of Financing Equity Financing, Venture Capital Debt Financing and Governmental Grants.
- **5. Project Planning and Feasibility Studies:** Methods of preparation of Project Plans and conducting Feasibility Studies.

Suggested Readings:

B.COM. (HONOURS) SEMESTER-V Course Code: UG BCOM-H-DSE-T-02A Course Title: ACCOUNTING FOR LOCAL BODIES Discipline Specific Course; Credit-6; Full Marks-75

COURSE OBJECTIVE:

Accounting for Local Body is an emerging area. The objective of the course is to provide concepts, principles and application of Local Body's accounting, which the students of affiliated colleges of this University, having rural hinterland, should know.

COURSE CONTENTS:

1. Introduction: Concept of local bodies; Salient features of 73rd Amendment of the Constitution in 1992, Article 243J- Audit of Accounts.

2. Provisions related to Accounts in the West Bengal Panchayat Act, 1973: Some important provisions of – (a) West Bengal Panchayat (Zilla Parishad and Panchayat Samiti) Accounts and Finance Rules 2003, (b) West Bengal Panchayat (Gram Panchayat Accounts, Audit and Budget) Rules 2007.

3. Financial Statements of Municipalities: Balance Sheet, Income & Expenditure Account, Statement of Cash Flows, Receipts and Payments Account, and Notes to Accounts (Refer National Municipal Accounts Manual, 2004);

Important contents of the Accounting Manual for Urban Local Bodies, 2006, of the Govt. of West Bengal: **Part 1:** Introduction to Double Entry Accrual- based Accounting Para 4- New Accounting System (i.e. double entry accrual system of accounting); Para 6- Accounting Documents; Para 7- Financial Statements; Para 9- Fundamental Accounting Assumptions. **Part 5:** Forms and Formats.

4. Accounting Standards: Overview of Accounting Standards for Local Bodies issued by the Institute of Chartered Accountants of India.

5. Financial Statements of PRIs (Panchayat Raj Institutions) and Municipalities: problem solutions; Software for Preparation of Financial Statements.

Note- Evaluation of Answer Scripts is to be made by internal teachers of concerned college.

Suggested Readings:

1. Constitution of India.

2. West Bengal Panchayat Act, 1973.

3. West Bengal Panchayat (Zilla Parishad and Panchayat Samiti) Accounts and Finance Rules 2003.

- 4. West Bengal Panchayat (Gram Panchayat Accounts, Audit and Budget) Rules 2007.
- 5. National Municipal Accounts Manual, 2004.
- 6. Accounting Manual for Urban Local Bodies, 2006, of the Govt. of West Bengal.
- 7. Accounting Standards for Local Bodies issued by the Institute of Chartered Accountants of India.

After completion of the course the learners will be able to:

• Learn the basic idea of Microeconomics in particular and Economics in general.

COURSE CONTENT:

Exploring the subject matter of Economics

Why study economics? 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; marginal benefits and marginal costs; opportunity cost (private and social); the basic competitive model.

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 and producer surplus; Elasticities and their applications.

The Households

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; consumers' optimum choice.

The Firm and Perfect Market Structure

Defining a firm – firm's legal forms; profit maximization hypothesis, Technology- general concept of production function; returns to factor and returns to scale, isoquants and diminishing rate of factor substitution – elasticity of substitution. short run and long run costs; cost curves in the short run and long run; relation between short run and long run costs.

SUGGESTED READINGS:

- Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007.
- N. Gregory Mankiw, Economics: Principles and Applications, Indian 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 and Company Inc., New York, International Student Edition, 4th Edition, 2007.
➤ K.G. Binmore, Mathematical Analysis, Cambridge University Press, 1991.

Course: ECON—H-GE-T-1 Course title: Introductory Microeconomics Generic Elective; Credit-6; Full Marks-75

COURSE OBJECTIVES:

After completion of the course the learners will be able to:

• Learn the basic idea of Microeconomics in particular and Economics in general.

COURSE CONTENT:

Exploring the subject matter of Economics

Why study economics? 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; marginal benefits and marginal costs; opportunity cost (private and social); the basic competitive model; prices.

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 and producer surplus; Elasticities and their applications.

The Households

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; consumers' optimum choice.

The Firm and Perfect Market Structure

Defining a firm – firm's legal forms; profit maximization hypothesis, Technology- general concept of production function; returns to factor and returns to scale, isoquants and diminishing rate of factor substitution – elasticity of substitution. Short run and long run costs; cost curves in the short run and long run; relation between short run and long run costs.

SUGGESTED READINGS:

- Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007.
- N. Gregory Mankiw, Economics: Principles and Applications, Indian 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 and Company Inc., New York, International Student Edition, 4th Edition, 2007.
- Samuelson and Nordhaus, Economics, Mc-Graw Hill
- > Pyndyck and Rubenfeld, Microeconomic Theory.
- Lypsey and Chrystal, An Introduction to Positive Economics

Course: ECON—H-AECC-T-1 Course title: English/ENVS Ability Enhancement Compulsory Course; Credit-2; Full Marks-50

SEMESTER II

Course: ECON-H-CC-T-03 Course Title: Introductory Macroeconomics Core Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After the completion of the course the learner will be able to be equipped with the knowledge of basic functioning of a market economy at the macro level including understanding of national income accounting.

COURSE CONTENT:

National Income Accounting, unemployment and open economy issues

What is Macroeconomics? Circular flow of income, closed and open economy .Macroeconomic data- National Income accounting and cost of living; Concept of Growth- role of savings, investment,; Open Economy-; Concept of unemployment- Types and their characteristics.

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 – concept of equilibrium,

Money and Inflation

Monetary system- definition and functions of money and determinants of money supply; inflation and its costs.

SUGGESTED READINGS:

- 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 and Company, 1994
- Alpha Chiang and Kevin Wainwright, Fundamental Methods of Mathematical Economics, 4th Edition, McGraw Hill, 2005

Course: ECON-H-GE-T-02 Course Title: Introductory Macroeconomics Generic Elective; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After the completion of the course the learner will be able to be equipped with the knowledge of basic functioning of a market economy at the macro level including understanding of national income accounting.

COURSE CONTENT:

National Income Accounting, unemployment and open economy issues

What is Macroeconomics? Circular flow of income, closed and open economy .Macroeconomic data- National Income accounting and cost of living; Concept of Growth- role of savings, investment,; Open Economy-; Concept of unemployment- Types and their characteristics.

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 – concept of equilibrium,

Money and Inflation

Monetary system- definition and functions of money and determinants of money supply; inflation and its costs.

SUGGESTED READINGS:

- > 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
- Branson, Macroeconomic Theory.

Course: ECON—H-AECC-T-2 Course title: English/ENVS Ability Enhancement Compulsory Course; Credit-2; Full Marks-50

SEMESTER III

Course: ECON-H-CC-T-5 Course Title: Intermediate Microeconomics – I Core Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to understand the fundamentals of microeconomic theories in the context of a market economy.

COURSE CONTENT:

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 homogeneous and homothetic production function and their properties; production with one and more variable inputs; isocost line and firm's 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. Nicholoson, Fundamentals of Microeconomics, Cengage Learning (India), 2010
- B. Douglas Bernheim and Michael D. Whintson, 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.

Course: ECON-H-CC-T-6 Course Title: Intermediate Macroeconomics – I Core Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After the completion of the course the learner will be able to understand the fundamental macroeconomic theories in the context of a market economy.

COURSE CONTENT:

Income Determination in the short-run

IS-LM Model - equilibrium, stability and comparative statics; effects of fiscal and monetary policies, real balance effects;

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

What is inflation? Types and cost of Inflation. Inflation and unemployment trade-off-Short run and long- run Phillips curve under adaptive expectations-outcome under rational expectations (non-rigorous).

SUGGESTED READINGS:

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 (Concepts only)

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, 3rd Edition, New York, London.
- A.M. Mood, F.A. Greybill and D.C. Boes, Introduction to the theory of Statistics, McGraw Hill, 1974.
- ➢ Goon, Gupta and Dasgupta, Fundamentals of Statistics
- Gupta and Kapoor, Statistics

Course: ECON-H-GE-T-3A Course Title: Intermediate Microeconomics – I Generic Elective; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to understand the fundamentals of microeconomic theories in the context of a market economy.

COURSE CONTENT:

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 homogeneous and homothetic production function and their properties; production with one and more variable inputs; isocost line and firm's 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. Nicholoson, Fundamentals of Microeconomics, Cengage Learning (India), 2010
- B. Douglas Bernheim and Michael D. Whintson, 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.

Course: ECON-H-GE-T-3B Course Title: Intermediate Macroeconomics – I Generic Elective; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After the completion of the course the learner will be able to understand the fundamental macroeconomic theories in the context of a market economy.

COURSE CONTENT:

Income Determination in the short-run

IS-LM Model - equilibrium, stability and comparative statics; effects of fiscal and monetary policies, real balance effects;

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

What is inflation? Types and cost of Inflation. Inflation and unemployment trade-off-Short run and long- run Phillips curve under adaptive expectations-outcome under rational expectations (non-rigorous).

SUGGESTED READINGS:

SEMESTER – IV

Course: ECON-H-CC-T-8 Course Title: Intermediate Microeconomics – II Core Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to:

• Learn the fundamentals of microeconomic theories.

COURSE CONTENT:

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;

c) Perfect competition, Pareto efficiency and market failure (externalities and public good); property right and Coase Theorem.

Market Structure

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; Non collusive. (Cournot Equilibrium, Bertrand Equilibrium, Stackelberg Equilibrium, Kinked Demand Curve); concept of collusion and cartels;

Input Market under Imperfect Competition

Monopsony, bilateral monopoly in labour market; Externalities; public goods and markets with asymmetric information.

SUGGESTED READINGS:

► Hal Varian. Intermediate Microeconomics

▶ 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
- ► Anindya Sen, Microeconomics: Theory and Applications, OUP, 1999
- ▶ Pindyck and Rubinfeld, Microeconomics, Prentice Hall

Course: ECON-H-CC-T-9 Course Title: Intermediate Macroeconomics – II Core Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to:

• Learn the fundamentals of macroeconomic theories.

COURSE CONTENT:

Schools of Macroeconomic Thoughts

Classical System: Say's law and quantity theory; Classical dichotomy and neutrality of money; Keynesian vs classical 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;

Investment: MEC and MEI- 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 model; golden rule; dynamic efficiency, technological progress.

SUGGESTED READINGS:

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.

▶ 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

Course: ECON-H-GE-T-4A Course Title: Intermediate Microeconomics – II Generic Elective Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to:

• Learn the fundamentals of microeconomic theories.

COURSE CONTENT:

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;

c) Perfect competition, Pareto efficiency and market failure (externalities and public good); property right and Coase Theorem.

Market Structure

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; Non collusive. (Cournot Equilibrium, Bertrand Equilibrium, Stackelberg Equilibrium, Kinked Demand Curve); concept of collusion and cartels;

Input Market under Imperfect Competition

Monopsony, bilateral monopoly in labour market; Externalities; public goods and markets with asymmetric information.

SUGGESTED READINGS:

- ► Hal Varian. Intermediate Microeconomics
- ▶ 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
- Anindya Sen, Microeconomics: Theory and Applications, OUP, 1999

▶ Pindyck and Rubinfeld, Microeconomics, Prentice Hall

Course: ECON-H-GE-T-9 Course Title: Intermediate Macroeconomics – II Generic Elective Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to:

• Learn the fundamentals of macroeconomic theories.

COURSE CONTENT:

Schools of Macroeconomic Thoughts

Classical System: Say's law and quantity theory; Classical dichotomy and neutrality of money; Keynesian vs classical 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;

Investment: MEC and MEI- 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 model; golden rule; dynamic efficiency, technological progress.

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).

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.

SUGGESTED READINGS:

▶ 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.

- ► Rajat Acharyya- International Economics; Oxford University Press
- ► Giancarlo Gandolfo, International Trade Theory and Policy, Springer, 2014 Soderstein and Reid, International Economics

Course: ECON-H-CC-T-12 Course Title: Public Economics Core Course; Credit – 6; Full Marks – 75

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 multipliers, balanced budget multiplier; Fiscal Federalism in India; Meaning of Public Debt; Sources of Public Borrowings: internal and external borrowing; Effects of Public Debt.

SUGGESTED READINGS:

► A. B. Atkinson and J. E. Stiglitz, Lectures on Public Economics, McGraw-Hill Inc., US, 1980.

► C. V. Brown and P. M. Jackson. Public Sector Economics, Wiley-Blackwell; 4th Edition, 1991.

▶ J. F. Due and A. F. Friedlander. Government Finance-Economics of Public Sector, AITBS Publishers and Distributors, 1994

▶ 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.

Amaresh Bagchi (ed), Readings in Public Finance, OUP

► 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)

Course: ECON-H-DSE-T-1A Course title: Economic Development and Policy in India - I Discipline Specific Elective; Credit-6; Full Marks-75

COURSE OBJECTIVES:

This course reviews major trends in aggregate economic indicators in India and places these against the backdrop of major policy debates in India in the post- Independence period.

COURSE CONTENT:

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

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* (latest)
- 7. Dutt and Sundaram, *Indian Economy* (Latest Edition)
- 8. Mishra and Puri, Indian Economy (Latest Edition)

Course: ECON-H-DSE-T-1B Course Title: Money and Banking Discipline Specific Elective; Credit-6; Full Marks-75

COURSE OBJECTIVES:

This course exposes students to the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control. Financial and banking sector reforms and monetary policy with special reference to India are also covered.

COURSE CONTENT:

1. Money

Concept, functions, measurement; theories of money supply determination.

2. Financial Institutions, Markets, Instruments and Financial Innovations

a. Role of financial markets and institutions; problem of asymmetric information – adverse selection and moral hazard; financial crises.

b. Money and capital markets: organization, structure and reforms in India; role of financial derivatives and other innovations.

3. Interest Rates

Determination; sources of interest rate differentials; theories of term structure of interest rates; interest rates in India.

4. Banking System

a. Balance sheet and portfolio management.

b. Indian banking system: Changing role and structure; banking sector reforms.

5. Central Banking and Monetary Policy

- 2. Working of Monetary and Fiscal Policies
- 3. Analysis of Budget and Deficits
- 4. Fiscal Federalism in India
- 5. State and Local Finances

SUGGESTED READINGS:

- 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
- Kaushik Basu 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)
- ▶ H.L. Bhatia, Indian Public Finance

Course: ECON-H-DSE-T-2B Course Title: Environmental Economics Discipline Specific Elective Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to:

• Know the theories of environmental economics including the notion of sustainable development.

COURSE CONTENT:

Introduction

What is environmental economics; review of microeconomics and welfare economics

The Theory of Externalities

Pareto optimality and market failure in the presence of externalities; property rights and the Coase theorem

The Design and Implementation of Environmental Policy

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

Measuring the Benefits of Environmental Improvements

Non-Market values and measurement methods; risk assessment and perception

Sustainable Development

Concepts; measurement

SUGGESTED READINGS:

- 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 McGilvary 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.

SEMESTER VI

Course: ECON-H-CC-T-13 Course Title: Indian Economy Core Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to:

• Know the current issues and problems facing Indian economy.

COURSE CONTENT:

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 Human Development

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

SUGGESTED READINGS:

- Jean Dreze and Amartya Sen, India An Uncertain Glory, Princeton University Press, 2013.
- Jean Dreze and Amartya Sen, India: Economic Development and Social Opportunity, OUP
- Sukhamoy 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
- Kashik Basu and A. Maertens (eds), The New Oxford Companion to Economics in India, Oxford University Press.
- Mishra and Puri, Indian Economy, Latest Edition.
- Selected articles on the relevant topics from Economic and Political Weekly.

Course: ECON-H-CC-T-14 Course Title: Development Economics Core Course; Credit – 6; Full Marks – 75

COURSE OBJECTIVES:

After completion of the course the learner will be able to:

• Know the current theoretical and empirical issues and problems concerning economic development.

COURSE CONTENT:

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

Stages of Development and Structural Change

Sector thesis of Fisher and Clark, Stages of Growth: Rostow and Marx

Population and Economic Development

Theory of Demographic Transition,; Malthusian Population Trap, Concept of optimum population; Low level equilibrium trap models of Nelson and Libenstein and their criticism.

Development Strategies:

Poverty trap model of Nurkse, Big push Theory, Linkages- backward and forward, Theory of balance and unbalanced growth.

Role of capital and Labour in Economic Development

Role of capital in Economic Development, significance of capital output ratio, role of technology and technical progress; Concept of Economic Dualism; Lewis model of Economic Development; Disguised unemployment, concept and measurement; Sen's model of Choice of Technique; Harris- Todaro model of Rural- urban migration.

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 process

SUGGESTED READINGS:

- > Debraj Ray, Development Economics, Oxford University Press, 2009.
- Partha Dasgupta, Economics, A Very Short Introduction, Oxford University Press, 2007.
- ➤ Kaushik Basu, The Oxford Companion to Economics in India, OUP, 2007.
- Kaushik Basu, Analytical Development Economics, OUP
- Amartya Sen, Development as Freedom, OUP, 2000.
- 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.
- ➢ A.P. Thirwal, Development Economics

Course: ECON-H-DSE-T-3A Course title: Economic Development and Policy in India - II Discipline Specific Elective; Credit-6; Full Marks-75

COURSE OBJECTIVES:

Building on the more aggregative analysis of trends in the Indian Economy offered in Economic Development and Policy–I, this course examines sector-specific trends in key indicators and their implications in the post-Independence period.

COURSE CONTENT:

UNIVERSITY OF KALYANI



CBCS CURRICULUM FOR THREE YEARS UNDER-GRADUATE COURSE

IN

EDUCATION (HONOURS)

WITH EFFECT FROM THE ACADEMIC SESSION

2018-19

INTRODUCTION:

The University Grants Commission (UGC) has taken various measures by means of formulating regulations and guidelines and updating them, in order to improve the higher education system and maintain minimum standards and quality across the Higher Educational Institutions in India. The various steps that the UGC has initiated are all targeted towards bringing equity, efficiency and excellence in the Higher Education System of country. These steps include introduction of innovation and improvements in curriculum structure and content, the teaching-learning process, the examination and evaluation systems, along with governance and other matters. The introduction of Choice Based Credit System is one such attempt towards improvement and bringing in uniformity of system with diversity of courses across all higher education institutes in the country. The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising of core, elective, skill enhancement or ability enhancement courses. The courses shall be evaluated following the grading system, is considered to be better than conventional marks system. This will make it possible for the students to move across institutions within India to begin with and across countries for studying courses of their choice. The uniform grading system shall also prove to be helpful in assessment of the performance of the candidates in the context of employment.

Outline of the Choice Based Credit System being introduced:

1. Core Course (CC): A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

2. Elective Course: Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the student's proficiency/skill is termed as an Elective Course.

2.1 **Discipline Specific Elective Course (DSEC):** Elective courses that are offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).

2.2 Generic Elective Course (GEC): An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

3. Ability Enhancement Courses/ Skill Enhancement Courses:

3.1 Ability Enhancement Compulsory Course (AECC): Ability enhancement courses are the courses based upon the content that leads to Knowledge enhancement. They (i) Environmental Science, (ii) English Communication) are mandatory for all disciplines.

3.2 **Skill Enhancement Course (SEC):** These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based instruction.

A. IOTAL NUMBER OF COULSES IN OU-CDC5 (D.A. HOUS.).						
Types of	Core	Elective course		Ability enhancement course		Т
course	course	Discipline	Generic	Ability	Skill	
	(CC)	specific elective	elective	Enhancement	Enhancement	1
		course (DSE)	course(GE)	compulsory	course (SEC)	A
				course (AECC)		L
No. of course	14	4	4	2	2	26
Credit/course	6	6	6	2	2	140

A. TOTAL Number of courses in UG-CBCS (B.A. Hons.):

TABLE-1: DETAILS OF COURSES & CREDIT OF B.A.(HONOURS) UNDER CBCS

S. No.	Particulars of Course	Credit Point		
1.	Core Course: 14 Papers	Theory + Practical	Theory + Tutorial	
1.A.	Core Course: Theory (14 papers)	14x4 = 56	14x5 = 70	
1.B.	Core Course (Practical/Tutorial)*(14 papers)	14x2 = 28	14x1 = 14	
2.	Elective Courses: (8 papers)			
2.A.	A. Discipline specific Elective(DSE)(4 papers)	4x4 = 16	4x5 = 20	
2.B.	DSE (Practical / Tutorial)* (4 papers)	4x2 =8	4x1 =4	
<i>2C.</i>	General Elective(GE) (Interdisciplinary) (4	4x4 = 16	4x5 = 20	
	papers)			
2.D.	GE (Practical / Tutorial)* (4 papers)	4x2 =8	4x1 =4	
3. Ability Enhancement Courses				
<i>A.</i>	AECC(2 papers of 2 credits each)			
	ENVS, English Communication/ MIL	2x2 = 4	2x2 = 4	
В.	Skill Enhancement Course(SEC)			
	(2 papers of 2 credits each)	2x2 = 4	2x2 = 4	
	Total Credit:	140	140	

TABLE-2: SEMESTERWISE DISTRIBUTION OF COURSE & CREDITS IN B.A.(HONOURS)

Courses/ (Credits)	Sem-I	Sem-Il	Sem- III	Sem- IV	Sem-V	Sem-Vi	Total No. of Courses	Total credi t
CC (6)	2	2	3	3	2	2	14	84
DSE (6)					2	2	04	24
GE (6)	1	1	1	1			04	24
AECC (2)	1	1					02	04
SEC (2)			1	1			02	04
Total No. of								
Course/ Sem.	4	4	5	5	4	4	26	
Total Credit								
/Semester	20	20	26	26	24	24		140

COURSE CODE & COURSE TITLE:

A. Core courses (CC)

- 1. EDU-H-CC-T-1: Philosophical Foundation of Education-1
- 2. EDU-H-CC-T-2: Sociological Foundation of Education
- 3. EDU-H-CC-T-3: Psychological Foundation of Education
- 4. EDU-H-CC-T-4: History of Education in Colonial India
- 5. EDU-H-CC-T-5: Educational Evaluation & Statistics
- 6. EDU-H-CC-T-6: Philosophical Foundation of Education-II
- 7. EDU-H-CC-T-7: Inclusive Education
- 8. EDU-H-CC-T-8: History of Education in Post-Independence India
- 9. EDU-H-CC-T-9: Psychology of Instruction
- 10. EDU-H-CC-T-10: Contemporary issues in Education
- 11. EDU-H-CC-T-11: Educational Management
- 12. EDU-H-CC-T-12: Educational Technology
- 13. EDU-H-CC-T-13: Curriculum Studies
- 14. EDU-H-CC-T-14: Educational Research

B. Discipline specific elective courses (DSE)

- 1. EDU-H-DSE-T-1/2(A): Value Education
- 2. EDU-H-DSE-T-1/2(B): Population Education
- 3. EDU-H-DSE-T-1/2(C): Peace Education
- 4. EDU-H-DSE-T-1/2(D): Distance Education
- 5. EDU-H-DSE-T-1/2(E): History of Education in Ancient and Medieval India
- 6. EDU-H-DSE-T-3/4(A): Mental Hygiene
- 7. EDU-H-DSE-T-3/4(B): Comparative Education
- 8. EDU-H-DSE-T-3/4(C): Guidance & Counselling
- 9. EDU-H-DSE-T-3/4(D): Great Educators
- 10. EDU-H-DSE-3/4(E): Dissertation

C. Generic elective courses (GE):

- 1. EDU-H-GE-T-1: Educational Philosophy
- 2. EDU-H-GE-T-2: Educational Psychology
- 3. EDU-H-GE-T-3: Educational Sociology
- 4. EDU-H-GE-T-4: History of Education

D. Ability enhancement compulsory courses (AECC)

- 1. AECC-1: Environmental Education
- 2. AECC-2: English Communication

E. Skill enhancement courses (SEC)

- 1. EDU-H-SEC-T-1(A): Statistical Analysis
- 2. EDU-H-SEC-T-1(B): Achievement Test
- 3. EDU-H-SEC-T-2(A): Lesson Planning
- 4. EDU-H-SEC-T-2(B): Uses of Teaching Aids

(U CICUIT-75 Marks & 2 CICUIT-50 Marks)							
Course Code	SEMIESTER-I	Course wise Close	Credit				
Course Code		(L+T+P)	Crean				
EDU-H-CC-T-1	Philosophical foundation of Education-I	Core (75L+15T)	6(5L+1T)				
EDU-H-CC-T-2	Sociological foundation of Education	Core (75L+15T)	6(5L+1T)				
EDU-H-GE-T-1	Educational Philosophy	Generic Elective	6(5L+1T)				
		(75L+15T)					
AECC-1	Environmental Education	Ability enhancement	2 (2L)				
		compulsory (30L)	· · ·				
Total	4 courses	Total	20				
SEMESTER-II							
Course Code	Course Title	Course wise Class (L+T+P)	Credit				
EDU-H-CC-T-3	Psychological foundation of Education	Core (75L+15T)	6(5L+1T)				
EDU-H-CC-T-4	History of Education in Colonial India	Core (75L+15T)	6(5L+1T)				
EDU-H-GE-T-2	Educational Psychology	Generic Elective	6(5L+1T)				
		(75L+15T)					
AECC-2	English communication	Ability enhancement	2 (2L)				
	8	compulsory (30L)	~ /				
Total	4 courses	Total	20				
	SEMESTER-III		-				
Course Code	Course Title	Course wise Class	Credit				
		(L+T+P)					
EDU-H-CC-T-5	Educational Evaluation & Statistics	Core (75L+15T)	6(5L+1T)				
EDU-H-CC-T-6	Philosophical foundation of Education-II	Core (75L+15T)	6(5L+1T)				
EDU-H-CC-T-7	Inclusive Education	Core (75L+15T)	6(5L+1T)				
EDU-H-GE-T-3	Educational Sociology	Generic Elective	6(5L+1T)				
		(75L+15T)					
EDU-H-SEC-T-1	A. Statistical Analysis	Skill enhancement	2 (2L)				
	B. Achievement Test	(30L)					
Total	5 courses	Total	26				
SEMESTER-IV							
Course Code	Course Title	Course wise Class	Credit				
		(L+T+P)					
EDU-H-CC-T-8	History of Education in Post-independence	Core	6(5L+1T)				
EDU-H-CC-T-9	Psychology of Instruction	Core	6(5L+1T)				
EDU-H-CC-T-10	Contemporary issues in Education	Core	6(5L+1T)				
EDU-H-GE-T-4	History of Education	Generic Elective	6(5L+1T)				
		(75L+15T)	0(02+11)				
EDU-H-SEC-T-2	A. Lesson Planning	Skill enhancement	2 (2L)				
	B. Uses of Teaching Aids	(30L)					
Total	5 courses	Total	26				
	SEMESTER-V						
Course Code	Course Title	Course wise Class	Credit				
		(L+T+P)					
EDU-H-CC-T-11	Educational Management	Core (75L+15T)	6(5L+1T)				
EDU-H-CC-T-12	Educational Technology	Core (75L+15T)	6(5L+1T)				
EDU-H-DSE-T-1	A: Value Education	Discipline specific	2x6				
EDU-H-DSE-T-2	B: Population Education	(75L+15L)	(2x5L+2x1L)				
(any two)	C: Peace Education	1					
	D: Distance Education]					
	E:History of Education in Ancient and						
	Medieval India						

Table-3: Semester & Course wise credit distribution in B.A. (Hons.) Education(6 Credit=75 Marks & 2 Credit=50 Marks)

Total	4 courses	Total	24			
SEMESTER-VI						
Course Code	Course Title	Course wise Class	Credit			
		(L+T+P)				
EDU-H-CC-T-13	Curriculum Studies	Core (75L+15T)	6(5L+1T)			
EDU-H-CC-T-14	Educational Research	Core (75L+15T)	6(5L+1T)			
EDU-H-DSE-T-3	A: Mental hygiene	Discipline specific	2x6			
EDU-H-DSE-T-4	B: Comparative Education	(75L+15L)	(2x5L+2x1L)			
(any two)	C: Guidance and Counselling					
	D: Great educators					
	E: Dissertation					
Total	4 courses	Total	24			
Total (All	26 courses	Total	140			
semesters)						

CBCS CURRICULUM OF B.A. IN EDUCATION (HONOURS)

B.A. Education (Honours) SEMESTER-I EDU-H-CC-T-1: Philosophical Foundation of Education-I Core Course; Credit-6; Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Discuss the meaning, nature, scope and aims of education.
- Discuss the meaning and scope of educational philosophy.
- Explain the factors of education and their relationships.
- Describe the knowledge, reality and value of different Indian schools of philosophy namely Sankhya, Yoga and Buddhism.
- Discuss the educational view of different Western schools of philosophy namely Idealism, Naturalism, Pragmatism.
- Explain about the Philosophy of Indian Great Educators like Swami Vivekananda, Rabindranath Tagore, Mahatma Gandhi
- Explain about the Philosophy of Western Great Educators like Rousseau, Dewey, and Froebel.

Unit-I: Concept, Scope and Aim of Education

- a) Meaning, Nature and Scope of Education.
- b) Individualistic and socialistic aim.
- c) Report of Delor's commission (UNESCO, 1996)
- d) Meaning and scope of Educational Philosophy; Relation between education and philosophy.

Unit-II: Factors of Education:

- a) Child: Meaning and characteristics of child centric education system.
- b) Teacher: Qualities and duties of a good teacher. Teacher as a motivator, mentor, facilitator and problem solver.
- c) Curriculum: Meaning and Types. Co-curricular activities.
- d) School: vision and functions.

Unit-III: Schools of Philosophy

- a) Sankhya, and Yoga in terms of knowledge, reality and value.
- b) Buddhism and Jainism

Unit-IV: Great Educators and their educational philosophy

- a) Indian: Swami Vivekananda, Rabindranath Tagore, Mahatma Gandhi.
- b) Western: Rousseau, Dewey, Froebel.

Suggested Books:

- 1. J. C. Aggarwal- Theory and Principles of Education
- 2. J. C. Aggarwal Philosophical and Sociological Bases of Education
- 3. S. P. Chaube& A. Chaube Foundations of Education
- 4. K. K. Shrivastava- Philosophical Foundations of Education
- 5. S. S. Ravi A Comprehensive Study of Education
- 6. M. Sharma Educational Practices of Classical Indian Philosophies
- 7. S. S. Chandra & R. K. Sharma- Philosophy of Education
- 8. M. K. Goswami- Educational Thinkers: Oriental and Occidental, Thoughts and Essays.
- ৯. সুশীল রায় শিক্ষাতত্ত্ব ও শিক্ষাদর্শন
- ১০. অর্চনা ব-ন্দাপাধ্যায় শিক্ষাদর্শন ও শিক্ষানীতি

- ১১. দি-ব্যন্দু ভট্টাচার্য্য শিক্ষা ও দর্শন
- ১২. বিভুরঞ্জন গুহ শিক্ষায় পথিকৃৎ
- ১৩. অরুন -ঘাষ শিক্ষা বিজ্ঞানের দর্শন ও মূলতত্ত্ব
- ১৪. -গীরদাস হালদার ও প্রশান্ত র্শমা শিক্ষাতত্ত্ব ও শিক্ষানীতি
- ১৫. জগদিন্দ্র মন্ডল শিক্ষাদর্শন ও শিক্ষাবিজ্ঞান
- ১৬. বিভুরঞ্জন গুহ- শিক্ষায় পথিকৃৎ
- ১৭. বেবী দত্ত, দেবিকা গুহ- শিক্ষা দর্শন ও দার্শনিক-দর অবদান

B.A. Education (Honours) SEMESTER-I EDU-H-CC-T-2: Sociological Foundation of Education Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to-

- Discuss the meaning, nature and scope of Educational sociology and Relation between Education and Sociology.
- Describe the Social factor and their relation to Education.
- Define social groups, socialization and Social Institution and Agencies of Education.
- Explain the Social change and its impact on Education.

Unit-I: Educational Sociology

- a) Meaning, nature and scope of Educational sociology.
- b) Relation between education and sociology.
- c) Concept of Educational sociology and sociology of education.

Unit-II: Social factors, issues and Education

- a) Culture: Concept, role of education in culture, cultural lag.
- b) Meaning of Human Resource Development and its significance in the present society.
- c) Social issues: unemployment, poverty, education of socially and economically backward classes, disadvantage section of Indian society (SC, ST and OBC).

Unit-III: Social groups and Education

- a) Social groups- meaning and types (Primary, Secondary and Tertiary)
- b) Socialization: Meaning, process and factors of socialization, role of the family and school.
- c) Social Institutions and Agencies of Education: (i) Family, (ii) School, (iii) State, (iv) Mass media and (v) Religion

Unit-IV: Social change and Education

- a) Social change: definition, characteristics, factors, constraints and education as an instrument of social change.
- b) Social change in India (Privatization and Globalization)
- c) Education and social stratification: Definition and characteristics
- d) Education and Social Mobility

Suggested Books:

- 1. Y. K. Sharma Sociological Philosophy of Education
- 2. S. S. Ravi A Comprehensive Study of Education
- 3. J. C. Aggarwal Philosophical and Sociological Bases of Education
- সুশীল রায় শিক্ষাতত্ত্ব ও শিক্ষাদর্শন
- ৫. অর্চনা ব-ন্দাপাধ্যায় শিক্ষাদর্শন ও শিক্ষানীতি
- ৬. দি-ব্যন্দু ভট্টাচার্য্য শিক্ষা ও সমাজতত্ত্ব
- ৭. সোনালী চক্রবর্তী- শিক্ষার সমাজ বৈজ্ঞানিক ভিত্তি
- ৮. বিষুপদ নন্দ শিক্ষাশ্রয়ী সমাজতত্ত্ব
- ৯. অনাদি কুমার মহাপাত্র বিষয় সমাজতত্ত্ব
- ১০. মঞ্জুষা তরফদার শিক্ষাশ্রহয়ী সমাজ বিজ্ঞান
- ১১. শ্যামাপ্রসাদ চট্টরাজ শিক্ষামুখী সমাজ বিজ্ঞান
- ১২. পরিমল ভূষন সমাজতত্ত্ব

B.A. Education (Honours) SEMESTER-I EDU-H-GE-T-1: Educational Philosophy Generic Elective Course: Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Discuss the meaning, nature, scope and aims of education.
- Discuss the meaning and scope of educational philosophy.
- Explain the factors of education and their relationships.
- Describe the knowledge, reality and value of different Indian schools of philosophy namely Sankhya, Yoga and Buddhism.
- Discuss the educational view of different Western schools of philosophy namely Idealism, Naturalism, Pragmatism.
- Explain about the Philosophy of Indian Great Educators like Swami Vivekananda, Rabindranath Tagore, Mahatma Gandhi
- Explain about the Philosophy of Western Great Educators like Rousseau, Dewey, Froebel.

Unit-I: Concept, Scope and Aim of Education

- a) Meaning, Nature and Scope of Education.
- b) Individualistic and socialistic aim.
- c) Meaning and scope of educational Philosophy; Relation between education and philosophy.

Unit-II: Factors of Education:

- a) Child: Meaning and characteristics of child centric education system.
- b) Teacher: Qualities and duties of a good teacher.
- c) Curriculum: Meaning and Types. Co-curricular activities.

Unit-III: Schools of Philosophy and National Values

- a) Indian schools of Philosophy: Sankhya, Yoga, Buddhism; in terms of knowledge, reality and value.
- b) Western School of Philosophy: Idealism, Naturalism, Pragmatism: special reference to principles, aims of education, curriculum, teaching method, teacher, discipline.

Unit-IV: Great Educators and their educational philosophy

a) Swami Vivekananda, Rabindranath Tagore, Rousseau, Dewey.

Suggested Books:

- 1. J. C. Aggarwal- Theory and Principles of Education
- 2. J. C. Aggarwal Philosophical and Sociological Bases of Education
- 3. S. P. Chaube & A. Chaube Foundations of Education
- 4. K. K. Shrivastava- Philosophical Foundations of Education
- 5. S. S. Ravi A Comprehensive Study of Education
- 6. M. Sharma Educational Practices of Classical Indian Philosophies
- 7. S. S. Chandra & R. K. Sharma- Philosophy of Education

- 8. M. K. Goswami- Educational Thinkers: Oriental and Occidental, Thoughts and Essays.
- 9. সুশীল রায় শিক্ষাতত্ত্ব ও শিক্ষাদর্শন
- 10. অর্চনা ব-ন্দাপাধ্যায় শিক্ষাদর্শন ও শিক্ষানীতি
- 11. দি-ব্যন্দু ভট্টাচার্য্য শিক্ষা ও দর্শন
- 12. বিভু রঞ্জন গুহ শিক্ষায় পথিকৃৎ
- 13. অরুন -ঘাষ- শিক্ষা বিজ্ঞানের দর্শন ও মূলতত্ত্ব
- 14. -গৌরদাস হালদার ও প্রশান্ত র্শমা- শিক্ষাতত্ত্ব ও শিক্ষানীতি
- 15. জগদিন্দ্র মন্ডল শিক্ষাদর্শন ও শিক্ষাবিজ্ঞান
- 16. বিভুরঞ্জন গুহ- শিক্ষায় পথিকৃৎ
- 17. বেবী দত্ত, দেবিকা গুহ- শিক্ষা দর্শন ও দার্শনিক-দর অবদান

B.A. Education (Honours) SEMESTER-I AECC-1: Environmental Education Ability Enhancement Compulsory Course; Credit-2. Full Marks-50

COMMON SYLLABUS

B.A. Education (Honours) SEMESTER-II EDU-H-CC-T-3: Psychological Foundation of Education Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of this course the learners will be able to -

- Discuss the concept, nature, scope and uses of Psychology in education.
- Explain the influence of growth and development in education.
- Describe the meaning and concept of learning, its theories and factors.
- Explain the application of learning theories in classroom situation.
- Discuss the concept and theories of intelligence and creativity.
- Explain the concept and development of personality.

Unit-I: Educational Psychology and Development

- a) Concept, Nature and Scope; Distinction between Psychology and Educational Psychology.
- b) Growth and Development: Stages and aspects of development in human life; Physical, Social, Emotional, Cognitive and Language development of Infancy, Childhood and Adolescence period and respective educational programmes.
- c) Piaget's theory of Cognitive Development.

Unit-II: Learning

- a) Definition and characteristics of Learning; Factors influencing learning
- b) Theories of learning and their implications: Classical and Operant conditioning, Trial and Error, Insightful Learning
- c) Transfer of Learning: Concept & Types.
- d) Motivation: Types, factors and Role of Motivation in learning
- e) Memorization: Definition, factors, LTM, STM. Forgetting- meaning and causes

Unit-III: Intelligence & Creativity

- a) Intelligence: Definition; Theories of Intelligence and their implications- Spearman, Thurston, Guilford and Gardner; Measurement of Intelligence- verbal and non-verbal
- b) Creativity: meaning, nature, factors, and nurturing.

Unit-IV: Personality

- a) Definition; Heredity & Environment as determinants of Personality.
- b) Type and Trait theory, Psychoanalytical theory
- c) Measurement of Personality- projective test
- d) Individual differences -meaning and implications.

Suggested Books:

1. S. K. Mangal-Essentials of Educational Psychology

- 2. J. C. Aggarwal- Essentials of Educational Psychology
- 3. S. K. Mangal Advanced Educational Psychology
- 4. S.S. Chauhan- Advanced Educational Psychology
- 5. A. Woolfolk -Educational Psychology
- 6. J. W. Santrock -Educational Psychology
- 7. E. B. Hurlock -Child Development
- 8. L. E. Berk Child Development
- 9. B. N. Dash & N. Dash A Test Book of Educational Psychology
- ১০. সুশীল রায় শিক্ষা ম-নাবিদ্যা
- ১১. অরুণ -ঘাষ শিক্ষা ম-নাবিদ্যা
- ১২. প্রমোদবন্ধু সেনগুপ্ত এবং প্রশান্ত শর্মা- শিক্ষা ম-নাবিদ্যা
- ১৩. বিজন সরকার শিখন ও শিক্ষন
- ১৪. কল্পনা -সন বরাট এবং কনিকা -চৌধুরী শিক্ষার মনোবৈজ্ঞানিক ভিত্তি
- ১৫. প্রনব কুমার চক্রবর্তী- শিক্ষা মনোবিজ্ঞানের রূপ-রখা
- ১৬. জয়ন্ত -ম-ট, রুমা -দব ও বিরাজলক্ষী -ঘাষ বিকাশ ও শিখনের মনস্তত্ত
- ১৭. পাল, ধর, দাস, ব্যানাজী পাঠদান ও শিখনের মনস্তত্ত্ব
- ১৮. বিজন সরকার শিশু ও বিকাশ

B.A. Education (Honours) SEMESTER-II EDU-H-CC-T-4: History of Education in Colonial India Core Course; Credit-6. Full Marks-75

Course Objective:

After completion of this course the learners will be able to:

- Discuss the development of education in Colonial India in historical perspectives.
- Elaborate the contributions of Education Commission in post independent India.
- Describe the Educational Policy in Colonial India.
- Discuss Bengal Renaissance and its influence on Indian Education
- Describe National Education Movement and its impacts on Education.
- State different educational reform under colonial rule.
- Explain the nature of basic education.
- Discuss the impact of the colonial rule on the development of Indian Education.

Unit: I: Education in 19th Century in India

- a) Charter Act of 1813
- b) Oriental –Occidental Controversy
- c) Macaulay's Minute
- d) Bentinck's Declaration
- e) Wood's Despatch: Context, Recommendations, Criticism and Educational Significance
- f) Indian Education Commission: Background, Composition of the Commission, Criticism and Educational Significance

Unit: II: Bengal Renaissance and Its Influence on Education

- a) Concept Bengal Renaissance
- b) Causes of Bengal Renaissance
- c) Characteristics of Bengal Renaissance
- d) Contribution of Raja Rammohan Roy, Derozio and Vidyasagar in Education.
- e) Impact of Bengal Renaissance on Education,

Unit: III: Educational policy of Lord Curzon and National Education Movement

- a) Simla Conference 1901
- b) The Indian Universities Commission1902
- c) The Indian Universities Act 1904
- d) Govt. of India's Resolution on Indian Educational Policy 1904
- e) Curzon contribution in Indian Education

National Education Movement

- a) Characteristics, of National Education Movement,
- b) Causes of National Education Movement,

- c) Objective of National Education Movement
- d) Different Phases of National Education Movement
- e) Causes of Failure of the Movement
- f) Influence of the National Education Movement on Future Development of Indian Education

Unit: IV: Commission in between 1st and 2nd world war

The Calcutta University Commission (Sadler Commission) 1917-1919

- a) Context
- b) Recommendation
- c) Criticism
- d) Results

Basic Education:

- a) Concepts
- **b**) Characteristics
- c) Merits & Demerits

The post -war plan of educational development (Sargent Plan) 1944

- a) Context
- b) Objective
- c) Recommendations
- d) Criticism
- e) Results

Suggested Readings:

- 1. B. R. Purkait- Milestones of Modern Indian Education
- 2. J. C. Aggarwal Landmarks in the History of Modern Indian Education
- 3. Nurulla & Naik- A Students History in India
- 4. S. S. Ravi A Comprehensive Study of Education
- 5. J. P. Banerjee Education in India: Past, Present and Future
- 6. S.N. Mukerjee- Modern Indian Education
- 7. B. K. Nayak- History Heritage and Development of Indian Education
- 8. B. N. Dash -History of Education in India
- 9. -জ্যাতি প্রসাদ ব-ন্দ্যাপাধ্যায় আধুনিক ভার-ত শিক্ষা বির্বতন
- 10. ড. দিলীপ কুমার ঠাকুর ও -শখ হামিদুলহক আধুনিক ভার-তর শিক্ষার ধারা
- 11. ভক্তিভূষন ভক্তা ভারতীয় শিক্ষার রূপ-রখা
- 12. রনজিৎ -ঘাষ আধুনিক ভার-ত শিক্ষার বিকাশ
- 13. রনজিৎ -ঘাষ যু-গ যু-গ ভার-তর শিক্ষা: প্রাচীন, মধ্য, আধুনিক যুগ
B.A. Education (Honours) SEMESTER-II EDU-H-GE-T-2: Educational Psychology Generic Elective Course; Credit-6. Full Marks-75

Course Objectives:

After completion of this course the learners will be able to -

- Discuss the concept, nature, scope and uses of Psychology in education.
- Explain the influence of growth and development in education.
- Describe the meaning and concept of learning, its theories and factors.
- Explain the application of learning theories in classroom situation.
- Discuss the concept and theories of intelligence and creativity.
- Explain the concept and development of personality.

Unit-I: Educational Psychology and Development

- a) Concept, Nature and Scope; Distinction between Psychology and Educational Psychology.
- b) Growth and Development: Stages and aspects of development in human life; Physical, Social, Emotional, Cognitive (Piaget's view) of Infancy, Childhood and Adolescence period and respective educational programmes.

Unit-II: Learning

- a) Definition and characteristics of Learning; Factors influencing learning
- b) Theories of learning and their implications: Classical and Operant conditioning, Insightful Learning
- c) Transfer of Learning: Concept & Types (Positive, Negative & Zero)
- d) Motivation: Types, factors and Role of Motivation in learning
- e) Memorization: Definition, factors, LTM, STM. Forgetting- meaning and causes

Unit-III: Intelligence & Creativity

- a) Intelligence: Definition; Theories of Intelligence and their implications-Spearman, Thurston.
- b) Creativity: meaning, factors, and nurturing.

Unit-IV: Personality

- a) Definition; Heredity & Environment as determinants of Personality.
- b) Type and Trait theory, Psychoanalytical theory
- c) Individual differences –meaning and implications.

- 1. S. K. Mangal- Essentials of Educational Psychology
- 2. J. C. Aggarwal- Essentials of Educational Psychology

- 3. S. K. Mangal Advanced Educational Psychology
- 4. S.S. Chauhan- Advanced Educational Psychology
- 5. A. Woolfolk -Educational Psychology
- 6. J. W. Santrock -Educational Psychology
- 7. E. B. Hurlock -Child Development
- 8. L. E. Berk Child Development
- 9. B. N. Dash & N. Dash A Test Book of Educational Psychology
- 10. সুশীল রায় শিক্ষা ম-নাবিদ্যা
- 11. অরুণ -ঘাষ শিক্ষা ম-নাবিদ্যা
- 12. প্রমোদবন্ধু সেনগুপ্ত এবং প্রশান্ত শর্মা- শিক্ষা ম-নাবিদ্যা
- 13. বিজন সরকার শিখন ও শিক্ষন
- 14. কল্পনা -সন বরাট এবংকনিকা -চৌধুরী শিক্ষার মনোবৈজ্ঞানিক ভিত্তি
- 15. প্রনবকুমার চক্রবর্তী- শিক্ষা মনোবিজ্ঞানের রূপ-রখা
- 16. জয়ন্ত -ম-ট, রুমা -দব ও বিরাজলক্ষী -ঘাষ বিকাশ ও শিখনের মনস্তত
- 17. পাল, ধর, দাস, ব্যানাজী পাঠদান ও শিখনের মনস্তত্ত্ব
- 18. বিজন সরকার শিশু ও বিকাশ

B.A. Education (Honours) SEMESTER-II AECC-2: English Communication Ability Enhancement Compulsory Course; Credit-2. Full Marks-50

COMMON SYLLABUS

B.A. Education (Honours) SEMESTER-III EDU-H-CC-T-5: Educational Evaluation & Statistics Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Discuss the concepts, scope and need of measurement and evaluation
- Explain the relation between Evaluation & Measurement and scale of Measurement
- Describe basic concept of Statistics
- Organize and tabulate data
- Explain different types of measuring scales and their uses in education
- Describe different types of Tools and Techniques in the field of Education.
- Elaborate the concept and methods of validity, reliability and norms and their importance in educational measurement.
- Explain different type of Evaluation process

Unit-I: Measurement and Evaluation in Education

- a) Concept, Scope and Need of Evaluation; Relation between Evaluation and Measurement.
- b) Scales of Measurement- Nominal, Ordinal, Interval and Ratio.

Unit-II: Educational Statistics

- a) Concept, Scope and Need of Educational Statistics
- b) Concept of raw data, score, frequency distribution, range, variable.
- c) Organization and Tabulation of Data- Frequency distribution table

Unit-III: Tools and Techniques of Evaluation

- a) Tools:
 - Tests- Essay type and Objective type; Short answer type and Oral type.
 - Personality Test- Rorschach Ink Blot Test
 - o Interest Test- Kuder Richardson Test
- b) Techniques:
 - Observation, CRC, Interview, Questionnaire and Inquiry.
- c) Characteristics of a good test:
 - Reliability- Concept, Characteristics, Causes of low Reliability, Determination of Reliability, Various types.
 - o Validity- Concept Causes of low Validity, Types, Determination.
 - Objectivity- Concept, Characteristics, Types of Objective Test & Essay type test, advantages and disadvantages.
 - Norms- Concept, Types and their uses.

Unit-IV: Evaluation Process

- a) Evaluation Process: Concept, Types (Formative and Summative)
- b) Concept of Norm-Referenced Test and Criterion Referenced Test.
- c) Concept of Gradation and Credit system.

- 1. S. K. Mangal- Statistics in Education and Psychology
- 2. A. K. Singh Test, Measurement and Research Methods in Behavirioul Sciences
- 3. H.E. Garret- Statistics in Education and Psychology
- 4. R. A. Sharma- Mental Measurement and Evaluation
- 5. Y. P. Aggarwal- Statistics Methods Concepts, Application and Computation
- 6. সুশীল রায় মূল্যায়ন: নীতি ও -কৌশল
- 7. -দবাশিস পাল এবং -দবাশিস ধর- শিক্ষায় পরিমাপ ও মূল্যায়ন
- 8. পূ-র্ণন্দু আচার্য -শিক্ষাক্ষেত্রে মূল্যায়ন ও নি-র্দশনা
- 9. নূরুল ইসলাম- শিক্ষায় মূল্যায়ন ও পরিমাপ
- 10. অরুন -ঘাষ- মনোবৈজ্ঞানিক পরিমাপ ও পরিসংখ্যান

B.A. Education (Honours) SEMESTER-III EDU-H-CC-T-6: Philosophical Foundation of Education-II Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Explain the concept of Philosophical bases of Education
- Discuss the concept & nature of Western Philosophy
- Discuss the concept, nature & role of Metaphysics, Epistemology and Axiology in education
- Explain the concept, principles, aims, curriculum, methods, teachers & discipline of Idealism, Naturalism, and Pragmatism

Unit-1: Philosophical bases of Education

- a) Philosophical bases of Education
- b) Concepts and nature of Western Philosophy
- c) Concepts and nature of Metaphysics, Epistemology and Axiology
- d) Role of Metaphysics, Epistemology and Axiology in Education

Unit-2: Idealism and Education

• Idealism: principle of Idealism, influence of idealism on different aspects of Education (Aims, Curriculum, Methods, Teacher & Discipline)

Unit-3: Naturalism and Education

• Naturalism: principle of Naturalism, influence of Naturalism on different aspects of Education (Aims, Curriculum, Methods, Teacher & Discipline)

Unit-4: Pragmatism and Education

• Pragmatism: principle of Pragmatism, influence of Pragmatism on different aspects of Education (Aims, Curriculum, Methods, Teacher & Discipline)

Suggested Readings:

- 1. J.C. Aggarwal- Theory and Principles of Education: Vikash Publishing House
- 2. Biswaranjan Purkait- Principles and Practices in Education: New Central Pvt. Limited
- 3. Banerjee- Philosophy and Principles of Education
- 4. Susil Roy- Philosophy and Principles of Education: Sova Publication
- 5. Brubacher, John.S. Modern philosophies of education. New York: McGraw Hill Co.
- 6. S. N. Sharma- Philosophical and Sociological Foundations of Education, New Delhi: Kanishka Publishers Distributors.
- 7. R. P. Pathak- Philosophical and sociological principles of education. Delhi: Pearson.
- 8. সুশীলরায় শিক্ষাতত্ত্ব ও শিক্ষাদর্শন
- 9. অর্চনা ব-ন্দাপাধ্যায় শিক্ষাদর্শন ও শিক্ষানীতি
- 10. দি-ব্যন্দু ভট্টাচার্য্য শিক্ষা ও দর্শন
- 11. অরুন -ঘাষ- শিক্ষা বিজ্ঞানের দর্শন ও মূলতত্ত্ব
- 12. -গীরদাস হালদার ও প্রশান্ত র্শমা- শিক্ষাতত্ত্ব ও শিক্ষানীতি
- 13. জগদিন্দ্র মন্ডল শিক্ষাদর্শন ও শিক্ষাবিজ্ঞান
- 14. বেবী দত্ত, দেবিকা গুহ- শিক্ষা দর্শন ও দার্শনিক-দর অবদান

B.A. Education (Honours) SEMESTER-III EDU-H-CC-T-7: Inclusive Education Core Course; Credit-6. Full Marks-75

Course Objectives-

After completion the course the learners will be able to:

- Discuss the Concept, nature, need of Inclusive Education.
- Describe the theories of Inclusive Education.
- Explain the development of competencies for Inclusive Education.
- Discuss the practices of Inclusive Education
- Describe the Infrastructural facilities for an ideal Inclusive School.
- Discuss the Role of teacher in Inclusive Classroom setting

.Unit I: Inclusive Education concept and Nature

- a) Concept and principles of Inclusion.
- b) Need of Inclusive education.
- c) PWD Act (1994)

Unit II: Competencies development for Inclusive Education.

- a) Theories of Inclusive Education
- b) Development of Attitude, Positive Behaviour& social skill for Inclusion.

Unit III: Inclusive Education and its Practices.

- a) Differentiating Instruction.
 - •Peer Tutoring
 - •Co-operative learning
 - •Inclusive lesson planning.
- b) Inclusive Instructional Strategies at school level.
 - •Remedial Help.
 - •Team Teaching.
 - •Circles of Friends.

Unit -IV: Inclusive School

- a) Infrastructural facilities for an ideal Inclusive School.
- b) Teachers Role in Inclusive Classroom

Suggested Readings:

- 1. Loreman, Deppeler and Harvey- Inclusive Education, Allwenand Unwin Australia.
- 2. Corbett Jenny Supporting Inclusive Education, Routledge Falmer, 2001.
- 3. Felicity Armstrong and Michele Moore- Action Research for Inclusive Education, Routledge Falmer, 2004.
- 4. Mike Adams and sally Brown Towards Inclusive Learning in Higher Education, Routledge, 2006.
- 5. Peter Mittler- Working towards Inclusive Education, David Fulton Publishers, 2000
- 6. Nind, Sheehy and Simmns, Inclusive Education –Learners and Learning Context, Devid Fulton Pub.`17) Integrated and Inclusive Education, Premavathyand Mittal, R C I, 2006.
- 7. Advani, Lal. And Chadha, Anupriya (2003). You and Your Special Child, New Delhi: UBS Publishers' Distributors Pvt. Ltd.
- 8. Sharma, Kaushal and Mahapatra (2007). Emerging Trends in Inclusive Education', Delhi, IVY Pub.
- 9. Renuka, P. and Bai, Suneetha, G. Inclusive of Exceptional Childern in The Mainstream Schools and teacher education: Global Trends in Teacher education.
- 10. ড. উর্মি চক্রবর্তী- বিশেষ চাহিদা সম্পন্ন শিশু ও অর্ন্তভূক্তিমুলক শিক্ষা
- 11.ড. -দবরত -দবনাথ ও আশিষকুমার -দবনাথ- ব্যাতিক্রমধর্মী শিশু ও তার শিক্ষা

B.A. Education (Honours) SEMESTER-III EDU-H-GE-T-3: Educational Sociology Generic Elective Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to-

- Discuss the meaning, nature and scope of Educational sociology and Relation between Education and Sociology.
- Describe the Social factor and their relation to Education.
- Define social groups, socialization and Social Institution and Agencies of Education.
- Explain the Social change and its impact on Education.

Unit-I: Educational Sociology

- a) Meaning, nature and scope of Educational sociology.
- b) Relation between education and sociology.
- c) Concept of Educational sociology and sociology of education.

Unit-II: Social factors, issues and Education

- a) Culture: Concept, role of education in culture, cultural lag.
- b) Social issues: unemployment, poverty, disadvantage section of Indian society (SC, ST and OBC).

Unit-III: Social groups and Education

- a) Social groups- meaning and types (Primary, Secondary and Tertiary)
- b) Socialization: Meaning, process and factors of socialization, role of the family and school.
- c) Social Institutions and Agencies of Education: (i) Family, (ii) School.

Unit-IV: Social change and Education

- a) Social change: definition, characteristics, factors, constraints
- b) Education and social stratification: Definition and characteristics
- c) Education and Social Mobility

- 1. Y. K. Sharma Sociological Philosophy of Education
- 2. S. S. Ravi A Comprehensive Study of Education
- 3. J. C. Aggarwal Philosophical and Sociological Bases of Education
- 4. সুশীল রায় শিক্ষাতত্ত্ব ও শিক্ষাদর্শন
- 5. অর্চনা ব-ন্দাপাধ্যায় শিক্ষাদর্শন ও শিক্ষানীতি
- 6. দি-ব্যন্দু ভট্টাচার্য্য শিক্ষা ও সমাজতত্ত্ব
- 7. সোনালী চক্রবর্তী-শিক্ষার সমাজ বৈজ্ঞানিক ভিত্তি
- 8. বিষুপদ নন্দ শিক্ষাশ্রহী সমাজতত্ত্ব
- 9. অনাদি কুমার মহাপাত্র বিষয় সমাজতত্ত্ব
- 10. মঞ্জুষা তরফদার শিক্ষাশ্রহয়ী সমাজ বিজ্ঞান
- 11. শ্যামাপ্রসাদ চট্টরাজ শিক্ষামুখী সমাজবিজ্ঞান
- 12. পরিমলভূষন সমাজতত্ত্ব

B.A. Education (Honours) SEMESTER-III EDU-H-SEC-T-1(A): Statistical Analysis Skill Enhancement Course; Credit-2. Full Marks-50

Course Objectives:

After completion of the course the learners will be able to:

- Explain the concept of central tendency, variability and their properties
- Discuss the concept of Percentile and Percentile Rank and its application.
- Describe the concept of co-relation and their application
- Explain the concept of Parametric and Non-Parametric Test
- Apply the knowledge and calculate different statistical values

Unit-I: Descriptive Statistics

- a) Meaning of Central Tendency- Mean, Median and Mode-their Properties, Calculation and Application.
- b) Measure of Variability- Range, AD, SD and QD- their Properties, Calculation and Application)
- c) Percentile and Percentile Rank- Definition, Calculation, Application, Graphical Determination.

Unit-II: Relationship and Inferential Statistics

- a) Concept of Correlation Computation of Co-efficient of Correlation by Rank difference method and Product moment method, Interpretation of Co-efficient of Correlation,
- b) Parametric and Non-Parametric Test- (only Concept and Uses).

Practical:

Calculate - Mean, Median and Mode; Range, AD, SD & QD; PP, PR; Co-relation; Standard score & Z score from different frequency distribution.

- 1) S. K. Mangal- Statistics in Education and Psychology
- 2) A. K. Singh Test, Measurement and Research Methods in Behavioural Sciences
- **3**) H.E. Garret- Statistics in Education and Psychology
- 4) R. A. Sharma- Mental Measurement and Evaluation
- 5) Y. P. Aggarwal- Statistics Methods Concepts, Application and Computation
- 6) সুশীল রায় মূল্যায়ন: নীতি ও -কৌশল
- 7) -দবাশিস পাল এবং -দবাশিস ধর- শিক্ষায় পরিমাপ ও মূল্যায়ন
- 8) পূ-র্ণন্দু আচার্য -শিক্ষাক্ষেত্রে মূল্যায়ন ও নি-র্দশনা
- 9) নূরুল ইসলাম- শিক্ষায় মূল্যায়ন ও পরিমাপ

B.A. Education (Honours) SEMESTER-IV EDU-H-SEC-T-1(B): Achievement Test Skill Enhancement Course; Credit-2. Full Marks-50

Course Objectives:

After completion of the course the learners will be able to:

- Define Achievement Test
- Explain the characteristics of Achievement Test
- State the objectives of Achievement Test
- Discuss the functions of Achievement Test
- Describe the steps of constructing Achievement test
- Construct Achievement test

Unit-I: Concept of Achievement test

- a) Meaning & definition of Achievement test
- b) Characteristics of Achievement Test
- c) Objectives of Achievement Test

Unit-II: Different aspects of Achievement Test

- a) Principles of Achievement test construction
- b) Steps involved in the construction of Achievement Test

Practical:

Construct of an Achievement Test

- Purnendu Acharjee- Shiksha r khetre mullayan o nirdesana.
- R. A. Sharma- Mental Measurement and Evaluation
- Y. P. Aggarwal- Statistics Methods Concepts, Application and Computation
- সুশীল রায় মূল্যায়ন: নীতি ও -কৌশল
- -দবাশিস পাল এবং -দবাশিস ধর- শিক্ষায় পরিমাপ ও মূল্যায়ন
- পূ-র্ণন্দু আচার্য -শিক্ষাক্ষেত্রে মূল্যায়ন ও নি-র্দশনা
- নূরুল ইসলাম- শিক্ষায় মূল্যায়ন পরিমাপ

B.A. Education (Honours) SEMESTER-IV EDU-H-CC-T-8: History of Education in Post-Independence India Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Describe the Preamble, various articles and act on education in Indian Constitution.
- Explain the recommendations and educational importance of various Education Commission in post Independent India
- Discuss the functions of some educational bodies in West Bengal
- Discuss the National Policy on Education in different time.

Unit-I: Education and Constitution

- a) Preamble and various Articles on Education in Indian Constitution
- b) RTE Act-2009
- c) Development of Education under Plan (Last two plans)

Unit-II: Education Commission in post Independent India

- a) University Education Commission (1948-49)
- b) Secondary Education Commission (1952-53)
- c) Indian Education Commission (1964-66)
- d) Ashoke Mitra Commission (1991-92)

Unit-III: Some Educational Bodies in West Bengal (Function only)

a) SCERT, b) DIET.

Unit-IV: National Policies on Education

- a) National Policy on Education (1968)
- b) National Policy on Education (1986)
- c) Programme of Action (POA)- 1992
 - i) Ramamurti Committee (1990-91)
 - ii) Janardhan Reddy Committee (1992)

- 1. B. R. Purkait- Milestones of Modern Indian Education
- 2. J. C. Aggarwal Landmarks in the History of Modern Indian Education
- 3. S. S. Ravi A Comprehensive Study of Education
- 4. J. P. Banerjee Education in India: Past, Present and Future
- 5. S. P. Chaube & A. Chaube Education in Ancient and Medieval India
- 6. B. K. Nayak- History Heritage and Development of Indian Education
- 7. B. N. Dash -History of Education in India
- ৮. গীরদাস হালদার এবং প্রশান্ত শর্মা- আধুনিক ভারতীয় শিক্ষার বিকাশ
- ৯. অরুন -ঘাষ -আধুনিক ভারতীয় শিক্ষার ইতিহাস
- ১০. রণজিৎ -ঘাষ- যু-গ যু-গ ভার-তর শিক্ষা
- ১১. সুশীল রায় ভার-তর শিক্ষা ও শিক্ষার ভারতায়ন
- ১২. সুবিমল মিশ্র- ভারতীয় শিক্ষার ইতিহাস
- ১৩. ভক্তি ভূষণ ভক্তা-ভারতীয় শিক্ষার রূপ-রখা
- ১৪. -জ্যাতিপ্রসাদ ব-ন্দ্যাপাধ্যায়- ভারতীয় শিক্ষার ইতিহাস

B.A. Education (Honours) SEMESTER-IV EDU-H-CC-T-9: Psychology of Instruction Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Discuss the concept, factors, and principles of teaching.
- Explain the Flander's Interactional analysis
- Explain the characteristics of a good teacher.
- Discuss the nature of classroom teaching, traditional teaching, and constructivist teaching.
- Explain the concept and implications of Micro-teaching
- Discuss different types of teaching methods.

Unit-I: Teaching

- a) Science of Teaching- Relation between teaching and learning;
- b) Factors affecting teaching process, Input and Output variables;
- c) Maxims of teaching; Fundamentals of teaching.

Unit-II: Teacher Behaviour

- a) Observation of classroom behaviour: Flander's Interaction analysis.
- b) Characteristics of a good teacher.

Unit-III: Teacher and Classroom Teaching

- a) Nature of classroom teaching.
- b) Difference between traditional and constructivist teaching;
- c) Micro-teaching- meaning, nature, merits and demerits

Unit-IV: Teaching Methods

a) Meaning, nature, merits and demerits- Lecture, Demonstration, Project, Problem Solving, and, Story-telling.

- 1) S. K. Mangal-Essentials of Educational Psychology
- 2) J. C. Aggarwal- Essentials of Educational Psychology
- 3) S. K. Mangal Advanced Educational Psychology
- 4) S.S. Chauhan- Advanced Educational Psychology
- 5) A. Woolfolk -Educational Psychology
- 6) J. W. Santrock -Educational Psychology
- 7) B. N. Dash & N. Dash A Test Book of Educational Psychology
- 8) সুশীল রায় শিক্ষা ম-নাবিদ্যা
- 9) অরুণ -ঘাষ শিক্ষা ম-নাবিদ্যা
- 10) ওলয় কুমার -সন- শিক্ষা প্রযুক্তিবিজ্ঞন
- 11) -কৌশিক চট্টপাধ্যায়- শিক্ষা প্রযুক্তিবিদ্যা
- 12) শ্যামাপ্রসাদ চট্টরাজ-শিক্ষা প্রযুক্তি

B.A. Education (Honours) SEMESTER-IV EDU-H-CC-T-10: Contemporary issues in Education Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Explain constitutional provisions with special reference to RTE Act. DPEP, SSA-SSM of Universalization of Elementary Education.
- Describe the meaning, aims & objectives, significance of Universalization of Secondary Education and Role of RMSA.
- Explain the concept, role of Higher Education and Knowledge Commission and RUSA.
- Discuss modern issues in Indian Education like- Peace Education, Sustainable development, Inclusive Education, Open & Distance learning, Equality & Equity in Education, Women Education.

Unit-I: Universalization of Elementary Education

Universalization of Elementary Education- Meaning, Constitutional Provision with special reference to RTE Act; Aims and Objectives, Importance, Role of DPEP; SSA-SSM, Problems.

Unit-II: Universalization of Secondary Education

Meaning, aims & objectives, significance; Role of RMSA, Problems.

Unit-III: Higher Education and RUSA

- a) Role of Higher Education
- b) Knowledge Commission & Higher Education
- c) Higher Education and RUSA
- d) Problems of Higher Education in India

Unit-IV: Issues in Education

- a) Peace Education: Meaning, aims & objectives, need.
- b) Education for Sustainable Development: Meaning, aims & objectives, Role of education in Sustainable Development.
- c) Inclusive Education: Meaning, Need &Govt, programme.
- d) Open & Distance Learning System: Meaning, Characteristics and need.
- e) Equality and Equity in Education: Meaning, importance, causes of inequality, Role of education to remove inequality in education.
- f) Women Education: Importance, problems.

- 1. S. S. Ravi A Comprehensive Study of Education
- 2. J. C. Aggarwal- Theory and Principles of Education
- 3. R. P. Pathak Development and Problems of Indian Education
- 4. B. K. Nayak- Modern Trends and Issues in Education of India
- ৫. দুলাল মু-খাপাধ্যায়, বিজন সরকার, তারিনী হালদার এবং অভিজিৎ কুমার পাল- ভার-তর শিক্ষার চলমান ঘটনাবলী
- ৬. তারিনী হালদার, বিনায়ক চন্দ এবং সুশান্ত কুমার বর্মন- শিক্ষা ও উন্নয়ন
- তারিনী হালদার ও বিনায়ক চন্দ- সমকালীন ভারতবর্ষ ও শিক্ষা

B.A. Education (Honours) SEMESTER-IV EDU-H-GE-T-4: History of Education Generic Elective Course; Credit-6. Full Marks-75

Course Objectives:

After completion the course the learners will be able to:

- Understand the development of education in India in historical perspectives.
- Discuss the British Indian education system.
- Explain the significant points of selected educational documents and report of ancient, medieval and British India.
- Describe the Constitutional Provision of Education.
- Discuss the contributions of Education Commission in post Independent India.
- Understand the National Policy on Education and National Education System.

Unit-I: Education in 19th Century in India

- a) Charter Act of 1813 and its educational significance
- b) Macaulay Minuets- (1835)- its educational significance
- c) Bengal Renaissance- Contribution of Raja Ram Mohan Roy & Derozio.
- d) Wood's Despatch (1854) and its impact on education.
- e) Indian Education Commission (1882-83) and its impact of education.

Unit-II: Education in 20th Century in India (1901-1944)

- a) Educational reformer Lord Curzon
- b) National education movement- Causes, Phases and Importance in Education.
- c) Basic Education- Concept, characteristics, merits and demerits.
- d) Sargent Plan Report (1944)-Pre-primary education, Primary education, Secondary education, Vocational & Technical education.

Unit-III: Education in Post Independence India

- a) University Education Commission (1948-49)
 -Aims and Objective, Rural University Examination System, Teacher and Teaching Education, Vocational Education, Women Education.
- b) Secondary Education Commission (1952-53)
 -Structure of Education system, Aims and Objective, Curriculum and Evaluation system and Language Policy
- c) Indian Education Commission (1964-66)
 Structure of Education system, Aims and Objective, Curriculum, Language Policy, Exam System and Teacher Education, Equality in Educational Opportunity.

Unit-IV: National Policy on Education

- a) National Policy on Education (1986)
 -National System of Education, Equality in Education, ECCE, Operation Black Board, NavadayVidyalaya.
- b) Revised National Policy on Education-1992.

- 1. B. R. Purkait- Milestones of Modern Indian Education
- 2. J. C. Aggarwal Landmarks in the History of Modern Indian Education
- 3. S. S. Ravi A Comprehensive Study of Education
- 4. J. P. Banerjee Education in India: Past, Present and Future
- 5. S. P. Chaube& A. Chaube Education in Ancient and Medieval India
- 6. B. K. Nayak- History Heritage and Development of Indian Education
- 7. B. N. Dash -History of Education in India
- 8. গীরদাস হালদার এবং প্রশান্ত শর্মা- আধুনিক ভারতীয় শিক্ষার বিকাশ
- 9. অরুন -ঘাষ -আধুনিক ভারতীয় শিক্ষার ইতিহাস
- 10. রণজিৎ -ঘাষ- যু-গ যু-গ ভার-তর শিক্ষা
- 11. সুশীল রায় ভার-তর শিক্ষা ও শিক্ষার ভারতায়ন
- 12. সুবিমল মিশ্র- ভারতীয় শিক্ষার ইতিহাস
- 13. ভক্তি ভূষণ ভক্তা -ভারতীয় শিক্ষার রূপ-রখা
- 14. -জ্যাতিপ্রসাদ ব-ন্দ্যাপাধ্যায়- ভারতীয় শিক্ষার ইতিহাস

B.A. Education (Honours) SEMESTER-IV EDU-H-SEC-T-2(A): Lesson Planning Skill Enhancement Course; Credit-2. Full Marks-50

Course Objectives:

After completion of the course the learners will be able to:

- Discuss the meaning and characteristics of Lesson Plan
- Explain the advantages of Lesson Plan
- Classify different Lesson Plans
- Explain the steps of constructing Lesson Plan
- Discuss the principles of Lesson Plan
- Develop Lesson Plan

Unit-I: Concept of Lesson Planning

- a) Definition & Meaning of Lesson Plan
- b) Characteristics of Lesson Plan
- c) Advantages of Lesson Plan

Unit-II: Different aspects of Lesson Plan

- a) Types of Lesson Plan
- b) Steps involved in Lesson Planning
- c) Principles of development of Lesson Plan

Practical:

Development of Lesson Plan (At least 20).

- ১. ড. দুলাল মু-খাপাধ্যায় এবং ড. উদয়শস্করকবিরাজ শিক্ষাবিজ্ঞান নীতি পদ্ধতি ও কৌশল
- ২. ড. নিখিল কুমার দত্ত এবং ড. চৈতন্যমন্ডল শিক্ষাবিজ্ঞান শিক্ষনপদ্ধতি
- ৩. ড. চৈতন্যমন্ডল সমাজপাঠ শিক্ষন পদ্ধতি

B.A. Education (Honours) SEMESTER-IV EDU-H-SEC-T-2(B): Uses of Teaching Aids Skill Enhancement Course; Credit-2. Full Marks-50

Course Objectives:

After completion the course the learners will be able to:

- Discuss the meaning and characteristics of Teaching Aids
- Explain the usability of Teaching Aids
- Express the quality and limitation of Teaching Aids
- Discuss the classification of Teaching Aids
- Develop different Teaching Aids

Unit-I: Concept of Teaching Aids

- a) Definition & Meaning of Teaching Aids
- b) Characteristics of Teaching Aids
- c) Utility of Teaching Aids
- d) Limitations of Teaching Aids

Unit-II: Different Types of Teaching Aids

- a) Classification of Teaching Aids (Concept only)
- b) Projected Teaching Aids- OHP, Slide Projection, Film Strip (Concept, principles of construction, uses)
- c) Non-Projected Teaching Aids- Model, Chart, Poster (Concept, principles of construction, uses)

Practical:

Development of Teaching Aids

- ড. দুলাল মু-খাপাধ্যায় এবং ড. উদয়শষ্কর কবিরাজ শিক্ষাবিজ্ঞান নীতি পদ্ধতি ও কৌশল
- ২. ড. নিখিল কুমার দত্ত এবং ড. চৈতন্য মন্ডল শিক্ষাবিজ্ঞান শিক্ষন পদ্ধতি
- ৩. ড. চৈতন্য মন্ডল সমাজপাঠ শিক্ষন পদ্ধতি

B.A. Education (Honours) SEMESTER-V EDU-H-CC-T-11: Educational Management Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion the course the learners will be able to:

- Explain the Meaning, Nature, Scope, Function and Needs and types of Educational management.
- Explain the meaning and function of Educational Administration.
- Explain the meaning, purpose of supervision and distinguish between supervision and inspection.
- Illustrate educational planning and types of educational planning.
- Discuss the functions of some selected administrative bodies.

Unit-I: Concept of Educational Management

- a) Educational Management: Meaning, Nature, Scope, Function and Needs.
- b) Types of Educational Management: Centralization, Decentralization, Autocratic, Democratic and Laissez-fair.

Unit-II: Educational Administration and Supervision

- a) Educational Administration: meaning and function.
- b) Supervision: meaning, purpose; difference between Supervision and Inspection.
- c) Factors affecting managerial behaviour of teachers: Personal, Social, Cultural, Political and Institutional.

Unit-III: Educational Planning

- a) Educational Planning: Meaning, Needs and Significance.
- b) Types of Educational Planning; Strategies and Steps in Educational Planning.
- c) Brief outline of the last Five Year Plan in Primary and Secondary Education.

Unit-IV: Functions of Various Administrative Bodies

a) UGC, b) NAAC, c) NCERT, d) NCTE.

- 1. J. C. Aggarwal- Educational Administration, Management and Supervision
- 2. J. Mohanty- Educational Administration, Supervision and School Management
- 3. I. S. Sindhu- Educational Administration and Management
- ৪. বিমল চন্দ্র দাশ, দেবযানী সেনগুপ্ত এবংপ্রদীপ্তরঞ্জনরায়- শিক্ষায়ব্যবস্থাপনা
- ৫. দিলিপ কুমার চক্রবর্তী- শিক্ষাগত ব্যবস্থাপনা ও পরিকল্পনা
- ৬. তুহিন কুমার কর এবং ভীমচন্দ্র মন্ডল- শিক্ষায়ব্যবস্থাপনা ও প্রযুক্তিবিদ্যা
- ৭. গাঁরদাস হালদার- শিক্ষনপ্রসঙ্গে বিদ্যালয়সংগঠন ও শিক্ষনবিজ্ঞান
- ৮. অরুন -ঘাষ- বিদ্যালয় সংগঠন ও পদ্ধতি বিজ্ঞান
- ৯. সুশীল রায়- শিক্ষন ও শিক্ষা প্রসঙ্গ

B.A. Education (Honours) SEMESTER-V EDU-H-CC-T-12: Educational Technology Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Discuss the concept, nature and scope of educational technology.
- Explain the role of communication & multimedia approach in the field of Education.
- Discuss the role Seminar, Panel Discussion. Team teaching in the field of education.
- Describe the role of technology in modern teaching-learning process.

Unit-I: Educational Technology

- a) Meaning, Nature, Need and Scope of Educational Technology
- b) Technology in Education and Technology of Education
- c) Approaches of ET: Hardware, Software, and System

Unit-II: Classroom Communication and Media used

- a) Meaning, Nature, Types, and Components of Communication
- b) Barriers of classroom communication and strategies of overcoming barriers in communication
- c) Media used in education: Audio (Radio), Visual (Projector), Audio-visual (TV)- merits and demerits

Unit-III: Instructional Technology

- a) Mass Instructional Technology- Seminar, Discussion, Panel Discussion. Team teaching
- b) Personalized Instructional Techniques- Programmed Instruction- meaning, principles, types, merits and demerits
- c) Computers and its role in educational instruction

Unit-IV: Phases, Levels, and Models of Teaching

- a) Phases of Teaching: Pre-active, Inter-active & Post-active.
- b) Levels of Teaching: Memory, Understanding, Reflective.
- c) Models of Teaching: Concept, Components, Families, Glaser's Basic Teaching Model, Bruner's Concept Attainment Model.

- 1. K. Sampath- Introduction to Educational Technology
- 2. R. P. Pathak- New Dimensions of Educational Technology
- 3. U. Rao Educational Technology
- 4. K. L. Kumar- Educational Technology
- 5. J. Mohanty- Educational Technology
- 6. J.C.Aggarwal Educational Technology
- 7. S.S.Dahiya Educational Technology
- ৮. মলয় কুমার -সন- শিক্ষা প্রযুক্তিবিজ্ঞান
- ৯. -কৌশিক চট্টপাধ্যায়- শিক্ষা প্রযুক্তিবিদ্যা
- ১০. শ্যামাপ্রসাদ চট্টরাজ-শিক্ষা প্রযুক্তি

B.A. Education (Honours) SEMESTER-V EDU-H-DSE-T-1/2(A): Value Education

Discipline Specific Elective Course; Credit-6. Full Marks-75

Course objectives:

After end of this course learner will able to-

- Explain the meaning, nature, classify value and its reflection in Indian Constitution.
- Discuss the meaning, objectives and need of value Education
- Describe the role of value education through Curriculum, Co-curricular activities.
- Explain the meaning, advantages and disadvantage of Storytelling, Play-way method and Role plays.

UNIT-I: Meaning and nature of Value

- a) Value: Meaning and Nature
- b) Values enshrined in Indian constitution.
- c) Classification of values proposed by NCERT

UNIT-II: Value Education

- a) Value Education: concept and objective.
- b) Need for value education in India

UNIT-III: Value Education in School

- a) Value Education through Curriculum.
- b) Value Education through Co-Curricular Activities.
- c) Role of teachers to facilitate development of values among the learners.

UNIT-IV: Strategies of value education

- a) Storytelling.
- b) Play-way Method.
- c) Role plays.

- 1) Diwahar, R. R., & Aggarwal, M. (Ed). (1984). Peace education. New Delhi: Gandhi Marg.
- 2) Fountain, S. (1999) Peace Education in UNICEF, Working Paper, Education Section, Programme Division, UNICEF, New
- 3) Aggarwal, J.C. (2010). *Education for Values, Environment and Human Rights*. New Delhi: Shipra Publications
- 4) Chadha, S. C. (2008). Education value & value education. Meerut: R.Lall Books Depot
- 5) Chakraborty, Mohit (2003); *Value Education: Changing Perspectives*. New Delhi: Kanishka Publishers. Gupta, N.L. (2000). *Human Values in Education*. New Delhi: Concept Publishing Company.
- 6) Mahakud, L. & Behera, S.K. (2013) (Edit.) Value Education: Dimensions and Approaches, S.B. Enterprise, Kolkata.
- 7) Passi, B. K., & Singh, P. (1999). Value education. Agra: Agra Psychological Corporation.

- 8) Ruhela, S.P. (ed.) (1986). *Human Values and Education*. New Delhi: Sterling Publishers Pvt. Ltd.
- 9) Singh,Y. K. (2009). Value education. New Delhi: APH Publishing Corporation.
- 10) Sharma, Y.K. and Katoch, K.S. (2007) Education for Values, Environment and Human Rights, New Delhi: Deep & Deep Publications Pvt. Ltd.
- 11) Sharma, R. A. (2008). Human value of education. Meerut: R.Lall Books Depot.

B.A. Education (Honours) SEMESTER-V EDU-H-DSE-T-1/2(B): Population Education Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives:

After end of this course learner will able to-

- Explain the meaning, concept, scope & objectives of Population Education.
- Discuss the historical development of Population Education.
- Describe the definition, factors, causes and prevention of population growth.
- Explain the Population Education curriculum and policies.

Unit-1: Meaning and Concept of Population Education

- a) Meaning & Concept of Population Education
- b) Scope & objectives of Population Education.

Unit-II: Historical Development of Population Education

a) Historical development of Population Education and education programme in India.

- b) Some major thrust areas of population education-
 - Family planning
 - Adolescent education.

Unit-III: Population Growth and Problems in India

- a) Definition of population growth.
- b) Factors influencing population growth- fertility, mortality, and migration.
- c) Causes of rapid population growth
- d) Preventive measures for rapid population growth.

Unit-IV: Population Education Curriculum and Policy

- a) Curriculum of Population education at different stages.
- b) Role of population policy in India.
- c) Role of Teacher in making awareness of population explosion.
- d) Community sensitisationprogramme of early marriage and child labour etc.

- 1) Aggarwal, J.C (2002).Population Education.Shipra Publication, 115-A, VikasMarg, Shakarpur, Delhi-110092.
- 2) Bhardwaj, Ramesh Kumar (2002). Population Education in India. The Associate Publishers 2963/2, Kacha Bazar, Post Box No. 56.
- 3) Ghosh, B.N(1985). Fundamentals of Population Geography. Sterling Publishers Private Limited, New Delhi-11006
- 4) Raju, B. Joseph et al. (2004). Population Education.Sonali Publications, New Delhi-110002.
- 5) Sharma, Yogendra K. (2007). Population Education: Concepts, Principles and Approaches. Kanishka Publishers Distributors, 4697/55-21A Answari Road, Daryaganj, New Delhi-110002
- 6) Sinha, P. N (2000).Population Education and Family Planning. Authors Press, E/35/103, Jawarharpark, Laxmi Nagar, Delhi-110092.

B.A. Education (Honours) SEMESTER-V EDU-H-DSE-T-1/2(C): Peace Education

Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives:

After end of this course learner will able to:

- Explain the concept, aims, objectives, scope, need and factors of Peace Education.
- Discuss views of Gandhi, Rabindranath Tagore, Aurobinda and JidduKrishnamurti regarding Peace Education
- Explain the principles and curriculum of Peace Education
- Discuss the role of education in Peace Education.
- Understand the approaches of Peace Education

UNIT-1: Concept of Peace Education

- a) Peace Education : Meaning, nature, aims, objectives & scope
- b) Need of Peace Education.
- c) Factors of peace education: unemployment, terrorism, religion.

UNIT-2: Key Thinkers of Peace Education

- a) Indian Context:
 - Rabindranath Tagore,
 - Sri Aurobinda
- b) Global context:
 - Montessori
 - John Dewey

UNIT-3:Peace Education Programme in School

- a) Principles of peace education
- b) Curriculum and Peace Education.
- c) Quality of a teacher as a peace educator

UNIT-4: Approaches of Peace Education

- a) Participatory Education
- b) Co-operative Learning

Reading List

- 1. Krishnamurti, J. Education and the Significance of Life
- 2. Kumar, K. Learning from Conflict.
- 3. Kumar, K. Battle for Peace.
- 4. NCERT. Ways to Peace
- 5. UNESCO. Learning the Way of Peace: Teacher's Guide.
- 6. Diwahar, R. R., & Agarwal, M. (Ed).(1984). Peace education. New Delhi: Gandhi Marg.
- 7. Fountain, S. (1999) Peace Education in UNICEF, Working Paper, Education Section, Programme Division, UNICEF, New
- 8. Aggarwal, J.C. (2010). Education for Values, Environment and Human Rights. New **Delhi: Shipra Publications**

- 9. Chadha, S. C. (2008). Education value & value education. Meerut: R.Lall Books Depot
- 10. Chakrabarti, Mohit (2003); *Value Education: Changing Perspectives*. New Delhi: Kanishka Publishers.
- 11. Gupta, N.L. (2000). *Human Values in Education*. New Delhi: Concept Publishing Company.
- 12. Mahakud, L. &Behera, S.K. (2013) (Edit.) Value Education: Dimensions and Approaches, S.B. Enterprise, Kolkata.
- 13. Passi, B. K., & Singh, P. (1999). Value education. Agra: Agra Psychological corporation.
- 14. Ruhela, S.P. (ed.) (1986). *Human Values and Education*. New Delhi: Sterling Publishers Pvt. Ltd.
- 15. Singh, Y. K. (2009). Value education. New Delhi: APH Publishing Corporation.
- 16. Sharma, Y.K. and Katoch, K.S. (2007) Education for Values, Environment and Human Rights, New Delhi: Deep & Deep Publications Pvt. Ltd.
- 17. Sharma, R. A. (2008). Human value of education. Meerut: R.Lall Books Depot.
- 18. Shukla, R. P. (2004). Value education and human rights. New Delhi: Sarup and sons.
- 19. Subramanian, K. (1990). Value Education. Madurai: Ravana Publication.
- 20. Venkataiah, (2009). Value education. New Delhi: APH Publishing Corporation

B.A. Education (Honours) SEMESTER-V EDU-H-DSE-T-1/2(D): Distance Education Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives:

After completing of the course the students will be able to-

- Explain the meaning, characteristics, objectives, merits & demerits of distance & open education.
- Discuss the mode and strategies of distance education.
- Describe the relationship among Non-formal, Correspondence, Distance and Open Education.
- Discuss the present status of distance and open education in India.
- Explain the role of multi-media in Distance and Open Education.
- Discuss the problems and remedies of distance and open education in India.

Unit I: Concept of Distance & Open Education

- a) Meaning and definition of Distance Education.
- b) Characteristics and objectives of Distance Education.
- c) Merits and limitations of Distance Education.

Unit II: Strategies of distance education

- a) Mode and strategies of Distance Education.
- b) Relationship among Non-formal, Correspondence, Distance and Open Education.

Unit III: Status of open and distance education in India

- a) Present state of Distance and Open Education in India.
- b) Role of multi-media in Distance and Open Education.

Unit IV: Problems and remedies of distance and open education in India

- a) Salient features of the Indira Gandhi National Open University (IGNOU) and National Open School.
- b) Problems of Distance and Open Education in India.
- c) Measures for strengthening Distance and Open Education in India.

- 1) S.S. Ravi A Comprehensive Study of Education
- 2) R.P. Pathak Development and Problems of Indian Education
- 3) B.K. Nayak Modern Trends and Issues in Education of India
- 4) দুলাল মু-খাপাধ্যায়, বিজনসরকার, তারিনী হালদার এবং অভিজিৎকুমারপাল- ভার-তর শিক্ষার চলমান ঘটনাবলী
- 5) তারিনী হালদার, বিনায়ক চন্দ এবং সুশান্ত কুমার বর্মন শিক্ষা ও উন্নয়ন
- 6) তারিনী হালদার ও বিনায়ক চন্দ সমকালীন ভারতবর্ষ ও শিক্ষা

B.A. Education (Honours) SEMESTER-V EDU-H-DSE-T-1/2(E): History of Education in Ancient and Medieval India Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives :

After end of this course the learners will able to:

- Discuss the features, aims, objectives, curriculum, teaching methods, student teacher relationship and evaluation system of Brahmanic system of Education
- Explain the education system of different educational institutions of Brahmanic system of education.
- Discuss the features, aims, objectives, curriculum, teaching methods, student teacher relationship and evaluation system of Buddhistic system of Education
- Explain the education system of different educational institutions of Buddhistic system of Education
- Compare between Brahmanic and Buddhistic system of Education
- Discuss the features, aims, objectives, curriculum, teaching methods, student teacher relationship and evaluation system of Islamic system of Education
- Discuss the educational contribution of Akbar, Aurangageb.
- Explain the women and vocational education in Ancient and Medieval India.

Unit 1: Brahmanic System of Education:

- a) Salient features
- b) Aims and objectives, Curriculum, Methods of Teaching, Teacher Taught relation and Evaluation System.
- c) Centre of Learning: Takshasila and Nabadwip

Unit 2: Buddhistic System of Education:

- a) Salient features
- b) Aims and objectives, Curriculum, Methods of Teaching, Teacher- Taught relation and Evaluation System.
- c) Centre of Learning: Nalanda and Vikramasila
- d) Comparison between Brahmanic System of Education and Buddhistic System of Education.

Unit 3: Medieval System of Education:

- a) General characteristics
- b) Aims and objectives, Curriculum, Methods of Teaching, Teacher Taught relation and Evaluation System.
- c) Contribution of Akbar and Aurangageb
- d) Centre of Learning: Fatepur Sikri and Delhi

Unit 4: Women and Vocational education in Ancient and Medieval India:

- a) Women's Education in Ancient and India
- b) Women's Education in Medieval India
- c) Vocational Education in Ancient and India
- d) Vocational Education in Medieval and India

Suggested Readings:

- 1. S.M.Jafar -- Some Cultural Aspects of Medieval India,
- 2. B.R. Purkait -- Milestone in Ancient and Medieval Indian Education. Central Book Agency. Kolkata.
- 3. A.S.Altekar -- Education in Ancient India.
- 4. E.E.Keay --India Education in ancient times.
- 5. J. C. Aggarwal Landmarks in the History of Modern Indian Education
- 6. S. S. Ravi A Comprehensive Study of Education
- 7. J. P. Banerjee Education in India: Past, Present and Future
- 8. S. P. Chaube& A. Chaube Education in Ancient and Medieval India
- 9. B. K. Nayak- History Heritage and Development of Indian Education
- $10. \ \text{B. N. Dash} \text{History of Education in India}$
- 11. Dr. Harisadhan Goswami- BharatiyaShikhayarItihas (Bengali Version)
- 12. -জ্যাতি প্রসাদ ব-ন্দ্যাপাধ্যায় আধুনিকভার-ত শিক্ষা বির্বতন
- 13. ড. দিলীপ কুমার ঠাকুর ও -শখ হামিদুলহক আধুনিক ভার-তর শিক্ষারধারা
- 14. ভক্তিভূষন ভক্তা ভারতীয় শিক্ষার রূপ-রখা
- 15. রনজিৎ -ঘাষ আধুনিক ভার-ত শিক্ষার বিকাশ
- 16. রনজিৎ -ঘাষ যু-গ যু-গ ভার-তর শিক্ষা: প্রাচীন, মধ্য, আধুনিক যুগ

B.A. Education (Honours) SEMESTER-VI EDU-H-CC-T-13: Curriculum Studies Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to -

- Illustrate the meaning, nature, scope, determinants and functions of Curriculum.
- Discuss the types and bases of curriculum.
- Explain the concept of curriculum framework and NCF-2005.
- Discuss the basis of curriculum construction, evaluation and innovation.
- Describe the definition and types of curriculum theories

Unit-I: Introduction of Curriculum

- a) Meaning, Nature, Scope and functions of Curriculum
- b) Determinants of Curriculum
- c) Difference and Relation between Curriculum and Syllabus.
- d) Different Types of Curriculum
- e) Co-curricular Activities
- f) Bases of Curriculum: Philosophical, Sociological & Psychological.

Unit-II: Concept of Curriculum Framework

- a) Curriculum Framework: Meaning
- b) NCF-2005
- c) Principles of curriculum construction

Unit-III: Curriculum Evaluation

- a) Meaning & importance of curriculum evaluation
- b) Formative and summative evaluation of curriculum: concept &difference between them.

Unit-IV: Curriculum Theories

- a) Definition
- b) Types (only concept)
- c) Technical & Non-Technical Model (One theory from each category)

- 1. N. Bhalla- Curriculum Development
- 2. M. Talla- Curriculum Development: Perspectives, Principles
- 3. P. H. Taylor & C. M. An Introduction to Curriculum Studies
- 4. দি-ব্যন্দু ভট্টাচার্য্য-পাঠক্রম চর্চা ও মূল্যায়ন
- 5. মিহির চ-ট্রাপাধ্যায়- পাঠক্রম চর্চা
- 6. প্রণব কুমার চক্রবর্তী- পাঠক্রম নীতি ও নির্মান

B.A. Education (Honours) SEMESTER-VI EDU-H-CC-T-14: Educational Research Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Define and explain the meaning, and nature of research.
- Define and explain the meaning and nature of Educational research.
- Identify sources of data for Research.
- Describe the types of Research.
- Describe the meaning of Research problem, Review of Related Literature.
- Explain the concept of Hypothesis, Variables, and Research data.
- Analyse the Qualitative and Quantitative data.
- Acquaint with the process of collecting data.

Unit-I: Research-meaning and nature:

- a) Meaning and nature of research
- b) Sources of knowledge (Authority, Tradition, Personal Experience, Deduction, Induction.)
- c) Need of research in Education

Unit-II: Educational Research- meaning, nature and types

- a) Meaning, nature & scope of Educational Research
- b) Types of research: Basic, Applied & Action Research; Longitudinal and Cross Sectional Research. Historical, Descriptive and Experimental research (meaning only)
- c) Importance of Educational Research.

Unit-III: Basic Ideas of Research

- a) Characteristics of a good research problem
- b) Review of related Literature purpose
- c) Variable dependent and independent
- d) Research Hypothesis meaning, nature and types
- e) Population, Sample and sampling technique- meaning

Unit-IV: Research Data:

- a) Qualitative and Quantitative data
- b) Tool of data collection- characteristics, merits and demerits of questionnaire and interview
- c) Descriptive and Inferential statistics (meaning only)
- d) Steps of testing hypotheses

- 1. L. Koul Methodology of Educational Research
- 2. S. K. Mangal- Statistics in Education and Psychology
- 3. A. K. Singh Test, Measurement and Research Methods in Behavioral Sciences
- 4. J.W.Best&J.V.Kahn Research in Education
- 5. J.W.Creswell Educational Research
- ৬. -দবাশিস পাল- গবেষণা পদ্ধতি ও রাশিবিজ্ঞানের কৌশল
- ৭. -মাঃ লুৎফুর রহমান, শওকতআলী খান এবং স্বপন কুমার দাস- গ-বষণা পদ্ধতি ও পরিসংখ্যান
- ৮. জাকির -হা-সন- শিক্ষামূলক গ-বষণা

B.A. Education (Honours) SEMESTER-VI EDU-H-DSE-T-3/4(A): Mental Hygiene

Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learner will be able to:

- Discuss the concept, nature, aims and scope of Mental Hygiene
- Discuss the concept, nature, symptoms and causes of mental illness
- Explain the different characteristics of mental disorder
- Discuss the role of parents for preventing Mental health
- Discuss the role of teachers for preventing Mental health

Unit- I: Concept of Mental Hygiene

- a) Definition of Mental Hygiene
- b) Aims of Mental Hygiene
- c) Scope of Mental Hygiene

Unit-II: Concept of Mental Health

- a) Definition of mental health
- b) Symptoms of good mental health
- c) Causes of ill mental health

Unit-III: Classification of Mental disorder (Identification Characteristics, causes and treatment only)

- a) DSM-IV:
 - Axis- I: Depression
 - Axis- II: Obsessive compulsive disorder (OCD)
 - Axis- III: Bipolar mood disorder
 - Axis- IV: Occupational disorder
 - Axis- VI: Truancy
- b) Common Axis:
 - Common Axis-I: Anxiety
 - Common Axis-II: Personality disorder
 - Common Axis-III: Conflict

Unit-IV: Prevention of Mental Hygiene

- a) Role of parents in preserving mental illness of children
- b) Role of Teachers in preserving mental illness of children in the Educational Institution
- c) Relation between Mental Hygiene and Adjustment

- 1. Ghauhan, S.S. Mental Hygiene A Science of Adjustment.
- 2. Mohanty, J. Abnormal Psychology.
- 3. Sarason & Sarason The problem of Maladaptive Behavior
- 4. Sengupta, M.- Mano swasthaviggan
- 5. Ghosh, A. Manashik SwasthaViggan
- মঞ্জুরি সেনগুপ্ত মনো: স্বাস্থ্যবিজ্ঞান
- 7. অরুন -ঘাষ মানসিক স্বাস্থ্যবিজ্ঞান

B.A. Education (Honours) SEMESTER-VI EDU-H-DSE-T-3/4(B): Comparative Education Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Discuss the meaning, nature, scope, importance, and methods of Comparative Education.
- Explain the concept of Universalization of Elementary and Secondary Education in UK & USA.
- Compare Indian Education system with USA
- Compare Indian Education system with UK

Unit-I: Meaning, Nature, Scope, and Methods of Comparative Education

- a) Meaning, nature, scope and importance of Comparative Education.
- b) Methods of Comparative Education:
 - i) Philosophical Method
 - ii) Historical Method
 - iii) Sociological Method
 - iv) Psychological Method
 - v) Scientific Method

Unit-II: Factors of Comparative Education:

- a) Natural Factors: Historical, Racial, Linguistic and Social Factors.
- b) Spiritual Factors: Religious and Philosophical Factors.
- c) Secular Factors: Factor of Humanism, Socialism, Nationalism and Democracy.

Unit-III: Universalization of Elementary Education in UK & USA

In relation to Structure, Aims and Objectives, Curriculum, Methodology, Evaluation system and Administration including finance and Comparison with Indian Elementary Education System.

Unit-IV: Universalization of Secondary Education in UK & USA

In relation to Structure, Aims and Objectives, Curriculum, Methodology, Evaluation system and Administration including finance and Comparison with Indian Secondary Education System. **Suggested Books:**

1. S. P. Chaube & A. Chaube – Comparative Education

- 2. R. N. Sharma- Comparative Education
- 3. Y. K. Sharma- Comparative Education
- 4. Nikholas Hanse On Comparative Education
- ৫. -দবী মৃ-খাপাধ্যায়- তুলনামূলক শিক্ষা
- ৬. -মা: আব্দুসসামাদ- তুলনামূলক শিক্ষা
- ৭. শ্যামাপ্রসাদ চট্ররাজ- শিক্ষা -দ-শ বি-দ-শ
- ৮. কম-লশ করন- তুলনামূলক শিক্ষা

B.A. Education (Honours) SEMESTER-VI EDU-H-DSE-T-3/4 (C): Guidance & Counselling Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Explain the concept, nature, scope, types & importance of Guidance.
- Discuss the concept, nature, scope, types & importance of Counselling.
- Discuss different tools and techniques used in Guidance & Counselling.
- Identify the characteristics of diverse learner
- Explain the need of Guidance for diverse learner
- Explain the need of counselling for diverse learner

Unit-I: Concept of Guidance

- a) Meaning, Nature, Scope, and Importance of Guidance.
- b) Different Types of Guidance
 - i) Educational: Meaning, Characteristics, Purpose & Functions.
 - ii) Vocational: Meaning, Characteristics, Purpose & Functions.
 - iii) Personal: Meaning, Characteristics, Purpose & Functions.

Unit-II: Concept of Counselling

- a) Meaning, Nature, Scope, and Importance of Counselling
- b) Types of Counselling
 - i) Directive: Meaning, Characteristics, Purpose & Functions.
 - ii) Non-directive: Meaning, Characteristics, Purpose & Functions.
 - iii) Eclectic: Meaning, Characteristics, Purpose & Functions.
- c) Steps of Counselling; Characteristics of good Counsellor.

Unit-III: Tools and Techniques of Guidance and Counselling

- a) Basic data necessary for Educational Guidance- Pupils abilities, Aptitudes, Interests and Attitudes, Educational Attainments and Personality Traits.
- b) Difference between Guidance, Counselling and Teaching.

Unit-IV: Guidance and Counselling for Diverse Learners

- a) Identification of Gifted, Slow learners, Learner with learning disabilities.
- b) Need of Guidance for diverse learners
- c) Need of Counselling for diverse learner

Suggested readings:

- 1) Sharma, A.R.-Guidance and Counselling.
- 2) Gibson- Guidance and Counselling.

- 3) NCERT- Guidance and Counselling
- 4) Chauhan, S.S.- Principles and Techniques of Guidance
- 5) Guidance and counseling in college and university S K.Kochar
- 6) Milner, P.- Counselling in Education
- 7) Rao, S. N.-Counselling in Guidance
- 8) -দবাশিষ পাল- র্নি-দশনা ও পরামর্শ
- 9) ড. সুবীরনাগ ও গাগী দত্ত- সঙ্গতিবিধানে নিদেশনা ও পরামর্শদান
- 10) ড. ভীমচন্দ্র মন্ডল- র্নি-দশনা ও পরামর্শদা-নর রূপ-রখা

B.A. Education (Honours) SEMESTER-VI EDU-H-DSE-T-3/4(D): Great Educators Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives:

After end of this course learner will able to-

- Discuss the philosophies of great thinker of the east and west
- Explain the educational ideas of great thinker of the east and west
- Explain some experiments on education of eastern and western philosophers and thinkers
- Discuss the ideas of contemporary thinkers on education of eastern and western philosophers and thinkers

Unit – I: Indian Educators:

Contribution of following great educators with special reference to Educational Philosophy, aims of education, Curriculum, Method of Teaching, Role of teacher & Relevance in Present day context.

- Swami Vivekananda
- Shri Aurobinda.

Unit - II: Western Educators:

Contribution of following great educators with special reference toEducational Philosophy, Aims of education, Curriculum, Method of Teaching Role of teacher & Relevance in Present day context.

- Bertrand Russel
- Madam Maria Montessori

Unit - III: Modern Thinkers on Education in India

- a) S. Radhakrishnan
- b) Ashutosh Mukherjee
- c) AbulKalam Azad

Unit- IV: Some Experiments of Great Educators on Education:

- a) Viswabharati and Rabindranath Tagore
- b) Basic education and Gandhiji
- c) Kindergarten and Froebel
- d) Laboratory school and John Dewey

SUGGESTED READING:

- 1) Aggarwal.J.C Theory and Principles of education Philosophical and Sociological Bases of education
- 2) Mukherjee, K.K. –Some great educators of the world.
- 3) Purkait, B.R. –Great educators
- 4) Mukherjee, K.K. Principles of education.
- 5) Banerjee, A Philosophy and principles of education
- 6) Ravi,s-A comprehensive study of Education
- 7) Sushil Ray ShikshaTatta
- 8) ArunGhosh Shikshatatta& Shiksha Darshan.
- 9) BihuranjanGuha ShikshayaPathikrit.
- 10) GourdasHalder&Prasanta Sharma –ShikshaTatta&ShikshaNiti.
- 11) A.K.Pal –SikshadarshnerRuparekha
- 12) অর্চনা ব-ন্দাপাধ্যায় শিক্ষাদর্শন ও শিক্ষানীতি
- 13) বিভুরঞ্জন গুহ শিক্ষায়পথিকৃৎ
- 14) সুশীলরায় ভারতর শিক্ষা ও শিক্ষারভারতায়ন

B.A. Education (Honours) SEMESTER-VI EDU-H-DSE-T-3/4(E): Dissertation Discipline Specific Elective Course; Credit-6. Full Marks-75

Course objectives:

After completion of the course the learners will be able to:

- apply the knowledge gained through different courses in practical field.
- solve problems related to his course of study.
- document, calculate, analyse and interpret data.
- deduce findings from different studies
- write and report in standard academic formats.

Guidelines:

- a) The students undertake this course and shall be allotted a supervisor/mentor/guide at the beginning of the semester.
- b) The student shall select a topic for dissertation from any field of Education taking help from the supervisor/mentor/guide.
- c) The work completed within the stipulated time and written in standard academic format shall be submitted at the end of the semester.
- d) The work shall be evaluated on the basis of the written document submitted by the student and a *viva-voce* conducted on the same.

Suggested Readings:

- 1. L. Koul Methodology of Educational Research
- 2. S. K. Mangal- Statistics in Education and Psychology
- 3. A. K. Singh Test, Measurement and Research Methods in Behavioral Sciences
- 4. J.W.Best&J.V.Kahn Research in Education
- 5. J.W.Creswell Educational Research
- ৬. -দবাশিস পাল- গবেষণা পদ্ধতি ও রাশিবিজ্ঞানের কৌশল
- ৭. -মাঃ লুৎফুর রহমান, শওকত আলী খান এবং স্বপন কুমার দাস- গ-বষণা পদ্ধতি ও পরিসংখ্যান
- ৮. জাকির হা-সন- শিক্ষামূলক গ-বষণা
B.A. ENGLISH (Honours) SEMESTER-I

Course Code	Course T'	(-1		
ENGU IL COM I	Course little	Course Type	Credit	Full Marks
ENON-H-CC-I-I	Indian Classical Literature	Cono	1. A.	
Refer to Instruct	tions (On page 4)	Core	6	60+15=75

Group	Texts	Marks of	Numbers of
	Vyasa. "The Dicing" and "The Sequel to Dicing" Back V "	set	questions to be set
А	Effort" in <i>The Mahabharata</i> . Tr. And ed. J.A.B. van Buitenen. Chicago: Brill, 1975.	2,5	16 X2;
	IlangoAdigal. "The Book of Banci", in Cilappatikaram, The Tale of an Anklet. Bk.3.Tr. R. Parthasarathy. New Delhi: Panguin 2004	2,5	9X5
	Kalidasa. AbhijnanaShakuntalam. Tr. Chandra Rajan, in Kalidasa: The Loom of Time. New Delhi: Penguin, 1989	10	
в	"The Book of the Assembly Hall", "The Temptation of Karna", Book V.	10	4X10
-	Buitenen. Chicago: Brill, 1975.	19	
	Sudraka. Mrcchakatika. Tr. M.M.Ramachandra Kale. New Delhi: MotilalBanarsidas, 1962.	10	

Instructions for question papers in end-semester evaluation for CC 1-14 and DSE 1-5

Instructions for question papers in end-semester evaluation for CC 1-14 and DSE 1-5

Suggested topics for class presentations

- 1. The Indian epic tradition: themes and recensions
- 2. Classical Indian drama: theory and practice
- 3. Alamkara and rasa
- 4. Dharma and the heroic tradition

Readings

- Bharata. Chapter 6. "Sentiments". Natyashastra. Tr. ManmohanGhosh, vol I. 2nd Ed. Calcutta: Asiatic Society, 1967. pp. 100-18.
- IravatiKarve. "Draupadi". In Yuganta: The End of An Epoch. Hyderabad: Disha: 1991. pp. 79-105.
- 3. J.A.B. van Buitenen. "Dharma and Moksha". In Roy W. Perrett ed. *Indian Philosophy*, vol. V, *Theory of Value: A Collection of Readings*. New York: Garland, 2000. pp. 33-40.
- 4. VinayDharwadkar. "Orientalism and the Study of Indian Literature". In Orientalism and the Postcolonial Predicament: Perspectives on South Asia. Ed. Carol A. Breckenridge and Peter van der Veer. New Delhi: OUP, 1994.pp. 158-95.

and the second se	SENTESTER-	L second a second second second		
Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-CC-T-2	European Classical Literature	Core	6	60+15=75
D C · T ·	1 10 11	The second second second second		

B.A. ENGLISH (Honours)

SEMESTER-I

Group	Texts		And
	THE PARTY NEW TO AN ADDRESS OF THE PARTY NEW TO AND ADDRESS OF THE PARTY NEW TO ADDRES	Marks of questions to be	Numbers of questions to
	Plautus. Pot of Gold. Tr. E.F. Watling. Harmondsworth: Penguin 1965 9(set	be set
	Ovid. Selections from Metamorphoses, Book III: Bacchus: lines 512	2,5	
	733. ("Now Pentheus, son of Echion," to " worshipping at the 1	2,5	
	altars"). The prescribed portion covers the subtitles "The Stars"		
THE REPORT	Acoetes", "The Fate of the Lydian Sailors" and "The Death of D		
-10-76	Book IV: Pyramus and Thishe: lines 55, 164 ("Decent of Pentheus.		
A	lived next door to each other "to " root together		
in the let	Book VI: "The story of Taraya Broom and Di '		
	("All the pairshop princes of the and Philomela". Ll. 413 - 674.		16 X2
(Constraint)	hoppon and it looks as if it		
	(Db VD) To Mark as if it were accoutered for battle.") "Philomela"	Alter and Alteration	and
No. Alteration of	(BK. VI). Ir. Mary M. Innes. Harmondsworth: Penguin, 1975.		
· A Sugarda	Horace. "Epistle I". Bk. I. The Satires of Horace and Persius. Tr. Niall	2,5	9X5
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Rudd. Penguin, 2005. 10		
	Homer. Books I and II. The Iliad. Tr. E. V. Rieu. Harmondsworth:	10	
В	Penguin, 1985.		
	Sophocles. "Oedipus the King". Tr. Robert Fagles in Sophocles: The	10	4X10
Carlo Carlo Carlo	Three Theban Plays. Harmondsworth: Penguin, 1984. 15	a starting	

Suggested topics for class presentations

- 1. Epic
- 2. Comedy and tragedy in Classical drama
- 3. The Athenian city state
- 4. Catharsis and mimesis
- 5. Canons of Rhetoric
- 6. Literary cultures in Augustan Rome

Readings

- 1. Aristotle. Chapters 6-17, 23, 24 and 26. *Poetics*. Tr. with an introduction and notes by Malcolm Heath. London: Penguin, 1996.
- 2. Plato. Bk. X. The Republic. Tr. Desmond Lee. London: Penguin, 2007.
- 3. Horace. "ArsPoetica". *Horace: Satires, Epistles and ArsPoetica*. Tr. H. Rushton Fairclough. Cambridge, MA: Harvard UP, 2005. pp. 451-73.
- 4. The account of Bacchus' birth given "Juno and Semele" may be additionally referred to from *Metamorphoses*.

GE I (Any one)

B.A. ENGLISH (Honours) SEMESTER-I

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-GE-T-1	Academic Writing and Composition	GE	6	60+15=75

Textbook: Introduction to Undergraduate English: Book II. Cambridge University Press, 2018.is the <u>only</u> prescribed textbook for this course

Academic Writing and Composition (Any four)

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 15 6. Citing Resources; Editing, Book and Media Review

Further Readings

1. Liz Hamp-Lyons and Ben Heasley, Study writing: A Course in Writing Skills forAcademic Purposes

2. Renu Gupta, A Course in Academic Writing (New Delhi: Orient BlackSwan, 2010).

3. IlonaLeki, Academic Writing: Exploring Processes and Strategies (New York: CUP,2nded, 1998).

4. Gerald Graff and Cathy Birkenstein, They Say/I Say: The Moves That Matter in Academic Writing (New

5. Pramod K Nayar, Marilyn Anderson and Madhuchhanda Sen. Critical Thinking, Academic Writing and Presentation Skills. Pearson, 2009.

6. Mark Cholij. Towards Academic English.OUP, 2006.

B.A. ENGLISH (Honours) SEMESTER-I

Course Code	C THE	A second second second			
Course Coue	Course Title	Course	Credit	Full Marks	
ENGH-H-AECC-T-1	English Communication (I 1/I 2)	AECC		the second from the second	
Tand. I To to t	S-101 Communication (L1/L2)	ALCC	2	50	

Textbook: Introduction to Undergraduate English: Book I. Cambridge University Press, 2018. is the only prescribed textbook for this course

Objective:

The purpose of this course is to introduce students to the theory, fundamentals and tools of communication and to develop in them vital communication skills which should be integral to personal, social and professional interactions. One of the critical links among human beings and an important thread that binds society together is the ability to share thoughts, emotions and ideas through various means of communication: both verbal and non-verbal. In the context of rapid globalization and increasing recognition of social and cultural pluralities, the significance of clear and effective communication has substantially enhanced. The present course hopes to address some of these aspects through an interactive mode of teaching-learning process and by focusing on various dimensions of communication skills. Some of these are : Language of communication, various speaking skills such as personal communication, social interactions and communication in professional situations such as interviews, group discussions and office environments, important reading skills as well as writing skills such as report writing, note-taking etc.

While, to an extent, the art of communication is natural to all living beings, in today's world of complexities, it has also acquired some elements of science. It is hoped that after studying this course, students will find a difference in their personal and professional interactions. The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

1. Introduction: Theory of Communication, Types and modes of Communication 3

2. Language of Communication:

Verbal and Non-verbal (Spoken and Written) Personal, Social and Business 3. Speaking Skills: 4 Monologue

Barriers and Strategies Intra-personal, Inter-personal and Group communication

Dialogue

B.A. ENGLISH (Honours) SEMESTER-II **Course Code Course Title** Course Credit **Full Marks** Туре ENGH-H-CC-T-3 Indian Writing in English Core 6 60+15=75

Refer to Instructions (On page 4)

Group	Texts	and a state of the state of the	
P		Marks of questions to be set	Numbers of questions to be set
	AmitavGhosh. "The Ghosts of Mrs. Gandhi". The New Yorker 17 Jul	25	
	1995.	2,5	
	Salman Rushdie "The Free Padie"		
	Shankin Rushale. The Free Radio	2,5	Alter Charles
	SnashDesnpande. "The Intrusion" 10 8	2,5	
n mars have a serie	Kamala Das. "Introduction" 5	25	
A	Robin S. Ngangom. "The Strange Affair of Robin S. Ngangom" "A	2,5	16 X2
	Poem for Mother"	2,5	10 72
	Nissim Ezekiel. "Enterprise"	2,5	and
	Toru Dutt. "Our Casurina Tree"	25	And Charles Street
	ArunKolatkar. "The Bus"	2,5	9X5
	JavantaMahanatra "Dawn at Puri"	2,5	5110
	Girish Kamad Haumadana Theor DL N. D. 11: 027 100 15	2,5	
В	Onisinkamad. Huyavaaana. Inree Plays. New Delhi: OUP, 1997. 15	10	
	Anita Desai. In Custody. 5	10	4X10

Suggested topics for class presentations

- 1. Indian English in postcolonial context
- 2. Themes and contexts of Indian English literature
- 3. Aesthetics of Indian English poetry Readings
 - 1. Raja Rao. "Foreword". Kanthapura. New Delhi: OUP, 1989. pp. v-vi.
 - 2. Salman Rushdie. "Commonwealth Literature Does Not Exist". Imaginary Homelands. London: Granta, 1991. pp.61-70.
 - 3. Meenakshi Mukherjee. "Divided by a Common Language". The Perishable Empire. New Delhi: OUP, 2000. pp.61-70.
 - 4. Bruce King. "Introduction". Modern Indian Poetry in English. 2nded. New Delhi: OUP, 2005. pp. 1-10.

Page 8 of 25

B.A. ENGLISH (Honours)

SEMESTER-II

Course Code	Course Title			
ENOU IL CO -		Course	Credit	Full
ENGH-H-CC-T-4	British Poetry and Drama: 14th 17th	Туре		Marks
	Centuries	Core	6	60+15=75
Refer to Instr	uctions (On page 4)	the state and an		and the second second

	Geoffrey Chaucer. "Wife of Bath" The Prologue to the G	Marks of questions to be set	Numbers of questions to be set
	Tales.Ed. Neville Coghill.	2,5	
	Edmund Spenser, Sonnet LXXV, "One day I wrote her new "		
A	Amoretti.	2,5	
	Johne Donne. "The Sunne Rising" and " Valadiation E. 1:11		16 X2;
	Mourning"	2,5	9X5
	Francis Bacon. "Of Empire"		
	Christopher Marlowe, Doctor Faustus	2,5	
В	William Shakespeare Twalfih Night	10	4X10
a series and	William Shakespeare Machath	10	-me de aud
	Suggested topics 6 1	10	and the second second

Suggested topics for class presentations

- 1. Renaissance Humanism
- 2. The stage, the Court and the City
- 3. Religious and political thought of the period
- 4. Ideas of love and marriage
- 5. The writer in society

Readings

Group Tout

- 1. Pico della Mirandola. Excerpts from the Oration on the Divinity of Man. The Portable Renaissance Reader. Ed. James Bruce Ross and Mary martin McLaughlin. New York: Penguin Books, 1953. pp. 476-9.
- 2. John Calvin. "Predestination and Free Will". The Portable Renaissance Reader. Ed. James Bruce Ross and Mary martin McLaughlin. New York: Penguin Books, 1953. pp.704-11.
- 3. Baldassare Castiglione. "Longing for Beauty" and "Invocation of Love", "Love and Beauty". Bk.IV. The Courtier. Tr. George Bull. Harmondsworth: Penguin, rpt. 1983. pp. 324-8, 330-5.
- 4. Philip Sidney. An Apology for Poetry. Ed. Forrest G. Robinson. Indianapolis: Bobbs-Merrill, 1970. pp.13-18.

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-GE-T-2	Text and Performance	GE	6	60+15=75

B.A. ENGLISH (Honours) SEMESTER-II

Textbook: Introduction to Undergraduate English: Book II. Cambridge University Press, 2018.is the only prescribed textbook for this course.

5.0

1. Introduction

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

2.23

- 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,

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:

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:

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

B.A.	ENGLISH (Honours)	
	SEMESTER-III	

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-CC-T-5	American Literature	Core	6	60+15=75

Group	Texts	Marks of	Numbers of
		questions to be set	questions to
	Edgar Allan Poe. "The Purloined Letter"	2,5	
	William Faulkner. "Dry September"	2,5	
٨	Anne Bradstreet. "The prologue"	2,5 -	
А	Walt Whitman. "Passage to India" (ll. 1-68). Leaves of Grass.	2,5	
	Adriene Rich. "Power"	2,5	16 X2;
	Allen Ginsberg. "An Eastern Ballad". Beat Poets. Ed. Carmela Ciuraru.	2,5	9X5

	New York: Alfred A. Knopf, 2002			The second second
	Abraham Lincoln. "Gettysburg Address"	And J.		
	Martin Luther King, "I have a Dream"	<u>> 4</u>	2,5	
B	Tennessee Williams, The Glass Menageria	-34	2,5	
	Toni Morrison. Beloved	17	10	The second
		20	10	4X10

Suggested topics for class presentations

- 1. The American Dream
- 2. Social Realism and Folklore in American novel
- 3. Focial Realism and Folklore in American short story
- 4. Black women's writing
- 5. Questions of form in American poetry
- 6. Civil Rights Movement Readings

1. Hector St John Crevecouer. "What is an American". (Letter III) in Letters from an American Farmer. Harmondsworth: Penguin, 1982. pp. 66-105.

 Frederick Douglass. Chapters 1-7. A Narrative of the Life of Frederick Douglass. Harmondsworth: Penguin, 1982. pp.47-87.

3. Henry David Thoreau. "Battle of the Ants". Excerpt from "Brute Neighbors" Ch.12. Walden. Norton Critical Edition.

- 4. Ralph Waldo Emerson. "Self Reliance". *The Selected Writings of Ralph Waldo Emerson*. Ed. with a biographical introduction by Brooks Atkinson. New York: Modern Library, 1964.
- 5. Toni Morrison. "Romancing the Shadow". Playing in the Dark: Whiteness and Literary Imagination. London: Picador, 1993. pp. 29-39.
- 6. K. Sen and A. Sengupta. "Modernist Drama" A Short History of American Literature. New Delhi: Orient Blackswan.pp.160-174.

	SEMEST	ER-III		
Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-CC-T-6	Popular Literature	Core	6	60+15=75
Refer to Instruc	tions (On page 4)			00113-15

B.A. ENGLISH (Honours)

Group	Texts	Marks of questions to be set	Numbers of questions to be set
		and the second second	16 X2;
۵	DurgabaiVyam and ShubhashVyam. Bhimayana: Experiences of	2,5	9X5
71	Untouchability. / Autobiographical Notes on Ambedkar (for visually		
	challenged students) 35	a the second	
P	Lewis Carroll. Through the Looking Glass. ShyamSelvadurai. Funny Boy.	10	
Ъ	Agatha Christie. The Murder of Roger Ackroyd.		4X10
		AND DESIGNATION OF THE STREET STREET	A STATE OF A

Suggested topics for class presentations

- 1. Coming of age
- 2. The canonical and the popular
- 3. Caste, gender and identity
- 4. Ethics and education in children's literature

- 5. Sense and nonsense
- 6. The graphic novel

Readings

- Chelva Kanaganayakam. "Dancing in the Air: Reading Contemporary Sri Lankan Literature". rpt. MalashriLal, AlamgirHashmi and Victor J Ramraj eds. Post Independence Voices in South Asian Writings. Delhi: Doaba Publications, 2001. pp.51-65.
- Sumathi Ramaswamy. "Introduction". Beyond Appearances? VisualPractices and Ideologies in Modern India. New Delhi: Sage, 2003. pp. xii-xxix.
- Leslie Fiedler. "Towards a Definition of Popular Literature". Super Culture: American Popular Culture and Europe. Ed. C.W.E. Bigsby. Bowling Green: Ohio UP, 1975. pp. 29-38.
- Felicity Hughes. "Children's Literature: Theory and Practice". English Literary History. Vol.45, 1978, pp. 542-61.

Course Code	SEMILSTER-III	Figure 1 Part of the state	1	
ENCLU IL COMP	Course Title	Course Type	Credit	Full Marks
ENGH-H-CC-T-7	British Poetry and Drama: 17 th and 18 th Centuries	Core	6	60+15=75
Refer to Instr	uctions (On page 4)			

B.A. ENGLISH (Honours)

Refer to Instructions (On page 4)

Group	Texts	Marks of questions to be	Numbers of questions to
	John Milton, Paradise Lost, Bk J 25	set	be set
A	Alexander Dono The Dana of the Total Contraction	2,5	16 X2;
	Rickander Pope. The Rape of the Lock. (Books I and II)	2,5	9X5
B	John Webster. The Duchess of Malfi.	10	1110
Б	Aphra Behn. The Rover.	10	4A10

Suggested topics for class presentations

- 1. Religious and secular thought in the 17th century
- 2. The Stage, the state and the market
- 3. The mock-epic and Satire
- 4. Women in the 17th century
- 5. The Comedy of Manners

Readings

- 1. "Genesis", Ch.1-4 and "The Gospel According to St. Luke", Ch.1-7. [King James Version]
- 2. Niccolo Machiavelli. Chapters 15, 16, 18 and 25. *The Prince*. Ed. and tr. Robert M. Adams. New York: Norton & Co, 1992.
- 3. Thomas Hobbes. Chapters 8, 11 and 13. The Leviathan. New York: Norton & Co, 2006.
- John Dryden. "A discourse Concerning the Origin and Progress of Satire". The Norton Anthology of English Literature. V.1. 9thedn. Ed. Stephen Greenblatt. New York: Norton, 2012. pp. 1767-8.

B.A. ENGLISH (Honours) SEMESTER-III

Page 12 of 25

5. Diane Larsen-Freeman. Techniques and Principles in Language Teaching. OUP, 1986.

6. Patsy M. Lightbown and Nina Spada. How Languages are Learned. 4th ed. OUP, 2013.

7. GeethaNagaraj. English Language Teaching: Approaches, Methods, Techniques. Orient Blackswan, 2010.

8. Jack C Richards and Theodore S Richards. Approaches and Methods in Language Teaching. CUP, 2001.

B.A. ENGLISH (Honours) SEMESTER-IV

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-CC-T-8	British Literature: 18th Century	Core	6	60+15=75

Refer to Instructions (On page 4)

Group	Texts	Marks of questions to be set	Numbers of questions to be set
	Samuel Johnson. "London".	2,5	16 X2; 9X5
А	Thomas Gray. "Elegy Written in a Country Churchyard".	2,5	
	Eliza Heywood. Fantomina.	2,5	and the second second
D	William Congreve. The Way of the World.	10	4X10
В	Jonathan Swift. Gulliver's Travels (Books I & II)	10	

Suggested topics for class presentations

- 1. The Enlightenment and Neoclassicism
- 2. Restoration Comedy
- 3. The Country and the City
- 4. The novel and the periodical press

Readings

- 1. Jeremy Collier. A Short View of the Immorality and Profaneness of the English Stage. London: Routledge, 1996.
- 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. (i) Essay 156 in *The Rambler* in *Selected Writings: Samuel Johnson*. Ed. Peter Martin. Cambridge, MA: Harvard UP, 2009. pp. 194-7; (ii) *Rasselas*. Ch.10. (iii) "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 Ed. New York: Norton, 2006. pp.2693-94, 2774-77.

	SEMESTE	R-IV		
Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-CC-T-9	British Romantic Literature	Core	6	60+15-75
Refer to Instr	uctions (On page 4)			00115-75

B.A. ENGLISH (Honours) SEMESTER-IV

Group	Texts	and the second	
oroup	I CALD	Marks of	Numbers of
		questions to be	quastions to

		set	be set
	William Blake. "The Lamb", "The Chimney Sweeper", "The Tyger", the	2,5	
A	Introduction to The Songs of Innocence.		
	Robert Burns. "A Bard's Epitaph" and "Scots WhaHae"		16 X2;
	Samuel Taylor Coleridge. "Kubla Khan", "Dejection: An Ode"	ALS POST OF	9X5
	John Keats. "Ode to a Nightingale", "Bright Star", "To Autumn"		
	Percy Bysshe Shelley. "Ode to the West Wind"		
	William Wordsworth. "Tintern Abbey"	10	
В	George Gordon Byron. Canto IV. Verses 178-86. Childe Harold's		4X10
	Pilgrimage. II. 1594-1674.		
	Mary Shelley. Frankenstein.		

Suggested Topics for class presentations

- 1. Reason and imagination
- 2. Conceptions of nature
- 3. Literature and revolution
- 4. The Gothic
- 5. The Romantic lyric

Readings

- 1. William Wordsworth. "Preface" to Lyrical Ballads (1802 ed.). The Norton Anthology of Theory and Criticism. Eds. William Cain et al. 2001. pp. 648-67.
- 2. John Keats. Letter to George and Thomas Keats, 21 December 1817.Letter to Richard Woodhouse, 27 October 1818. Complete Poems and Selected Letters of John Keats. Ed. Edward Hirsch. Modern Library, 2001.
- 3. Jean-Jacques Rousseau. "Preface" to Emile or On Education. Tr. Allan Bloom. Harmondsworth: Penguin, 1991.
- 4. Samuel Taylor Coleridge. Chap XIII. BiographiaLiteraria. Ed. George Watson. London: Everyman, 1993. pp. 161-6.

Course Code	C. Thu		Pault Print Contract	
Course Code	Course Title	Course	Credit	Full Marks
DUOLUU GG T 10		Туре		State State State
ENGH-H-CC-T-10	British Literature: 19th Century	Core	6	60+15=75
Refer to Instru	ictions (On page 4)		10	00+13-75

B.A. ENGLISH (Honours)

(On page 4)

	Marks of questions to be set	Numbers of questions to be set
Alfred Tennyson. "Ulysses"	2,5	16 X2:
Robert Browning. "My Last Duchess"	2.5	9X5
Christina Rossetti. 1 st Stanza. "The Goblin Market". 1862. 1.1-31.	2.5	
Charlotte Brontë. Jane Eyre. 1847. 3rd ed. Norton Critical Edition. 2016.	10	4X10
Charles Dickens. Hard Times, 1854. 4th ed. Norton Critical Edition. 2015.	10	
Thomas Hardy. <i>Tess of the d'Urbervilles</i> .1891-92. 3 rd ed. Norton Critical Edition.1991.	10	- State
	Alfred Tennyson. "Ulysses" Robert Browning. "My Last Duchess" Christina Rossetti. 1 st Stanza. "The Goblin Market". 1862. <i>ll</i> . 1-31. Charlotte Brontë. <i>Jane Eyre</i> . 1847. 3 rd ed. Norton Critical Edition. 2016. Charles Dickens. <i>Hard Times</i> , 1854. 4 th ed. Norton Critical Edition. 2015. Thomas Hardy. <i>Tess of the d'Urbervilles</i> . 1891-92. 3 rd ed. Norton Critical Edition. 1991.	Alfred Tennyson. "Ulysses"Marks of questions to be setAlfred Tennyson. "Ulysses"2,5Robert Browning. "My Last Duchess"2,5Christina Rossetti. 1 st Stanza. "The Goblin Market". 1862. <i>ll</i> .1-31.2,5Charlotte Brontë. Jane Eyre. 1847. 3 rd ed. Norton Critical Edition. 2016.10Charles Dickens. Hard Times, 1854. 4 th ed. Norton Critical Edition. 2015.10Thomas Hardy. Tess of the d'Urbervilles. 1891-92. 3 rd ed. Norton Critical10Edition. 1991.10

opics for class presentations

1. Utilitarianism

- 2. Nineteenth-century novel
- 3. Marriage and sexuality
- 4. The writer and society
- 5. Faith and doubt
- 6. Dramatic monologue
- Readings
- Karl Marx. "The Essence of the Materialist Conception of History: Being and Social Consciousness." Sec. IV, Part I. German Ideology, 1845.
- Charles Darwin. "Natural Selection and Sexual Selection" selection from *The Descent of Man.* Norton Anthology of English Literature. 8th Ed.Vol.2.Ed. Stephen Greenblatt. New York: Norton, 2006.
- John Stuart Mill. Selections from Ch. 1 of The Subjection of Women. Norton Anthology of English Literature. 8th Ed.Vol.2.Ed. Stephen Greenblatt. New York: Norton, 2006.

B.A. ENGLISH (Honours)

SEMESTER-IV

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-GE-T-4	Contemporary India: Women and	GE	6	60+15=75
The second s	Empowerment	TRADING OF THE REPORT OF		

Textbook: Introduction to Undergraduate English: Book II. Cambridge University Press, 2018.is the only prescribed textbook for this course

1. Social Construction of Gender (Masculinity and Femininity) and 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

5. Female Voices: RokeyaShekhawatHossein. Sultana's Dream.

6. Dalit Discourse: Sharmila Rege. "Dalit Feminist Standpoint". Gender and Caste. Ed. A. Rao. Kali for Women, 2003.

B.A. ENGLISH (Honours) SEMESTER-IV

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-SEC-T-2	Soft Skills	SEC	2	50

Textbook: Introduction to Undergraduate English: Book I. Cambridge University Press, 2018. is the only prescribed textbook for this course

Topics and skills to be learnt Teamwork

Emotional Intelligence

Adaptability

Leadership

Problem solving

Readings

1. S.P. Dhanavel. English and Soft Skills. OrientBlackswan, 2013

2. English for Students of Commerce: Précis, Composition, Essays, Poems. Eds.Kaushik, et al.

3. Sabina Pillai and Agna Fernandez. Soft Skills and Employability Skills. CUP, 2017.

B.A. ENGLISH (Honours) SEMESTER-V

Course Code	Course Title	Course	Credit	Full Marks
ENGH-H-CC-T-11	Women's Writing	Com		60116 55
Refer to Instru	ictions (On page 4)	Core	0	60+15=75

Group	Texts		
	Emily Dickinson W	Marks of questions to be set	Numbers of questions to be set
	that" "Sylvia Plath, "Daddy", "I adv I are a "	2,5	16 X2; 9X5
	Maya Angelou "Coord Di u m	2,5	
Α	Angelou. Random House Inc., 1994.	2,5	
Λ	Katherine Mansfield. "Bliss"	25	
	Mahashweta Devi, "Draupadi", Translated with a foreword by	2,5	
	GayatriChakravortySpivak. <i>Critical Inquiry</i> , Vol. 8, No. 2, Writing and Sexual Difference. (Winter, 1981), pp. 381-402.	2,5	
	Vol.1. Eds. Susie Tharu and K. Lalita. New Delhi: OUP, 191-2.	2,5	
	Mary Wollstoneeraft Charles 18	10	4X10
В	Norton Critical Edition. 1988. Pp.19-38.	10	into
	PanditaRamabai through Her Own Words: Selected Works. Tr. MeeraKosambi, New Delbi: OUR 2000 and 2017 and		and the first
	Suggested topics for class presentations		

- 1. The confessional mode in women's writing
- 2. Sexual politics
- 3. Race, caste and gender
- 4. Social reform and women's rights

Readings

- 1. Virginia Woolf. Chapters 1 & 6. A Room of One's Own.
- Simone de Beauvoir. "Introduction". *The Second Sex.* Tr. Constance Borde and Sheila Malovany-Chevallier. London: Vintage, 2010. pp.3-18.
- KumkumSangari and SudeshVaid. "Introduction". Recasting Women: Essays in Colonial History. New Delhi: Kali for Women, 1989. pp.1-25.
- Chandra TalapadeMohanty."Under Western Eyes: Feminist Scholarship and Colonial Discourses". Contemporary Postcolonial Theory: A Reader. Ed. PadminiMongia. New York: Arnold, 1996. pp. 172-97.

B.A. ENGLISH (Honours) SEMESTER-V

Course Code	Course Title				
	Course Thie	Course	Credit	Full Marks	1
ENGH-H-CC-T-12	British Literature: The Farly 20th	-spc			
		Core	6	60+15=75	1

Century		100.000
Refer to Instructions (On page 4)		Contraction of the Contraction

page

Group	Texts	Marks of questions to be set	Numbers of questions to be set
	William Butler Yeats. "Byzantium", "Sailing to Byzantium"	2,5	16 X2;
	Thomas Stearns Eliot. "The Love Song of J. Alfred Prufrock", "Preludes", "Hollow Men"	2,5	9X5
A	Wystan Hugh Auden, "Unknown Citizen"	2,5	
	David Herbert Lawrence. "Odour of Chrysanthemums" 13	2,5	
	Virginia Woolf, "Mark on the Wall"	2,5	that the setue
	W. Somerset Maugham. "Rain"	2,5	k same
Service of the servic	Joseph Conrad. Heart of Darkness.	10	4X10
В	John Millington Synge, Riders to the Sea.	10	
	James Joyce, A Portrait of the Artist as a Young Man.	10	

Suggested topics for class presentations

- 1. Modernism
- 2. Women's movements in early twentieth-century
- 3. Psychoanalysis and the stream of consciousness
- 4. Uses of myth
 - Readings
 - 1. Sigmund Freud. "Theory of Dreams", "Oedipus Complex", "The Structure of the Unconscious". The Modern Tradition. Ed. Richard Ellman et al. Oxford: OUP, 1965. pp.571, 578-80, 559-63.
 - 2. T. S. Eliot. "Tradition and the Individual Talent". Norton Anthology of English Literature. 8th Ed. Vol.2.Ed. Stephen Greenblatt. New York: Norton, 2006.pp.2319-25.
 - 3. Raymond Williams. "Introduction". The English Novel from Dickens to Lawrence. London: Hogarth Press, 1984. pp.9-27.

B.A. ENGLISH (Honours) SEMESTER-V

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-DSE-T-1	Modern Indian Writing in English Translation	DSE	6	60+15=75

Refer to Instructions (On page 4)

Group	Texts	Marks of questions to be set	Numbers of questions to be set
1	Premchand. "The Shroud". New Penguin Book of Classic Urdu Stories.	2,5	
1.4	Ed. M. Assaduddin. Penguin, 2006.		
	IsmatChughtai. "The Quilt". Lifting the Veil: Selected Writings of	2,5	
	IsmatChughtai. Tr. M. Assaduddin. Penguin, 2009.	a diserca ver	100
1.1.1	Gurdial Singh. "A Season of No Return". Earthy Tones. Tr. RanaNayar.	2,5	445
	Fiction House, 2002.		
	Fakir Mohan Senapati. "Rebati". Oriya Stories. Ed. Vidya Das. Tr.	2,5	16 X2;
A	KishoriCharan Das. Srishti, 2000.	1 Alex Tal and	9X5
	G.M.Muktibodh. "The Void" (Tr. VinayDharwadker) and "So Very Far"	2,5	

	(tr. Vishnu Khare and AdilJussawala). Oxford Anthology of Modern Indian Poetry. OUP, 2000.		
	Amrita Pritam. "I Say unto Waris Shah" (Tr. N.S.Tasneem). Modern Indian Literature: An Anthology. Plays and Prose. Vol.3.Ed. K. M. George. SahityaAkademi, 1992.	2,5	
	ThangjamIbopishak Singh. "Dali, Hussain, or Odour of Dream, Clours of Wind" and "The Land of the Half-Humans". Tr. Robin S. Ngangom. <i>The Anthology of Contemporary Poetry from the Northeast</i> . NEHU, 2003.	2,5	
B	Rabindranath Tagore. <i>Red Oleanders</i> or DharamveerBharati. <i>Andha Yug.</i> Tr. AlokBhalla. OUP	10	4X10
Ъ	G. KalyanRao. Untouchable Spring. Tr. AlladiUma and M. Sridhar. Orient Blackswan.	10	

Suggested Topics for Class Presentation

- 1. The aesthetics of translation
- 2. Linguistic regions and languages
- 3. Modernity in Indian literature
- 4. Caste, gender and resistance
- 5. Questions of form in twentieth-century Indian literature

Readings

1. Namwar Singh. 'Decolonising the Indian Mind', tr. Harish Trivedi, Indian Literature, no. 151 (Sept./Oct. 1992).

2. B.R. Ambedkar. "Annihilation of Caste". Dr. BabasahebAmbedkar: Writings and Speeches, vol. 1 (Maharashtra: Education Department, Government of Maharashtra, 1979) chaps. 4, 6, and 14.

3. Sujit Mukherjee. "A Link Literature for India". *Translation as Discovery*. Orient Longman, 1994. pp. 34–45.

4. G.N. Devy. "Introduction". After Amnesia in The G.N. Devy Reader. Orient BlackSwan, 2009. pp. 1–5.

Course	Credit	Full Marks
Туре	Cicuit	run Marks
DSE	6	60+15=75
This is not a second se	Course Type DSE	CourseCreditType0DSE6

B.A. ENGLISH	(Honours)	
SEMESTED I	- Destanting	

Group	Texts	Marks of questions to be set	Numbers of questions to be set
	Phillip Larkin. "Whitsun Weddings" and "Church Going"	2.5	16 X2.
А	Ted Hughes. "Hawk Roosting" and "Crow's Fall"	2.5	9X5
	Seamus Heaney. "Digging" and "Casualty"	25	1110
	Carol Anne Duffy. "Text" and "Stealing" 6	2,5	
	George Orwell. Animal Farm	10	4110
В	John Osborne. Look Back in Anger	10	4X10
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Julian Barnes, England England	10	
States and	Cusant I The Long Change Lange Lang	10	

Suggested Topics for Class Presentations

- 1. Postmodernism in British Literature
- 2. Britishness after 1960s

- 3. Intertextuality and experimentation
- 4. Literature and counterculture Readings

1. Alan Sinfield. "Literature and Cultural Production." Literature, Politics, and Culture in

PostwarBritain. University of California Press, 1989. pp. 23-38.

2. Seamus Heaney. "The Redress of Poetry". The Redress of Poetry. Faber, 1995. pp. 1-16.

3. Patricia Waugh. "Culture and Change: 1960-1990". The Harvest of The Sixties: English Literature And Its Background, 1960-1990. OUP. 1997.

B.A. ENGLISH (Honours) SEMESTER-V

	SEMI			E-II Marka
Course Code	Course Title	Course Type	Credit	Full Marks
ENCH U DEE T 2	L transmission	DSE	6	60+15=75
LINON-H-DSE-1-3	Literary Criticism	002		ne di ancie di della

Refer to Instructions (On page 4)

Group	Texts	Marks of questions to be set	Numbers of questions to be set
	William Wordsworth "Preface" to the Lyrical Ballads (1802) 18	2,5	16 X2;
Α	Virginia Woolf "Modern Fiction"	2,5	9X5
	T S Eliot: "Tradition and the Individual Talent"	2,5	
	S.T. Coleridge <i>BiographiaLiteraria</i> . Chapters XIII and XIV 12	10	4X10
B	I.A. Richards. <i>Principles of Literary Criticism</i> . Chapters 1, 2 and 34.	10	
B	Cleanth Brooks. "The Heresy of Paraphrase", and "The Language of Paradox"	10	

Suggested Topics for Class Presentations

- 1. Summarising and critiquing
- 2. Point of view
- 3. Reading and interpreting
- 4. Media criticism
- 5. Plot and setting
- 6. Citing from critics' interpretations

Readings

1. C.S. Lewis. "Introduction". An Experiment in Criticism. Cambridge University Press, 1992.

2. M.H. Abrams. The Mirror and the Lamp. Oxford University Press, 1971.

3. Rene Wellek and Stephen G. Nicholas. Concepts of Criticism. Yale UP, 1963.

4. Andrew Bennett and Nicholas Royle. Eds. An Introduction to Literature, Criticism and Theory. 5th Ed. Routledge, 2016.

B.A. ENGLISH (Honours)

SEMESTER-VI

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-CC-T-13	Modern European Drama	Core	6	60+15=75
Refer to Instru	uctions (On page 4)	And the formation		and an and a second

Group	Texts	Marks of	Numbers of
		questions to be	questions to
		set	be set

A	Henrik Ibsen. "Ghosts". Ghosts and Other Plays. Tr. Peter Watts. Penguin, 1964.	2,5	16 X2;
	Samuel Beckett. Waiting for Godot.OUP.	2,5	9X5
	Anton Chekov, "The Seagull", Plays, Tr. Peter Carson, Penguin, 2002.	2,5	
В	Bertolt Brecht. The Good Person of Szechwan. Ed.&Tr. Ralph Manheim. Penguin, 2008.	10	
	Eugene Ionesco. "Rhinoceros". Rhinoceros, The Chairs, The Lesson. Tr. Derek Prouse and Donald Watson. Penguin, 1974.	10	4X10
	Luigi Pirandello. Six Characters in Search of an Author. Tr. John Linstrum. Bloomsbury, 2014.	10	

Suggested topics for class presentations

- 1. Politics, social change and the stage
- 2. Text and performance
- 3. European drama: realism and beyond
- Tragedy and heroism in modern European drama
- 5. The Theatre of the Absurd

Readings

- 1. Constantin Stanislavsky. "Faith and the Sense of Truth". Sections 1, 2, 7, 8, 9. Chapter 8. An Actor Prepares. Tr. Elizabeth Reynolds Hapgood. Harmondsworth: Penguin, 1967. pp. 121-5, 137-46.
- 2. Bertolt Brecht. "The Street Scene", "Theatre for Pleasure or Theatre for Instruction", and "Dramatic Theatre vs. Epic Theatre". Brecht on Theatre: The Development of An Aesthetic. Ed. and tr. John Willet. London: Methuen, 1992. pp.68-76., 121-8.
- 3. George Steiner. "On Modern Tragedy". The Death of Tragedy. London: Faber, 1995. pp. 303-24.
- 4. Martin Esslin. "Introduction: Absurdity of the Absurd". Theatre of the Absurd. New York: Vintage, 1961.
- 5. Raymond Williams. "A Generation of Masters". Ch.1. Drama from Ibsen to Brecht. Oxford: OUP, 1969. pp.25-111.

	SEMIESI	ER-VI		
Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-CC-T-14	Postcolonial Literatures	Core	6	60+15=75

SEMESTED VI

B.A. ENGLISH (Honours)

Refer to <u>Instructions</u> (On page 4)

Group	Texts	Marks of questions to be set	Numbers of questions to be set
	Bessie Head. "The Collector of Treasures".	2,5	
	Ama Ata Aidoo. "The Girl Who Can"	2,5	
	Grace Ogot. "The Green Leaves".	2,	16 X2;
А	Pablo Neruda. "Tonight I Can Write", "The Way Spain Was."	2,5	9X5
	Derek Walcott. "A Far Cry from Africa", "Names".	2,5	
	David Malouf. "Revolving Days", "Wild Lemons".	2,5	
	Mamang Dai. "Small Towns and the River", "The Voice of the Mountain"	2,5	a trate
В	Chinua Achebe. Things Fall Apart.	10	4X10

Gabriel Garcia Marquez. "No One Writes to the Colonel".

Suggested Topics for class presentations

- 1. Decolonization, globalization and literature
- 2. Literature and identity politics
- 3. Writing for the new world audience
- 4. Region, race and gender
- 5. Postcolonial literatures and questions of form Readings
 - 1. Franz Fanon. "The Negro and Language". Black Skin, White Masks. Tr. Charles Lam Markmann. London: Pluto Press, 2008. pp.8-27.

10

- 2. NgugiwaThiong'o. "The Language of African Literature". Sections 4-6. Ch.1. Decolonising the Mind. London: James Curry, 1986.
- 3. Gabriel Garcia Marquez. The Nobel Prize Acceptance Speech. Gabriel Garcia Marquez: New Readings. Ed. Bernard McGuirk and Richard Cardwell. Cambridge: Cambridge UP, 1987.

B.A. ENGLISH (Honours) SEMESTER-VI

Course Code	Course Title	Course Type	Credit	Full Marks
ENGH-H-DSE-T-4	Literary Theory	DSE	6	60+15=75
Refer to Instru	actions (On page 4)		-	S CARE AND AND

Group	Texts	Marks of questions to be set	Numbers of questions to be set
А	 Marxism: a. Antonio Gramsci. "The Formation of the Intellectuals" and "Hegemony (Civil Society) and Separation of Powers". Selections from the Prison Notebooks. Ed. and tr. Quentin Hoare and Geoffrey Novell Smith . London: Lawrence and Wishart, 1971. p. 5, 245–6. Feminism: a. Elaine Showalter. "Twenty Years on: A Literature of Their Own Revisited." A Literature of Their Own: British Women Novelists from Bronte to Lessing. 1977. Rpt. London: Virago, 2003. pp. xi–xxxiii. 	2,5	16 X2; 9X5
	Postcolonial Studies: a. Mahatma Gandhi. "Passive Resistance" and "Education". <i>Hind Swaraj and Other Writings</i> , ed. Anthony J Parel. Delhi: CUP, 1997. pp. 88–106.	2,5	
	Feminism: b. Luce Irigaray. "When the Goods Get Together". This Sex Which is Not One. New French Feminisms. Ed. Elaine Marks and Isabelle de Courtivron. New York: Schocken Books, 1981. pp. 107–10.	2,5	
	A CARLES AND A CONTRACT OF A CONTRACT AND A CONTRACT AN	123	
	Marxism: b. Louis Althusser. "Ideology and Ideological State Apparatuses" <i>Lenin and Philosophy and Other Essays</i> . New Delhi: Aakar Books, 2006. pp. 85–126.	10	
B	Postcolonial Studies: b. Edward Said. "The Scope of Orientalism." Orientalism.Harmondsworth: Penguin, 1978. pp. 29–110. Postcolonial Studies: c. Aijaz Ahmad. ""Indian Literature: Notes towards the Definition of a Category". In Theory: Classes, Nations, Literatures. London: Verso, 1992. pp. 243–285.	10	
	Poststructuralism: a. Jacques Derrida. "Learning to Live Finally." Tr. Pascale-Anne Brault and Michael Nass. The Last Interview of	10	4X10

SKILL ENHANCEMENT COURSE 01 (Code: UG-ENVS-H- SEC-01a) REMOTE SENSING, GEOGRAPHIC INFORMATION SYSTEM & MODELLING

FULL MARKS: 50, CREDITS: 2

Preamble: This course introduces the students to various computer-based and statistical methods used for study and management of natural resources and the environment. The students are expected to learn about remote-sensing techniques, physical principles, sampling, statistics and image-analysis methods.

Unit 1: Remote Sensing: definitions and principles; electromagnetic (EME) spectrum; interaction of EMR with Earth's surface; spectral signature; satellites and sensors; aerial photography and image interpretation.

Unit 2: Geographical Information Systems: definitions and components; spatial and non-spatial data; raster and vector data; database generation; database management system; land use/ land cover mapping; overview of GIS software packages; GPS survey, data import, processing, and mapping.

Unit 3: Applications and case studies of remote sensing and GIS in geosciences, water resource management, land use planning, forest resources, agriculture, marine and atmospheric studies.

Unit 4: Basic elements of statistical analyses: sampling; types of distribution – normal, binomial, poisson; measurements of central tendency and dispersion; skewness; kurtosis; hypothesis testing; parametric and non-parametric tests; correlation and regression; curve fitting; analysis of variance.

Unit 5: Demonstrative exercise

- Visual interpretation of standard False Colour Composite (FCC) data.
- Thematic map generation.
- Digitisation of thematic layer.
- Overlay analysis of thematic layer in GIS environment.
- GIS laboratory visit.

-OR-

SKILL ENHANCEMENT COURSE 01: (Code: UG-ENVS-H- SEC- 01b) OCCUPATIONAL HEALTH AND ENVIRONMENTAL SAFETY

FULL MARKS: 50, CREDITS: 2

Preamble: This course introduces the students to acquire knowledge about various occupational diseases and safety measures with particular attention to accident prevention in work place, safety education and training.

Unit 1: Introduction

Concept of occupational health and diseases: Occupation related diseases, mode, effects, risk, diagnosis and methods of prevention.

Unit 2: Occupational health hazards and devices

Evaluation of injuries: Medical services in industrial establishment, its function, action programs for work related diseases at the national level.

Personal Protective Equipment: Introduction, requirements and assessment of PPE, types of PPE.

Non-respiratory personal protective devices; head, ear, face and eye protection, feet and body protection, supply, use, care and maintenance of PPE, requirements under factory Acts and Rules. Respiratory PPE: Types of respiratory PPE, supply, use, care and maintenance of breathing apparatus, training for the use of breathing apparatus.

Unit 3: Introduction to Environmental Safety

Environmental Safety: Safety awareness, annual toll of industrial accidents in India, need for safety, legal, humanitarian factors impending safety, safety audit.

Health concern for workers of textile, dye, bidi making and brick kiln factory/industry.

Unit 4: Principles of accident prevention

Definition of accidents: injury, types of accidents, causes and remedial measures, injury records, prevention, modes of prevention, physiological factors.

Unit 5: Safety education and training

Assessment of training needs, design and developments of training program.

Unit 6: Demonstrative exercise

- Industry/factory visit to assess the safety measures adopted for the workers in textile, dye, bidi
 making and brick kiln factory/industry and fire.
- Occupational health study of small scale industry workers through survey and documentation.

. . in ii

CORE COURSE 13 (Code: UG-ENVS-H-CC-13) ENVIRONMENTAL LEGISLATION AND POLICY

FULL MARKS: 75, CREDITS: 4 (L) + 2(P) = 06.

Preamble: This paper introduces students to the legal structure of India and fundamentals of environmental legislation and policy making. Each unit will help the students to develop basic concepts of environmental legislation and policy making in India and around the world.

UG-ENVS-H-CC-L -13

CREDITS: 4; Lectures-60

Unit 1: Introduction

Constitution of India; fundamental rights; fundamental duties; Union of India; union list, state list, concurrent list; legislature; state assemblies; judiciary; panchayats and municipal bodies; National Green Tribunal.

Unit 2: History of environmental legislation and policy

Ancient period: worship of water, air, trees; Mauryan period: Kautilya's Arthashastra, Yajnavalkya smriti and Charaksamhita; Medieval period: forests as woodland and hunting Resources during Mughal reign; British India: Indian Penal Code 1860, Forest Act 1865, Fisheries Act 1897; Independent India: Van Mahotsava 1950, National Forest Policy 1952, Orissa River pollution and prevention Act 1953.

Unit 3: Environmental legislation

Legal definitions (environmental pollution, natural resource, biodiversity, forest, sustainable development); Article 48A (The protection and improvement of environment and safeguarding of forests and wildlife); Article 51 A (Fundamental duties).

Unit 4: Legislative instruments

The Indian Forest Act 1927; The Wildlife (Protection) Act 1972; The Water (Prevention and Control of Pollution) Act 1974; The Forests (Conservation) Act 1980; The Air (Prevention and Control of Pollution) Act 1981; The Environment (Protection) Act 1986; The Public Liability Insurance Act 1991; Noise Pollution (Regulation and Control) Rules 2000; The Biological Diversity Act 2002; The Schedule Tribes and other Traditional Dwellers (Recognition of Forests Rights) Act 2006; The National Green Tribunal Act 2010; scheme and labeling of environment friendly products, Ecomarks.

Unit 5: Government institutions

Role of Ministry of Environment, Forests & Climate Change in environmental law and policy making; role of central and state pollution control boards in environmental law and policy making.

Unit 6: Case studies

National Green Tribunal: Aditya N Prasad vs. Union of India & Others; Ganga Tanneries Case: M.C. Mehta vs. Union of India 1988; environmental education case: M.C. Mehta vs. Union of India, WP 860/1991.

55

Unit 7: International laws and policy

Ramsar convention, 1971; Stockholm Conference 1972; United Nations Conference on Environment and Development 1992; Rio de Janeiro (Rio Declaration, Agenda 21); Montreal Protocol 1987; Kyoto Protocol 1997; Copenhagen and Paris summits.

UG-ENVS-H-CC-P-13

CREDITS: 2

Practical: Field survey based analysis, exercise and interpretation

- Field visit for assessment of environmental policy adoption, environment safety policy adoption in industry and document preparation.
- Survey on perception of environmental laws in communities/ societies and document preparation.

CORE COURSE 10 (Code: UG-ENVS-H-CC-10) ENVIRONMENTAL POLLUTION AND HUMAN HEALTH

FULL MARKS: 75, CREDITS: 4 (L) + 2(P) = 06

Preamble: This paper deals with different aspects of environmental contamination, which have adverse effects on human health. It will lay emphasis on understanding mechanisms of pollutants impacting human health by developing an understanding of different types of pollutants, their sources and mitigation measures. The students will also be introduced to the concept of permissible limits.

UG-ENVS-H-CC-L -10

CREDITS: 4; Lectures-60

Unit 1: Introduction

Definition of pollution; pollutants; classification of pollutants.

Unit 2: Air pollution

Ambient air quality: monitoring and standards (National Ambient Air Quality Standards of India); air quality index; sources and types of pollutants (primary and secondary); smog (case study); effects of different pollutants on human health (NO_x , SO_x , PM, CO, CO₂, hydrocarbons and VOCs) and control measures; indoor air pollution: sources, effects on human health and remedial strategies. Vehicular pollution and control measures.

Unit 3: Water pollution

Sources of surface and ground water pollution; water quality parameters and standards; organic waste and water pollution; eutrophication; water quality monitoring, COD, BOD, DO; effect of water contaminants on human health (nitrate, fluoride, arsenic, chlorine, cadmium, mercury, pesticides); water borne diseases; concept and working of effluent treatment plants (ETPs).

Unit 4: Soil pollution

Causes of soil pollution and degradation; effect of soil pollution on environment, vegetation and other life forms; control strategies.

Unit 5: Noise pollution

Noise pollution – sources; frequency, intensity and permissible ambient noise levels; effect on communication, impacts on life forms and humans - working efficiency, physical and mental health; control measures.

Unit 6: Radioactive and thermal pollution

Radioactive material and sources of radioactive pollution; effect of radiation on human health (somatic and genetic effects); thermal pollution and its effects.

35

Unit 7: Marine pollution

Marine resources and their importance; sources of marine pollution; oil spill and its effects; coral reefs and their demise; coastal area management; existing challenges and management techniques (planning, construction, environmental monitoring of coastal zones).

Unit 8: Chemistry of environmental pollutants

Solubility of pollutants (hydrophilic and lipophilic pollutants), transfer of pollutants within different mediums, role of chelating agents in transferring pollutants, concept of biotransformation and bioaccumulation, concept of radioactivity, radioactive decay and half-life of pollutants, organometallic compounds, acid mine drainage.

Unit 9: Pollution control

Activated Sludge Process (ASP) – Trickling Filters – oxidation ponds, fluidized bed reactors, membrane bioreactor neutralization, ETP sludge management; digesters, up flow anaerobic sludge blanket reactor, fixed film reactors, sequencing batch reactors, hybrid reactors, bioscrubbers, biotrickling filters; regulatory framework for pollution monitoring and control; case study: Ganga Action Plan; Yamuna Action Plan; implementation of CNG in NCT of Delhi. Application of clean technologies for pollution control.

CORE COURSE 07 (Code: UG-ENVS-H-CC-07) ATMOSPHERE AND GLOBAL CLIMATE CHANGE

FULL MARKS: 75, CREDITS: 4 (L) + 2(P) = 06

Preamble: The paper deals with dynamics of atmospheric processes, which include its composition, meteorological phenomena and atmospheric chemistry. The paper also highlights the anthropogenic intervention in 'anthropocene', which has led to global climate change. The paper also explores effects of global changes on human communities and initiatives taken at global and regional levels to combat them.

UG-ENVS-H-CC-L -07

CREDITS: 4: Lectures-60

Unit 1: Fundamentals of atmospheric chemistry

Atmospheric structure and composition, Milankovitch cycles. Chemistry of atmospheric particles and gases; smog – types and processes; photochemical processes; ions and radicals in atmosphere; acid-base reactions in atmosphere; atmospheric water; role of hydroxyl and hydroperoxyl radicals in atmosphere. Green house gases (GHGs); greenhouse effect; global warming.

Unit 2: Meteorology and atmospheric stability

Meteorological parameters (temperature, relative humidity, wind speed and direction, precipitation); atmospheric stability and mixing heights; temperature inversion; plume behavior; Gaussian plume model.

Movement of air masses; atmosphere and climate; air and sea interaction; southern oscillation; western disturbances; *El Nino* and *La Nina*; tropical cyclone; Indian monsoon and its development, changing monsoon in Holocene in the Indian subcontinent, its impact on agriculture and Indus valley civilization; effect of urbanization on micro climate; Asian brown clouds.

Unit 3: Global warming and climate change

Earth's climate through ages; trends of global warming and climate change; drivers of global warming and the potential of different green house gases (GHGs) causing the climate change; atmospheric windows; impact of climate change on atmosphere, weather patterns, sea level rise, agricultural productivity and biological responses - range shift of species, CO₂ fertilization and agriculture; impact on economy and spread of human diseases.

Unit 4: Ozone layer depletion

Ozone layer or ozone shield; importance of ozone layer; ozone layer depletion and causes; Chapman cycle; process of spring time ozone depletion over Antarctica; ozone depleting substances (ODS); effects of ozone depletion; mitigation measures and international protocols.

Unit 5: Climate change and policy

Environmental policy debate; International agreements; Montreal protocol 1987; Kyoto protocol 1997; Convention on Climate Change; carbon credit and carbon trading; clean development mechanism.

CORE COURSE 06 (Code: UG-ENVS-H-CC-06) BIODIVERSITY AND CONSERVATION

FULL MARKS: 75, CREDITS: 4 (L) + 2(P) = 06

Preamble: This course is aimed at helping students to understand and appreciate various concepts and issues concerning biodiversity and conservation at local, regional and global levels. The course will attempt at encouraging students to appreciate the paradigm "think globally, act locally" for a sustainable common future of humankind.

UG-ENVS-H-CC-L -06

CREDITS: 4; Lectures-60

Unit 1: Levels of organization in living world

From genes to ecosystems; tree of life; history of character transformation; organic evolution through geographic time scale; species concept – what's in a name?; how many species are there on earth?; concept and types of speciation.

Unit 2: Biodiversity patterns

Spatial patterns: latitudinal and elevational trends in biodiversity; temporal patterns: seasonal fluctuations in biodiversity patterns; importance of biodiversity patterns in conservation.

Unit 3: Biodiversity estimation

Sampling strategies and surveys: floristic, faunal, and aquatic; qualitative and quantitative methods: scoring, habitat assessment, richness, density, frequency, abundance, evenness, diversity, biomass estimation; community diversity estimation: alpha, beta and gamma diversity; molecular techniques: RAPD, RFLP, AFLP; NCBI database, BLAST analyses.

Unit 4: Importance of biodiversity

Economic values – medicinal plants, drugs, fisheries and livelihoods; ecological services – primary productivity, role in hydrological cycle, biogeochemical cycling; ecosystem services – purification of water and air, nutrient cycling, climate control, pest control, pollination, and formation and protection of soil; social, aesthetic, consumptive, and ethical values of biodiversity.

Unit 5: Threats to biodiversity

Natural and anthropogenic disturbances; habitat loss, habitat degradation, and habitat fragmentation; climate change; pollution; hunting; over-exploitation; deforestation; hydropower development; invasive species; land use changes; overgrazing; man wildlife conflicts; consequences of biodiversity loss; Intermediate Disturbance Hypothesis.

Unit 6: Biodiversity Conservation

In-situ conservation (Biosphere Reserves, National Parks, Wildlife Sanctuaries); Ex-situ conservation (botanical gardens, zoological gardens, gene banks, seed and seedling banks, pollen culture, tissue culture and DNA banks), role of local communities and traditional knowledge in conservation; biodiversity hotspots; IUCN Red List categorization – guidelines, practice and application; Red Data

22

book; ecological restoration; afforestation; social forestry; agro forestry; joint forest management; role of remote sensing in management of natural resources.

Unit 7: Biodiversity in India

India as a mega diversity nation; phytogeographic and zoogeographic zones of the country; forest types and forest cover in India; fish and fisheries of India; impact of hydropower development on biological diversity; status of protected areas and biosphere reserves in the country; National Biodiversity Action Plan. Biological diversity Act & rule (2002/ 2004) implementation status.

CORE COURSE 4 (Code: UG-ENVS-H-CC-04) LAND AND SOIL CONSERVATION AND MANAGEMENT

FULL MARKS: 75, CREDITS: 4 (L) + 2(P) = 06

Preamble: This paper introduces students to the fundamentals of land and soil degradation. Each unit covers a range of topics, which will help students develop basic understanding of properties of soil and how the quality of land and soil degrades due to anthropogenic activities.

UG-ENVS-H-CC-L -04

CREDITS: 4; Lectures-60

Unit 1: Introduction

Land as a resource, soil health; ecological and economic importance of soil; types and causes of soil degradation; impact of soil loss and soil degradation on agriculture and food security; need for soil conservation and restoration of soil fertility.

Unit 2: Fundamentals of soil science

Soil formation; classification of soil; soil architecture; physical properties of soil; soil texture; soil water holding capacity; soil temperature; soil colloids; soil acidity and alkalinity; soil salinity and sodicity; soil organic matter; micronutrients of soil; nitrogen, sulphur, potassium and phosphorus economy of soil; soil biodiversity.

Unit 3: Soil degradation - causes

Soil resistance and resilience; nature and types of soil erosion; non-erosive and erosive soil degradation; losses of soil moisture and its regulation; nutrient depletion; soil pollution due to mining and mineral extraction, industrial and urban development, toxic organic chemicals, and organic contaminants in soils; fertilizers and fertilizer management; recycling of soil nutrients.

Unit 4: Landuse changes and land degradation

Land resources: types and evaluation; biological and physical phenomena in land degradation; visual indicators of land degradation; drivers of land degradation - deforestation, desertification; habitat loss, loss of biodiversity; range land degradation; land salinization; drivers of land use and land cover change in major geographic zones and biodiverse regions with particular reference to the Himalaya and the Western Ghats.

Unit 5: Costs of land degradation

Economic valuation of land degradation; onsite and offsite costs of land degradation; loss of ecosystem services; effects on farming communities; effects on food security; effects on nutrient cycles; future effects of soil degradation; emerging threats of land degradation to developing countries.

Unit 6: Controlling land degradation

Sustainable land use planning; role of databases and data analysis in land use planning control and management; land tenure and land policy; legal, institutional and sociological factors; participatory land degradation assessment; integrating land degradation assessment into conservation.

CORE COURSE 01 (Code: UG-ENVS-H-CC-01) EARTH AND EARTH SURFACE PROCESSES

FULL MARKS: 75, CREDITS: 4 (L) + 2(P) = 06

Preamble: The paper will introduce students to the basic structure and composition of the earth and will explore various surface processes and their impact and role in living systems. It will also deal with the interactive processes in the inner as well as outer Earth's surface.

UG-ENVS-H-CC-L -01

CREDITS: 4; Lectures-60

Unit 1: History of Earth

Formation of the Earth: formation and composition of core, mantle, crust, atmosphere and hydrosphere; chemical composition of earth; geological time scale and major changes on the earth's surface; holocene and the emergence of humans, role of humans in shaping landscapes; development of cultural landscapes.

Unit 2: Earth system processes

Movement of lithosphere plates; mantle convection and plate tectonics, major plates and hot spots, plate boundaries; sea floor spread; earthquakes; volcanic activities; orogeny; continental drift, Pangaea and present-day continents, paleontological evidences of plate tectonics; continental collision and mountain formation with specific example of the Himalaya.

Unit 3: Minerals and rocks

Minerals and important rock forming minerals; rock cycle: lithification and metamorphism; Three rock laws; rock structure, igneous, sedimentary and metamorphic rocks; weathering: physical, biogeochemical processes; erosion: physical processes of erosion, factors affecting erosion; agents of erosion: rivers and streams, glacial and aeolian transportation and deposition of sediments by running water, wind and glaciers.

Unit 4: Earth surface processes

Atmosphere: evolution of earth's atmosphere, composition of atmosphere, physical and optical properties, circulation; interfaces: atmosphere–ocean interface, atmosphere–land interface, ocean–land interface; land surface processes: fluvial and glacial processes, rivers and geomorphology; types of glaciers, glacier dynamics, erosional and depositional processes and glaciated landscapes; coastal processes.

Unit 5: Importance of being a mountain

Formation of Peninsular Indian mountain systems - Western and Eastern Ghats, Vindhyas, Aravallis, etc. Formation of the Himalaya; development of glaciers, perennial river systems and evolution of monsoon in Indian subcontinent; formation of Indo-Gangetic Plains.

CORE COURSE 09 (Code: UG-ENVS-H-CC-09) NATURAL RESOURCE MANAGEMENT AND SUSTAINABILITY

FULL MARKS: 75, CREDITS: 4 (L) + 2(P) = 06

Preamble: This paper takes an objective view of the nature of Earth's resources, their generation, extraction and impact of human activities on earth's environment. The students are expected to understand effective management strategies. It aims to provide an idea of effective management strategies and a critical insight of the major sustainability issues.

UG-ENVS-H-CC-L -09

CREDITS: 4; Lectures-60

Unit 1: Introduction

Resource and reserves; classification of natural resources; renewable and non-renewable resources; resource degradation; resource conservation; resource availability and factors influencing its availability; land resources; water resources; fisheries and other marine resources; energy resources; mineral resources; human impact on natural resources; ecological, social and economic dimension of resource management.

Unit 2: Natural resources and conservation

Water resources: supply, renewal, and use of water resources, freshwater shortages, strategies of water conservation; soil resources: importance of soil, soil conservation strategies; food resources: world food problem, techniques to increase world food production, green revolution. Forest resources: economic and ecological importance of forests, forest management strategies, sustainable forestry. Mineral resources and the rock cycle; identified resources; undiscovered resources; reserves; types of mining: surface, subsurface, open-pit, dredging, strip; reserve-to-production ratio; global consumption patterns of mineral resources techniques to increase mineral resource supplies; ocean mining for mineral resources; environmental effects of extracting and using mineral resources.

Unit 3: Energy resources-Non-renewable & Renewable

Oil: formation, exploration, extraction and processing, oil shale, tar sands; natural gas: exploration, liquefied petroleum gas, liquefied natural gas; coal: reserves, classification, formation, extraction, processing, coal gasification; environmental impacts of non renewable energy consumption; impact of energy consumption on global economy; application of green technology; future energy options and challenges.

Energy efficiency; life cycle cost; cogeneration; solar energy: technology, advantages, passive and active solar heating system, solar thermal systems, solar cells, JNN solar mission; hydropower: technology, potential, operational costs, benefits of hydropower development; nuclear power: nuclear fission, fusion, reactors, pros and cons of nuclear power, storage of radioactive waste, radioactive contamination; tidal energy; wave energy; ocean thermal energy conversion (OTEC); geothermal energy; energy from biomass; bio-diesel.

33

Unit 4: Resource management

Approaches in resource management: ecological approach; economic approach; ethnological approach; implications of the approaches; integrated resource management strategies; concept of sustainability science: different approach towards sustainable development and its different constituents; sustainability of society, resources and framework; sustainable energy strategy; principles of energy conservation; Indian renewable energy programme.

CORE COURSE 03 (Code: UG-ENVS-H-CC-03)

WATER AND WATER RESOURCES

FULL MARKS: 75, CREDITS: 4 (L) + 2(P) = 06

Preamble: The paper introduces students to the hydrological cycle, properties of water, physicochemical and biological water quality assessment and indices, types of water resources, their use and management. It will also highlight the problems associated with water shortages in India and familiarizes students with case studies on international and national conflicts on water.

UG-ENVS-H-CC-L -03

CREDITS: 4; Lectures-60

Unit 1: Introduction

Sources and types of water; hydrological cycle; precipitation, runoff, infiltration, evaporation, evapotranspiration; classification of water resources (oceans, rivers, lakes and wetlands).

Unit 2: Properties of water

Physical: temperature, colour, odour, total dissolved solids and total suspended solids; Chemical: major inorganic and organic constituents, dissolved gases, DO, COD, BOD, acidity and alkalinity, electrical conductivity, sodium adsorption ratio; Biological: phytoplankton, phytobenthos, zooplankton, macro-invertebrates and microbes.

Unit 3: Surface and subsurface water

Introduction to surface and ground water; surface and ground water pollution; water table; vertical distribution of water; formation and properties of aquifers; techniques for ground water recharge; river structure and patterns; watershed and drainage basins; importance of watershed and watershed management; rain water harvesting in urban settings.

Unit 4: Wetlands and their management

Definition of a wetland; types of wetlands (fresh water and marine); ecological significance of wetlands; threats to wetlands; wetland conservation and management; Ramsar Convention, 1971; major wetlands of India.

Unit 5: Marine resource management

Marine resources; commercial use of marine resources; threats to marine ecosystems and resources; marine ecosystem and resource management (planning approach, construction techniques and monitoring of coastal zones).

Unit 6: Water resource in India

Demand for water (agriculture, industrial, domestic); overuse and depletion of surface and ground water resources; water quality standards in India; hot spots of surface water; role of state in water resource management.

14

Unit 7: Water resource conflicts

Water resources and sharing problems, case studies on Kaveri and Krishna river water disputes; Multipurpose river valley projects in India and their environmental and social impacts; case studies of dams.

- Narmada and Tehri dam – social and ecological losses versus economic benefits; International conflicts on water sharing between India and her neighbours; agreements to resolve these conflicts.

Unit 8: Major laws and treaties

National water policy; water pollution (control and prevention) Act 1972; Indus water treaty; Ganges water treaty; Teesta water treaty; National River linking plan: ecological and economic impacts.

UNIVERSITY OF KALYANI

Syllabus forB.A./B.Sc.(Honours)Course

in

Geography

Cross cutting issues in Geography

SEMESTER-II

CORECOURSE (CC):

GEO/H/CC/T/03:(Theory):HumanGeography

Unit-1:NatureandPrinciples

- 1. Introduction:DefiningHumanGeography;MajorThemes;ContemporaryRelevance
- 2. EvolutionofHumans; ConceptofRaceandEthnicity; MajorRacialGroups oftheWorld
- 3. Space, Society and Cultural Regions (Language and Religion)
- 4. Concept:Culture,CulturalDiffusion,Community,Society,Cultural Realms

Unit-2:Society, Demographyand Ekistics

- 1. EvolutionofHumanSociety:HuntingandGathering,PastoralNomadism,Subsistence Farming, Industrial and Urban Society
- 2. PopulationGrowthandDistribution,PopulationComposition;DemographicTransition Model
- 3. Population-ResourceRegions(Ackerman)
- PopulationandEnvironmentRelationswithspecialreferencetoDevelopment– Environment Conflict
- 5. SocialMorphologyandRuralHouseTypesinIndia
- 6. TypesandPatternsofRuralSettlements
- 7. FunctionalClassificationofUrbanSettlements
- 8. TrendsandPatternofWorld Urbanization

ReferenceBooks:

- Bergman, E.F., 1995: HumanGeography-Culture, Connections and Landscape, Prentice Hall, New Jersey
- Chandna,R.C.,2016:GeographyofPopulation-Concepts,DterminantsandPatterns, Kalyani publishers
- Chisholm, 1975: HumanGeography, PenguinBooks, Hermondsworth
- Daniel, P.A., and Hopkinson, M.F., 1989: The Geography of Settlement, Oliver & Boyd, London
- Hussain, M., 2011: HumanGeography, Rawatpublication, Jaipur
- Johnston, R., Gregory, D., Pratt, G. et al., 2008: The Dictionary of Human Geography, Blackwell Publication
- Jordan-Bychkov,etal.,2006:TheHumanMosaic:AThematicIntroductiontoCultural Geography, W. H. Freeman and Company, New York
- Pearce, D., 1995: TourismToday: AGeographical Analysis, 2nd edition, Longman Scientific & Technical, London
- Pickering,K.,andOwen,A.A.,1997:AnIntroductiontoGlobalEnvironmentalIssues,2nd edition, Rutledge, London
- Raw,M.,1986:UnderstandingHumanGeography:APracticalApproach,BellandHyman. London
- Rubenstein, J.M., 2002: The Cultural Landscape, 7th edition, Prentice Hall, Englewood Cliffs
- Smith, D.M., 1982: HumanGeography: AWelfareApproach, EdwardArnold, London

6 Credits

2Credits

4Credits

CC/04: Cartograms, Survey and Thematic Mapping

<u>6Credits</u>

<u>GEO/H/CC/T/04</u>:(Theory):Cartograms,SurveyandThematicMapping <u>4 Credits</u>

- 1. ConceptsofCartogramsandThematicMaps
- 2. ConceptandUtilityof IsoplethandChoropleth
- 3. Concept, utility and Interpretation of: Climograph, Hythergraph and Ergograph
- 4. PreparationandInterpretationofDemographicChartsandDiagrams(Age-Sex Pyramid)
- 5. ConceptsofBearing:MagneticandTrue,Whole-circleandReduced
- 6. BasicConceptsofSurveyingand SurveyEquipments:AbneysLevel, Clinometer
- 7. BasicConceptsofSurveyingandSurveyEquipments:PrismaticCompass,DumpyLevel, Transit Theodolite
- 8. InterpretationofLanduseandlandcovermaps

<u>GEO/H/CC/P/04</u>:(Practical):Cartograms,SurveyandThematicMapping <u>2 Credits</u>

- 1. DiagrammaticRepresentationof Data:StarandAge-sex PyramidDiagram, Pie Diagram
- 2. RepresentationofDataonMapbyProportionalCircles,DotsandSpheres, Isolinesand Choropleth method
- 3. Survey:TraversingbyPrismaticCompassandDumpyLevelwithOneChangePoint (Profile Drawing)
- 4. DeterminationofHeightof ObjectsusingTransitTheodolite(Accessiblebases)

*AProjectFileofexercisesconsistingofeachthemeistobesubmitted Reference

Books:

- Cuff,J.D.,andMattson,M.T.,1982:ThematicMaps:TheirDesignandProduction, Methuen Young Books
- Dent,B.D.,Torguson,J.S.,andHolder,T.W.,2008:Cartography:ThematicMapDesign (6th Edition), Mcgraw-Hill Higher Education
- Gupta,K.K.,andTyagi,V.C.,1992:WorkingwithMaps, SurveyofIndia,DST,NewDelhi
- 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: The matic Cartography and Geovisualization (3rd Edition), Prentice Hall
- Tyner, J.A., 2010: Principles of MapDesign, The Guilford Press
- Sarkar, A., 2015: Practical Geography: Asystematic approach. Orient Black Swan Private Ltd., New Delhi

OR GEO/H/GE/T/02/B:(Theory):Regional Development

6 Credits

- 1. DefinitionofRegion,Evolution,TypesandNeedofRegionalplanning:Formal, Functional and Planning Regions and Regional Development
- 2. Regional ImbalancesandProblemsof FunctionalRegions
- 3. ChoiceofaRegionforPlanning:CharacteristicsofanIdealPlanningRegion;Delineation of Planning Region; Regionalization of India for Planning (Agro Ecological Zones)
- 4. Strategies/ModelsforRegionalPlanning:GrowthPoleModelofPerroux;GrowthCentre Model in Indian Context; Village Cluster
- 5. ProblemRegionsandRegionalPlanning:BackwardRegionsandRegionalPlans-Special Area Development Plans in India; DVC-The Success Story and the Failures
- 6. ConceptofHumanDevelopmentandHDI(HumanDevelopmentIndex)

ReferenceBooks:

- 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 LevelPlanningin India. KBPublication,Delhi
- DeshpandeC.D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.
- DrezeJ.andA.Sen,IndianDevelopment:SelectRegionalPerspectives(Oxford: Oxford University Press, 1996).
- Rapley, John., 2007: Understanding Development: Theory and Practice in the 3rd World. Lynne Rienner, London.
- Raza, M., Ed., 1988: Regional Development. Contributions to Indian Geography. New Delhi, Heritage Publishers.
- Schmidt-Kallert, Einhard., 2005: A Short Introduction to Micro-Regional Planning, Food and Agriculture Organization of the United Nations (FAO) at
- Sdyasuk Galina and P Sengupta., 1967: *Economic Regionalisation of India*, Census of India
- Ses, Amratya., 2000: Developmentas Freedom. Random House, Toronto

SEMESTER-IV

CORECOURSE (CC):

GEO/H/CC/T/08: (Theory): Regional Planning and Development

Unit-I:Regional Planning

- 1. Conceptofregion, Types and delineation: Formal, functional and planning regions
- $2. \ Types of planning, principles and techniques of regional planning$
- 3. Needsofregionalplanning, multilevelplanninginIndia
- 4. Conceptofmetropolitanandurbanagglomerations;RegionalisationofIndiaforplanning (Agro-Ecological Zones)

6Credits

2 Credits

Unit-II:RegionalDevelopment

- 1. Development:Meaning,growthversus development
- 2. Theoriesandmodelsforregionaldevelopment:GrowthpolemodelofPerroux;growth foci model in Indian context (R.P. Misra)
- 3. Theories and models for regional development: Cumulative causation (Myrdal), Core periphery (Hirschman, Rostow and Friedman)
- 4. Changingconceptofdevelopment;conceptofunderdevelopment
- 5. ConceptandindicatorsofregionalimbalancesinIndia
- 6. Significanceofbalanced developmentinIndia
- 7. Humandevelopment:Significance,IndicatorsandMeasurement

ReferenceBooks:

- Berry, BJ.L. and Horton, F.F. (1970): Geographic Perspectives on Urban Systems. PrenticeHall, New Jersey.
- BhatL.S.(1972):RegionalPlanninginIndia,StatisticalPublishingSociety
- BlijH.J.De,(1971):Geography:RegionsandConcepts,JohnWileyand Sons.
- Chand, MandPuriV.K. (1983): Regional planning in India, allied publishers, New Delhi
- Claval P.I,(1998): AnIntroductiontoRegional Geography,BlackwellPublishers,Oxfordand Massachusetts.
- Dickinson, R.E. (1964): Cityandregion, Rutledge, London.
- Datta,R.andSundaraman,K.P.M.(2018):IndianEconomy,S.Chand,India.
- 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;EssaysontheTheory,PoliciesandPracticeofDevelopment Intervention,Metropolis-Verlag, Marburg.
- Hall,P.(1992):UrbanandRegionalPlanning,Routledge,London.
- HaynesJ.(2008):DevelopmentStudies,PolityShortIntroduction Series.
- JohnsonE.A.J.(1970): The Organization of Space in Developing Countries, MITPress, Massachusetts.
- Kulshetra, S.K., (2012): Urban and Regional Planning in India: A hand book for Professional Practioners, Sage Publication, New Delhi
- Kundu, A. (1992): UrbanDevelopment UrbanResearchinIndia, KhannaPubl. NewDelhi.
- Misra, R.P, Sundaram K.V, Prakash Rao, VLS (1974): Regional Development Planning in India, Vikas publication, New Delhi
- Misra,R.P(1992):RegionalPlanning:Concepts,techniques,PoliciesandcaseStudies, Concept, New Delhi
- PeetR.(1999):TheoriesofDevelopment,TheGuilfordPress,NewYork.
- UNDPHumanDevelopmentReport,OxfordUniversityPress.
- WorldDevelopmentReport,WorldBank,OxfordUniversityPress.

GEO/H/CC/T/10 (Environmental Geography)

- 1. Perceptionofenvironmentindifferentstagesofcivilization
- 2. Conceptofholisticenvironment;conceptof EIA
- 3. Ecosystem:concept,structureandfunctions
- 4. Environmentalpollutionanddegradation:Land,waterandair
- 5. Environmentalissuesrelatedto agriculture
- 6. Urbanenvironmentalissueswithspecialreferencetowastemanagement
- 7. Environmentalprogrammesandpolicies:global(Earthsummit,1992;Montrealand Kyoto protocols), national and local levels.

GEO/H/CC/P/10:(Practical):EnvironmentalGeography

- 1. Preparationofquestionnaireforperceptionsurveyonenvironmental problems
- 2. Environmentalmapping;Qualityassessmentof soilusingfieldkit: pHandNPK
- 3. Interpretationofair qualityusingCPCB/WBPCBdata
- 4. Aproject file consistingoftwo exerciseeach istobesubmitted.

*AProject Fileofexercisesconsisting of eachthemeistobe submitted

ReferenceBooks:

- ChandnaR.C.(2002):EnvironmentalGeography,Kalyani,Ludhiana.
- CunninghumW.P.andCunninghumM.A.(2004):PrincipalsofEnvironmentalScience: Inquiry and

2 Credits

7

Applications, Tata Macgraw Hill, New Delhi.

- GoudieA.(2001):TheNatureoftheEnvironment,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 and Forests, 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.
- SinghS.(1997):EnvironmentalGeography,PrayagPustakBhawan. Allahabad.
- UNEP (2007): Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme.
- Singh, R.B. (1998): Ecological Techniques and ApproachestoVulnerable Environment, New Delhi, Oxford & IBH Pub.

SEMESTER-V

GEO/H/DSE/T/02/A:(Theory):Population Geography

Unit-I

- 1. Development of Population Geography as a field of specialization; Relation between population geography and demography; Sources of population data with special reference to India (Census, Vital statistics and NSS)
- 2. World patterns determinants of population distribution and growth; Concept of optimum population
- 3. Demographic Transition Model; Theories of population growth: Malthusian and Marxian theory
- 4. Populationdistribution, density and growth profile in India

Unit-II

- 1. PopulationCompositionandCharacteristics:Age-Sex Pyramid;Female-Male Ratio
- 2. DeterminatemeasuresofFertilityandMortality
- 3. PopulationCompositionofIndia:RuralandUrban,OccupationalStructureasper Census of India
- 4. Migration: Theories, Causes and Types
- 5. ConceptofHumanDevelopmentIndex
- 6. Populationanddevelopment:population-resource regions
- 7. PopulationpoliciesinSelectedCountries: IndiaandChina
- 8. ContemporaryIssuesinPopulation:HealthandUnemployment

6 Credits

4 Credits

2 Credits

ReferenceBooks:

- BarrettH.R.,1995:PopulationGeography,OliverandBoyd.
- BhendeA.andKanitkarT.,2000:PrinciplesofPopulationStudies,HimalayaPublishing House.
- ChandnaR.C.andSidhuM.S.,1980:AnIntroductiontoPopulationGeography,Kalyani Publishers.
- ClarkeJ.I., 1965: Population Geography, Pergamon Press, Oxford.
- Jones, H.R., 2000: Population Geography, 3rded. Paul Chapman, London.
- LutzW.,WarrenC.S.andScherbovS.,2004:TheEndoftheWorldPopulationGrowthin the 21st Century, Earthscan
- MauryaSD(2009)JansankyaBhugol,ShardaPutakBhawan, Allahabad
- NewboldK.B.,2009:PopulationGeography:ToolsandIssues,RowmanandLittlefield Publishers.
- PacioneM., 1986: PopulationGeography: Progress and Prospect, Taylor and Francis.
- PandaBP(1988):JanasankyaBhugol,MPHindiGranth Academy,Bhopal
- WilsonM.G.A., 1968: PopulationGeography, Nelson.

UNIVERSITYOFKALYANI

SyllabusforB.A/B.Sc.(General/Program)Course in Geography

Cross cutting issues in Geography

B.A./B.Sc.(General/Program)CourseinGeography

SEMESTER-II

CC/02: Climatology, Soil and Biogeography and Surveying and Levelling

	6Credits
<u>GEO/G/CC/T/02</u> :(Theory):Climatology,SoilandBiogeography	4 Credits
1. ElementsofWeatherandClimate;ThermalandChemicalCompositionand Layering Atmosphere	gofthe
2. HeatBalance, PressureBeltandPlanetaryWindCirculationSystem	
3. FormsofPrecipitationandTypesofRainfall	
4. TropicalandTemperateCyclones,ClimaticClassification(Koppen)	
- 5. DefinitionofSoil;PhysicalandChemicalPropertiesofSoil(SoilTexture, ColourandpH)
- 6. SoilFormingFactors;SoilFormation(PodzolandLaterite)
- 7. DefinitionofBiosphereandBiogeography;MeaningofEcology,Ecosystem,Environment, Ecotone, Communities, Habitats and Biotopes
- 8. EnvironmentalProblemsandManagement:AirPollution,Bio-diversityLoss,Solidand

Liquid Waste

ReferenceBooks:

- Barry, R.G., and Carleton, A.M., 2001: Synoptic and Dynamic Climatology, Routledge, UK
- Barry, R.G., and Chorley, R.J., 1998: Atmosphere, Weather and Climate, Routledge, New York
- Critchfield, H.J., 1987: General Climatology, Prentice-HallofIndia, 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

GEO/G/CC/P/02:(Practical):SurveyingandLevelling

- 1. DefinitionandClassification of Surveying
- 2. Open and Close TraversingbyPrismaticCompass
- 3. DrawingofLongitudinalProfilebyDumpyLevel

ReferenceBooks:

- Singh, R.L., and Singh, R.P.B., 1999: Elements of Practical Geography, Kalyani Publishers
- Sarkar, A., 2015: Practical Geography: ASystematic Approach. Orient Black Swan Private Ltd., New Delhi

B.A./B.Sc.(General/Program)CourseinGeography

SEMESTER-III

CC/03:Human Geography and Map Projection and Map Interpretation

	6Credits
<u>GEO/G/CC/T/03</u> :(Theory):Human Geography	<u>4 Credits</u>
1. Definition, Nature, MajorSubfields, Contemporary Relevance	
2. SpaceandSociety:CulturalRegions;Race;Religionand Language	
3. Population:PopulationGrowthandDemographicTransitionTheory	
4. TypesofPopulationMigrationwithReferencetoIndia	
5. WorldPopulationDistributionandComposition(Age,Gender andLiteracy)	
6. Settlements:TypesandPatternsofRuralSettlements	

2 Credits

7. ClassificationofUrbanSettlements;FunctionalClassificationof Towns

ReferenceBooks:

- Chandna, R.C., 2010: Population Geography, Kalyani Publisher
- 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-Bychkovetal.,2006:TheHumanMosaic:AThematicIntroductiontoCultural Geography. W. H. Freeman and Company, New York
- $\bullet \quad Ghosh, S., 2015: Introduction to Settlement Geography. Orient Black Swan Private Ltd., Kolkata$

<u>GEO/G/CC/P/03</u>:(Practical):MapProjectionandMapInterpretation

2 Credits

- 1. SimpleConical ProjectionwithOneStandardParallel
- 2. CylindricalEqualAreaProjection
- 3. InterpretationofTopographicalMaps:relationbetweenPhysiography,Drainageand Settlement
- 4. InterpretationofWeatherMaps (Pre-Monsoon, MonsoonandPostMonsoon)

ReferenceBooks:

- Dent, B.D., 1999: Cartography: Thematic MapDesign, (Vol.1), McGrawHill
- Gupta,K.K.,andTyagi,V.C.,1992:WorkingwithMaps,SurveyofIndia,DST,NewDelhi
- 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
- Steers, J.A., 1965: An Introduction to the Study of Map Projections, University of London

SEMESTER-IV

CC/04:Environmental Geography and Field Work 6 Credits

CORECOURSE (CC):

<u>GEO/G/CC/T/04:</u>(Theory):Environmental Geography

4 Credits

- 1. ConceptsandapproachesofEnvironmentalGeography
- 2. Concept, Structure and Functions of Ecosystem
- DefinitionofBiosphere,MeaningofEcology,Econtone,Habitat,Community,Ecological Niche, Biotopics and Biomes
- 4. EnviromentalProblemsandManagement: Air and Water Pollution
- 5. EnvironmentalProgrammesandPolicies:MAB
- 6. Wetlands:RamsarSitesinIndia
- 7. Human-EnvironmentRelationshipinMountainandCoastal Regions

GEO/G/CC/P/04:(Practical):FieldWork

2 Credits

- 1. Preparation of SurveySchedule or Questionnaire for Air Pollution and Health Perception Survey
- 2. MappingofWetlandsfromTopographicalSheet
- 3. MappingofForestfrom TopographicalSheet

ReferenceBooks:

- CasperJ.K.(2010):ChangingEcosystems:EffectsofGlobalWarming.InfobasePub. 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):EnvironmentalGeography,HeritagePublishers,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.andHietala,R.(Eds.)(2014):LivelihoodsecurityinNorthwesternHimalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer

GE/02: Sustainable Development

6 Credits

GEO/G/GE/T/02: (Theory): Sustainable Development 6 Credits 1. Sustainable Development: Historical Background, Definition, Components, Limitations 2. Sustainable Regional Development: Need and examples from different Ecosystems 3. Inclusive Development: Education and Health 4. Climate change and sustainable development: Policies and global cooperation 5. Poverty and disease; Human right to health; Challenges of Universal Health Coverage 6. Sustainable Development Policies and Programmes: The proposal for SDGs at Rio+20; Illustrative SDGs; Goal-Based Development 7. Sustainable Development: Financial issues 8. Good Governance for sustainable development 9. National Environmental Policy, Clean development mechanism 10. Sustainable regional resource development and livelihood security

<mark>19</mark>

Reference Books: 2 Agyeman, Julian, Robert D. Bullard and Bob Evans (Eds.) (2003): Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.). 2 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. 2 Baker, Susan (2006): Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge. (Chapter 2, "The concept of sustainable development"). 2 Brosius, Peter (1997): "Endangered forest, endangered people: Environmentalist representations of indigenous knowledge", Human Ecology 25: 47-69. 2 Lohman, Larry (2003): "Re-imagining the population debate". Corner House Briefing 28. 2 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. 2 Merchant, Carolyn (Ed.) (1994): Ecology. Atlantic Highlands, N.J: Humanities Press. (Introduction, pp 125.) 2 Osorio, Leonardo et al (2005): "Debates on sustainable development: towards a holistic view of reality". Environment, Development and Sustainability 7: 501-518. 2 Robbins, Paul (2004): Political Ecology: A Critical Introduction. Blackwell Publishing. 2 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. <u>OR</u>

1.3.1 Crosscutting Issues in the CBCS Syllabi

Name of the Department:HISTORY.....

Crosscutting Issues Related	Paper Code	Specific Topic as in the Syllabi
to– Professional Ethics.	NA	NA
Gender	DSC-T-3, GE-1.	Empowerment of Women,Political Participation &Women Women.Women Movement
Human Values	HIST- CC-1 CC -1 1, CCIV,CC-VI, CC- <u>X,CC-XI,. CC-XIV.</u>	Sprititual& Material of Ajivikism , <u>Vaisnavism, Jainism ,</u> <u>Budhism,</u> Sufism. Cultural Reformation in Bengal &India, <u>Suddhi Movement, Arjo</u> <u>Samaj, Bramah Samaj-</u> <u>Dayananda</u> Saraswati,Rammohon,Keshab Chandra,PrarthanaSamaj,Aligarh Movement, <u>Atma sakti</u> <u>Movement of</u> <u>Tagore,Vivekananda.</u> Satyagrah of Gandhiji. HumanRights.
Environment & Sustainability	Value Added <u>Courese.</u>	Development of wild lifeðnic Comonities of Rural India.

Detail Course & Contents of Mathematics (Honours) syllabus

B.A./B.Sc. Mathematics (Honours) SEMESTER-I Course: MATH-H-CC-T-01 Course title: Calculus & Analytical Geometry Core Course; Credit-6; Full Marks-75

COURSE CONTENT:

6 Credits (5+1) (Theory + Tutorial)

Unit 1.

[25L]

[16L]

[30L]

- Hyperbolic functions and its derivative, higher order derivatives, Leibnitz rule and its applications to problems of type $e^{ax+b}sinx$, $e^{ax+b}cosx$, $(ax + b)^nsinx$, $(ax + b)^ncosx$.
- Pedal equations.
- Curvature, radius of curvature, centre of curvature, circle of curvature
- Asymptotes.
- Singular points, concavity and inflection points.
- 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 $\int \sin^n x \, dx$, $\int \cos^n x \, dx$, $\int \tan^n x \, dx$, $\int \sec^n x \, dx$, $\int (\log x)^n dx$, $\int \sin^n x \cos^m x \, dx$.
- 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.

- Transformation of coordinate axes, pair of straight lines, reflection properties of conics, canonical form second degree equations, classification of conics using the discriminant, polar equations of conics.
- Straight lines in 3D, sphere, cylindrical surfaces. central conicoids, paraboloids, plane sections of conicoids, generating lines, classification of quadrics, illustrations of graphing standard quadric surfaces like cone, ellipsoid.

Graphical Demonstration (Teaching Aid)

- 1. Plotting of graphs of function e^{ax+b} , log(ax + b), $\frac{1}{(ax + b)}$, 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 polynomials of degree 4 and 5, the derivative graph, the second derivative graph and comparing them.
- 3. Sketching parametric curves (e.g., trochoid, cycloid, epicycloids, hypocycloid).
- 4. Obtaining the surface of the 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.

[4L]

B.A./B.Sc. Mathematics (Honours) SEMESTER-III Course: MATH-H-CC-T-05 Course title: Theory of Real & Vector Functions Core Course; Credit-6; Full Marks-75

COURSE CONTENT:

6 Credits (5+1) (Theory + Tutorial)

[20L]

[20L]

[10L]

- Unit 1: [25L]
 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, neighbourhood property. Sequential criterion for continuity and discontinuity. Algebra of continuous functions. Continuous functions on an interval,
 - Bolzano's Theorem, 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.
- Darboux's theorem.

Unit 3.

- Rolle's theorem.
- Lagrange's and Cauchy's mean value theorems.
- Taylor's theorem with Lagrange's and Cauchy's forms of remainder.
- Application of Taylor's theorem to convex functions.
- Applications of mean value theorem to inequalities and approximation of polynomials.
- Relative extrema, interior extremum theorem.
- Taylor's series and Maclaurin's series expansions of exponential and trigonometric functions,
 - $log (1+x), \frac{1}{ax+b}, (1+x)^n.$
- Application of Taylor's theorem to inequalities.

Unit 4.

- Vector products.
- Introduction to vector functions, operations with vector-valued functions.
- Limits and continuity of vector functions.
- Differentiation and integration of vector functions of one variable $(\int_a^b \vec{f(t)} dt)$.
- Gradient, divergence, curl of vector functions.

SUGGESTED READINGS/REFERENCES:

- 1. R. Bartle and D.R. Sherbert, Introduction to Real Analysis, John Wiley and Sons.
- 2. K. A. Ross, Elementary Analysis: The Theory of Calculus, Springer.

SUGGESTED READINGS/REFERENCES:

- 1. D. S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of Abstract Algebra, McGraw-Hill.
- 2. John B. Fraleigh, A First Course in Abstract Algebra, Pearson.
- 3. M. Artin, Abstract Algebra, Pearson.
- 4. Joseph A. Gallian, Contemporary Abstract Algebra, Narosa Publishing House, New Delhi.
- 5. Joseph J. Rotman, An Introduction to the Theory of Groups, Springer Verlag.
- 6. R. K. Sharma, S. K. Shah and A. G. Shankar, Algebra-I, Pearson.
- 7. U. M. Swamy, A.R.S.N. Murthy, Algebra, Pearson.
- 8. I. N. Herstein, Topics in Algebra, Wiley Eastern Limited, India.

B.A./B.Sc. Mathematics (Honours) SEMESTER-III Course: MATH-H-CC-T-07 Course title: Numerical Methods (Theory) & Numerical Methods Lab Core Course; Credit-6; Full Marks-75

Numerical Methods (Theory)

COURSE	E CONTENT:		6 Credits (4+2)	(Theory + Practical)
Unit 1.				[10L]
•	Algorithms, convergence, errors, relative, absolu	te, round-off, truncation	errors.	
•	Interpolation, Lagrange and Newton's methods.	Error bounds. Finite diff	erence operator	s. Gregory forward
	and backward difference interpolation. Cent	ral difference interpolat	tion formula: S	tirling and Bessel
	interpolation			
•	Numerical differentiation, methods based on inte	erpolations, methods bas	ed on finite diffe	rences.
Unit 2.				[10L]
•	Numerical integration, Newton Cotes formula, T	rapezoidal rule, Simpson	's 1/3rd rule, Sir	npson's 3/8th rule,
	Weddle's rule, Boole's rule. Midpoint rule, co	mposite trapezoidal rule	, composite Sin	ipson's 1/3rd rule,
	Gauss quadrature formula.			
Unit 3.				[10L]
•	Transcendental and polynomial equations, bisect	<mark>ion method, Newton's</mark> m	nethod, secant m	ethod, Regula-Falsi
	method, fixed point iteration, Newton-Raphson r	method, rate of converge	nce of these met	hods.
•	System of linear algebraic equations, Gaussian el	imination and Gauss Jorc	dan methods, Ga	uss Jacobi method,
	Gauss Seidel method and their convergence anal	ysis, LU decomposition		
Unit 4.				[10L]
•	The algebraic eigenvalue problem, power metho	d.		
•	Approximation, least square polynomial approxir	nation.		

Unit 5:

Ordinary differential equations: The method of successive approximations, Euler's method, the modified Euler method, Runge-Kutta methods of orders two and four.

LIST OF PRACTICAL PROBLEMS (Using 'C' or Python programming)

[Two experiments are to be performed in the presence of External Examiner(s) (Marks: 7.5x2) and Viva (Marks: 5)]

(A practical note book must be maintained as a part of Internal Assessment)

(i) Calculate the sum of infinite convergent series.

(ii) Find the absolute value of an integer.

(iii) Enter 100 integers into an array and sort them in an ascending order.

(iv) Bisection Method.

(v) Newton Raphson Method.

(vi) Secant Method.

(vii) Regula-Falsi Method.

(viii) LU decomposition Method.

(ix) Gauss-Jacobi Method.

(x) SOR Method or Gauss-Seidel Method.

(xi) Lagrange's Interpolation

(xii) Trapezoidal Rule.

(xiii) Simpson's rule.

SUGGESTED READINGS/REFERENCES:

- 1. Scarborough, James B., Numerical Mathematical Analysis, Oxford and IBH publishing co.
- 2. M.K. Jain, S. R. K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering, New Age International Publishers.
- 3. S. S. Sastry, Introductory Methods of Numerical Analysis, PHI.
- 4. Brian Bradie, A Friendly Introduction to Numerical Analysis, Pearson Education, India.
- 5. C. F. Gerald and P. O. Wheatley, Applied Numerical Analysis, Pearson Education, India.
- 6. Uri M. Ascher and Chen Greif, A First Course in Numerical Methods, PHI Learning Private Limited.
- 7. P. S. Das, C. Vijayakumari, Numerical analysis, Pearson.
- 8. John H. Mathews and Kurtis D. Fink, Numerical Methods using Matlab, PHI Learning Private Limited.

[10L]

[25L]

B.A./B.Sc. Mathematics (Honours) SEMESTER-IV Course: MATH-H-CC-T-10 Course title: Linear Programming Problems & Game Theory Core Course; Credit-6; Full Marks-75

COURSE CONTENT:

6 Credits (5+1) (Theory + Tutorial)

Unit 1.

[10L]

[20L]

[25L]

[20L]

- Introduction to linear programming problems. Mathematical formulation of LPP. Graphical solution.
- Convex sets. Basic solutions (B.S.) and non-basic solutions. Reduction of B.F.S from B.S.

Unit 2

•

- 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.

Unit 3.

- Transportation problem and its mathematical formulation, northwest-corner method, least cost method and Vogel approximation method for determination of initial basic solution. Algorithms for solving transportation problems.
- Assignment problem and its mathematical formulation, Hungarian method for solving assignment problems.
- Travelling Salesman Problems.

Unit 4.

- Game theory: Formulation of two-person zero sum games.
- Solving two persons zero sum games. Games with mixed strategies. Graphical solution procedure.
- Solving game using simplex algorithm.

SUGGESTED READINGS/REFERENCES:

- 1. Hamdy A. Taha, Operations Research, An Introduction, Prentice-Hall India.
- 2. G. Hadley, Linear Programming, Narosa Publishing House, New Delhi.
- 3. Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, Linear Programming and Network Flows, John Wiley and Sons, India.
- 4. F. S. Hillier and G. J. Lieberman, Introduction to Operations Research, Tata McGraw Hill, Singapore.
- 5. S. I. Gass, Linear Programming: Methods and Applications, Dover Publications.
- 6. T. Veerarajan, Operations Research, University Press.
- 7. K. Swarup, P. K. Gupta and Man Mohan, Operations Research, Sultanchand.

B.A./B.Sc. Mathematics (Honours) SEMESTER-V Course: MATH-H-CC-T-12 Course title: Mechanics-I Core Course; Credit-6; Full Marks-75

COURSE CONTENT:

Unit-1:

6 Credits (5+1) (Theory + Tutorial)

- Motion in a straight line, motion under attractive and repulsive forces, motion under acceleration due to gravity.
- Simple harmonic motion, horizontal oscillation, composition of two S.H.M.'s, damped harmonic motion, forced oscillation, damped forced oscillation.
- Motion in a resisting medium: Vertical and curvilinear motion in a resisting medium.
- Motion of varying mass: Equations of motion.

Unit-2:

- Work, Power and Energy: Definitions. Work done in stretching an elastic string.
- Conservative forces. Conservation of energy.
- Impulse and impulsive forces: Impulse of a force. Impulsive forces. Conservation of linear momentum.
- Collision of elastic bodies: Elasticity. Impact of smooth bodies. Impact on a fixed plane. Direct and oblique impact of two smooth spheres. Loss of kinetic energy. Angle of deflection.

Unit-3:

[20L]

[10L]

[15L]

- Motion in a Plane: Velocity and acceleration of a particle moving on a plane in Cartesian and polar coordinates. Motion of a particle moving on a plane refers to a set of rotating rectangular axes. Angular velocity and acceleration. Circular motion. Tangential and normal accelerations.
- Central orbit: Characteristics of central orbits. Areal velocity. Law of force for elliptic, parabolic and hyperbolic orbits. Velocity under central forces. Orbit under radial and transverse accelerations. Stability of nearly circular orbits.
- Planetary motion: Newtonian law. Orbit under inverse square law. Kepler's laws of planetary motion. Time of description of an arc of an elliptic, parabolic and hyperbolic orbit. Effect of disturbing forces on the orbit. Artificial satellites: Orbit round the earth. Parking orbits. Escape velocity.

Unit-4:

[30L]

- Degrees of freedom. Moments and products of inertia: Moment of inertia (M.I) and product of inertia (P.I.) of some simple cases. M.I. about a perpendicular axis. Routh's rule. M.I. about parallel axes. M.I. about any straight line. M.I. of a lamina about a straight line in its plane. Momental ellipsoid. Equi-momental systems.
- General equations of motion: D'Alembert's principle and its application to deduce general equations of motion of a rigid body. Motion of the centre of inertia (C.I.) of a rigid body. Motion relative to C.I.
- Motion about an axis: Rotation of a rigid body about a fixed body. Equation of motion. K.E. of the body rotating about an axis. Compound pendulum and its minimum time of oscillation.

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) $u(x,0) = \phi(x), u(o,t) = a, u(l,t) = b, 0 < x < l, t > 0.$
 - (b) $u(x,0) = \phi(x), x \in R, 0 < t < T.$

SUGGESTED READINGS/REFERENCES:

- 1. I. N. Sneddon, Elements of Partial Differential Equations, McGraw Hill.
- 2. L. C. Evans, Partial Differential Equations, American Mathematical Society Press.
- 3. P. J. Oliver, Introduction to Partial Differential Equations, Springer.
- 4. Tyn Myint-U and Lokenath Debnath, Linear Partial Differential Equations for Scientists and Engineers, Springer.
- 5. S. L. Ross, Differential Equations, John Wiley and Sons.
- 6. M. L. Abell, J. P. Braselton, Differential Equations with MATHEMATICA, Elsevier Academic Press.
- 7. F. H. Miller, Partial Differential Equations, John Wiley and Sons.
- 8. G. B. Folland, Introduction to Partial Differential Equations, Princeton University Press.
- 9. J. L. Schiff, The Laplace Transform: Theory and Applications, Springer.
- 10. D. V. Widder, The Laplace Transform, Dover Publications Inc.
- 11. M. Spiegel, Schaum's Outline of Laplace Transforms, McGraw-Hill Education.

B.A./B.Sc. Mathematics (Honours) SEMESTER-V Course: MATH-H-DSE-T-2A Course title: Number Theory Discipline Specific Elective Course; Credit-6; Full Marks-75

COURSE CONTENT:

6 Credits (5+1) (Theory + Tutorial)

[20L]

Unit 1.

- 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, Statement of Fermat's Last theorem and their applications.

[10L]

Unit 2.

[30L]

- 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 reciprocity, quadratic congruences with composite moduli.
- Prime number and its properties.
- The arithmetic of Z_p , p a prime, pseudo prime and Carmichael Numbers, Fermat Numbers, perfect numbers, Mersenne numbers.
- Public key encryption, RSA encryption and decryption, the equation $y^2 + x^2 = z^2$.

SUGGESTED READINGS/REFERENCES:

- 1. David M. Burton, Elementary Number Theory, Tata McGraw-Hill.
- 2. Neville Robinns, Beginning Number Theory, Narosa Publishing House Pvt. Ltd.
- 3. G. H. Hardy, E. M. Wright, An Introduction to the Theory of Numbers, Oxford University Press.

B.A./B.Sc. Mathematics (Honours) SEMESTER-V Course: MATH-H-DSE-T-2B Course title: Differential Geometry Discipline Specific Elective Course; Credit-6; Full Marks-75

COURSE CONTENT:

6 Credits (5+1) (Theory + Tutorial)

Unit 1.

[25L]

- Space curves. Parametrised curves, arc length, regular curves, reparametrisation of space curves, curvature and torsion, planer curves, signed curvature of planer curves, curvature, torsion and Serret-Frenet formula.
- Osculating circles, osculating circles and spheres. Existence of space curves.
- Evolutes and involutes of curves. Simple closed curves, isoperimetric inequality, four vertex theorem.

Unit 2.

- Theory of surfaces: Definition of smooth surfaces, tangents normal and orientability, parametric curves on surfaces.
- Lengths of curves on surfaces, direction coefficients. First fundamental forms on surfaces.

Unit 3.

[15L]

[15L]

• Curvature of surfaces: Second fundamental forms. Curvature of curves on surfaces, Principal and Gaussian curvatures. Normal curvature, lines of curvature, Meusnier's theorem, Euler's theorem.

B.A./B.Sc. Mathematics (Honours) SEMESTER-VI Course: MATH-H-CC-T-14 Course title: Probability & Statistics Core Course; Credit-6; Full Marks-75

COURSE CONTENT:

6 Credits (5+1) (Theory + Tutorial)

- Sample space, probability axioms, real random variables (discrete and continuous).
- Probability distribution function, probability mass/density functions. Discrete distributions: uniform, binomial, Poisson, geometric, negative binomial. Continuous distributions: uniform, normal, exponential, Beta, Gamma.
- Mathematical expectation, moments, moment generating function, characteristic function.

Unit 2.

Unit 1.

[20L]

[15L]

[20L]

[20L]

- 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. 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.

Unit 4.

- Random samples, sampling distributions.
- Estimation of parameters and estimate consistent and biased. Maximum likelihood estimation. Applications to binomial, Poisson and normal populations.
- Confidence interval. Interval estimation for parameters of normal population. Confidence intervals for mean and standard deviation of a normal population. Approximate confidence limits for the parameter of a binomial population.

• Testing of hypotheses.

SUGGESTED READINGS/REFERENCES:

- 1. A. Gupta, Groundwork of Mathematical Probability and Statistics, Academic publishers.
- 2. E. Rukmangadachari, Probability and Statistics, Pearson.
- 3. G. S. Rao, Probability and Statistics, University Press.
- 4. Robert V. Hogg, Joseph W. McKean and Allen T. Craig, Introduction to Mathematical Statistics, Pearson.
- 5. Irwin Miller and Marylees Miller, John E. Freund, Mathematical Statistics with Applications, Pearson Education, Asia.
- 6. Sheldon Ross, Introduction to Probability Models, Academic Press.
- 7. V. K. Rohatgi, A. K. Saleh, An Introduction to Probability and Statistics, Wiley.
- 8. S. Lipschutz, Probability: Schaum's Outlines Series, McGraw Hill Education.

B.A./B.Sc. Mathematics (Honours) SEMESTER-VI Course: MATH-H-DSE-T-3B Course title: Bio-Mathematics Discipline Specific Elective Course; Credit-6; Full Marks-75

COURSE CONTENT:

6 Credits (5+1) (Theory + Tutorial)

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 Lotka-Volterra equations, populations in competitions, epidemic models (SI, SIR, SIRS).
- Activator-inhibitor system, Insect outbreak model.

Unit-2

- Qualitative analysis of continuous models: Linearization, equilibrium points, hyperbolic and non-hyperbolic equilibrium, Routh-Hurwitz criteria for stability.
- Interpretation of the phase plane. Phase plane methods and qualitative solutions, bifurcations and limit cycles with examples in the context of biological scenarios.
- Spatial models: One species model with one-dimensional diffusion. Two species model with one-dimensional diffusion.
- Conditions for diffusive instability, spreading colonies of microorganisms.

Unit-3

- Introduction to discrete models, Overview of difference equations, steady state solution and linear stability analysis.
- 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).
- Optimal exploitation models, models in genetics, stage-structure models, age-structure models.

Graphical Demonstration (Teaching Aid) [using any software]

Numerical solution of the models and its graphical representation:

- Growth model (exponential, logistic, Gompertz).
- Limited growth of population (with and without harvesting).
- Predator-prey model (Lotka-Volterra model, with density dependence, two prey one predator).
- Epidemic model of influenza (basic epidemic model, contagious for life, disease with carriers).
- Spruce Budworm outbreak model.

[5L]

[25L]

[25L]

[20L]

SUGGESTED READINGS/REFERENCES:

- 1. J. Dugundji, Topology, Allyn and Bacon.
- 2. J. R. Munkres, Topology, A First Course, Prentice Hall of India Pvt.Ltd.
- 3. M. A. Armstrong, Basic Topology, Springer.
- 4. G. F. Simmons, Introduction to Topology and Modern Analysis, McGraw Hill.
- 5. J. L. Kelley, General Topology, Van Nostrand Reinhold Co., New York.
- 6. J. Hocking, G. Young, Topology, Addison-Wesley Reading.
- 7. L. Steen, J. Seebach, Counter Examples in Topology, Holt, Reinhart and Winston, New York.
- 8. A. Dasgupta, Set Theory, Birkhäuser.

B.A./B.Sc. Mathematics (Honours) SEMESTER-VI Course: MATH-H-DSE-T-4B Course title: Mechanics-II Discipline Specific Elective Course; Credit-6; Full Marks-75

COURSE CONTENT:

6 Credits (5+1) (Theory + Tutorial)

Unit 1.

[15L]

- Coplanar forces: Reduction of a system of coplanar forces. Moment about any point as base. Equation of the line of resultant. Necessary and sufficient conditions of equilibrium. Astatic equilibrium. Case of three forces. Action at joint in a framework.
- Principle of virtual work and its converse.
- Forces in three dimensions: Moment of a force about a line. Reduction of a system of forces in space.
 Poinsot's central axis. Invariants of a system of forces. Equations of the central axis. Wrench and screw.
 Condition for a single resultant force.

Unit-2:

[15L]

[15L]

- Centre of gravity: Centre of gravity of areas, surfaces and volumes (variation of gravity included). Pappus theorem (statement only).
- Stable and unstable equilibrium. Stability of equilibrium of two bodies other than spherical bodies. Energy test of stability. Condition of stability of equilibrium of a perfectly rough heavy body lying on a fixed body.

Unit-3:

- Real and ideal fluids. Pressure of fluid. Transmission of fluid pressure. Elasticity. Specific gravity. (* No broad question is to be set from this section)
- Pressure of heavy fluids: Magnitude of pressure at a point in a liquid. Pressure at all points at the same horizontal level in a liquid at rest under gravity. For a liquid in equilibrium under gravity, the difference of pressure between any two points is proportional to their depths. Free surface of a homogeneous in equilibrium under gravity is horizontal. Horizontal planes in a liquid in equilibrium under gravity are surfaces

of equal density. Pressure at any point in the lower of two immiscible liquids in equilibrium under gravity; Surface of separation is a horizontal plane. Thrust of homogeneous liquids on the plane surface.

• Condition of equilibrium of fluids: Pressure derivative in terms of force. Pressure equation and the conditions of equilibrium. Surfaces of equal pressure. Fluid of equilibrium under gravity. Fluid in relative equilibrium. Rotating fluid.

Unit-4:

[15L]

- Centre of pressure: Definition, position of the centre of pressure (C.P.) of a plane area. C.P. of a plane area immersed in a heavy liquid under gravity. Positions of centres of pressure of some simple areas, e.g., triangular area, parallelogram, circular area, composite plane area. C.P. of a plane area immersed in a number of liquids with different densities. Locus of the C.P. C.P. of a plane area referred to the axes through its centroid.
- Thrusts on curved surfaces: Resultant thrust on a curved surface of a heavy homogeneous fluid at rest. Resultant thrust on a solid body wholly or partially immersed in a heavy fluid at rest. Resultant vertical thrust on a surface exposed to the pressure of a heavy fluid at rest. Resultant horizontal thrust in a given direction on a given surface. Resultant thrust on any surface of a liquid at rest under given forces. Resultant thrust on the curved surface of a solid bounded by a plane curve.

Unit-5:

[15L]

- Equilibrium of floating bodies: Conditions of equilibrium. Bodies floating under constraint. Potential energy of a liquid.
- Stability of floating bodies: Plane and surface of floatation. Buoyancy. Metacentre and metacentric height.
 Conditions of stability of equilibrium. Properties of surface of buoyancy. Equilibrium of a vessel containing liquid. Some elementary curves of buoyancy, e.g., triangle, rectangle. Oscillation of floating bodies.

SUGGESTED READINGS/REFERENCES:

- 1. Verma, R. S., A Textbook on Statics, Pothishala.
- 2. I.H. Shames and G. Krishna Mohan Rao, Engineering Mechanics: Statics and Dynamics, Dorling Kindersley (India) Pvt. Ltd.
- 3. R.C. Hibbeler and Ashok Gupta, Engineering Mechanics: Statics and Dynamics, Dorling Kindersley (India) Pvt. Ltd.
- 4. A.S. Ramsey, Hydrostatics, Cambridge University Press.
- 5. W. H. Besant, A.S. Ramsey, A Treatise on Hydromechanics: Part 1, CBS Publishers.

----- X -----

- Swami Vivekananda, Bani O Racana (samagra khanda)
- Patanjal Yoga Darsan, Hariharananda Aranya, Paschimbanga Rajya Pustak in Bengali
- Patanjal Darsan: Purnachandra Vedantachancu, Paschimbanga Rajya Pustak in Bengali
- Shadadarsan Yoga, Dinesh Chandra Bhattacharya, Paschimbanga Rajya Pustak in Bengali

From Second Discipline/Subject

SEMESTER V

PHIL-G-GE-T-1			
Prescribed Course : Applied Ethics Total: 56			
. Unit – I	An Introduction to Moral Philosophy and Applied Ethics.	10 Credits	
Unit – II	Value of Human Life: 1. Human Rights 2. Punishment	10 Credits	
Unit – III	 Environmental Ethics: 1. Nature as Means and End. 2. Respect for animal ecology. 	10 Credits	
Unit – IV	Professional Ethics and Public Policy: Medical Ethics – Surrogacy, Doctor – patient relation, Euthanasia.	10 Credits	
Unit -V	Discrimination: Gender, class and caste	10 Credits	

Recommended Readings:

- Motilal Sashi (ed) (2010) Applied Ethics and Human Rights : Conceptual Analysis and Contextual Applications, London, Anthem Press.
- Rachel James, (2011) The Elements of Moral Philosophy. Oxford, Oxford University Press.
- Singer Peter (1986) Applied Ethics. Oxford, Oxford University Press.
- Yogi, Manavini, M, Euthanasia : Its Moral Implications, (2007), Delhi, Pratibha Prakashan.
- Hammer Bhonda and Kellner Dougles (eds). (2009), Medical and Cultural studies : Critical Approaches, New York, Peter Lang Publishing.
- Holmes Rolston and Andrew Light (eds.), (2007), Environmental Ethics : An Anthology. USA, Blackwell.
- Attitudes to Nature'John Passmore, Environmental Ethics (ed.)
- Robert Elliot, Oxford University Press, Oxford, 1998
- Respect for Nature: A Theory of Environmental Ethics (Select
- Parts), Paul Taylor, Princeton University Press, Princeton, 1986
- 'Intrinsic value, Environmental Obligation and Naturalness', Robert ElliotMonist, 1975
- 'The Shallow and the Deep, Long-Range Ecology Movements: A Summary', Arne Naess, Inquiry, 1973
- Nature, Self and Gender: Feminism, Environmental Philosophy and the Critique of Rationalism, Val Plumwood, Environmental Ethics (ed.) Robert Elliot, Oxford University Press, Oxford, 1998 Bengali:
- Paribesh o Naitikata: Nirmalya Narayan Chakraborty, Progressive



- 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
- · Sarvadarshanasamgraha: Satyajyoti Chakraborty (Pratham Khanda)

<u>0r</u>

PHIL-G-DSE-T-1B

Contemporary Indian Philosophy Total: 56 Credits

Prescribed Course:

Total: 56 Credits

- Rabindranath Tagore- Surplus in Man, Education
- 2. M.N.Roy: Radical Humanism
- 3. Aurobindo-Evolution, Involution
- 1. Vivekananda- Universal Religion, Practical Vedanta

Recommended Readings:

- Practical Vedanta: Swami Vivekananda
- Integral Yoga: Sri Aurobindo
- Religion of Man: Rabindranath Tagore
 - Biplabi bhābuk- Manabendranath, *Mukti sadhana*r *tin parva*: Edited by Shivnarayan Ray (in Bengali)
 - English:
- 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
- Patraboli : Swami Vivekananda
- Religion Of Man: Rabindranath Tagore
- The Philosophy of Rabindranath Tagore : Binay Gopal Roy
- Philosophy of Rabindranath Tagore: S. Radhakrishnan
- Rabindra Rachanabali (Khanda 12,pp-532-545,567-614):
 Janmashatbarshiki Samskaran
- Rabindra Darsan: Sachindranath Gangopadhyay, Pabitra Kumar Roy,
- Nripendranath Bandyopadhyay
- Life Divine: Sri Aurobindo
- Synthesis of Yoga: Sri Aurobindo
- Integral Yoga: Sri Aurobindo

18

PHIL-G-DSE-T-1A				
Prescribed	Vedic Value System Total: 56 Credits			
Unit I	1. Vedic System of Values	06 Credits		
	2. Concept of Man and Humanity	06 Credits		
Unit II	1. Purusartha-s (dharma, artha, kāma & mokṣa)	08 Credits		
	2. Nature of svadharma and sādhāraṇa dharma	06 Credits		
Unit III	UNIT – III : Varnāśrama dharma	04 Credits		
Unit IV	Three ways to attain Mokşa (Bhagavad Gītā)	14 Credits		
	(Jñāna Mārga, Karma Mārga, Bhakti Mārga)			
Unit V	Niskāma Karma	12 Credits		

Recommened Readings:-

- Chaterjee, S. Chandra, The Fundamentals of Hinduism, Calcutta, University of Calcutta, 1970.
- Dasgupta, S.N. : A History of Indian Philosophy, Delhi, Motilal Banarasidass, 1975.
- Srimad Bhagavad Gita
- Radhakrishnan, S, Indian Philosophy, Vol-I & II, New York : The Macmillan Company, 1956.
- Hirriyan, N; Outlines of Indian Philosophy, London, George Alhen & Unwin (1952)
- Radhakrishnan, S; The Hindu View of Life, London Unwin Books, 1960. Suggested Readings:
- English:
- Rajendra Prasad : Ethics in the Gita- An Analytical Study
- Swami Ranganathananda Central Theme of Gita
- Madhusudan Saraswati: Śrimadbhagabadgīta
- Atul Chandra Sen : Śrimadbhagabadgīta
- Jagadish Chandra Ghosh Śrigīta:
- Sri Aurobindo: Gitanibandha
- Śrimadbhagabadgīta: Swami Jagadiswarananda(Tran.)

SEMESTER-VI

PHIL-G-DSE-T-1B Western Ethics			
Prescribed Course : Total: 56 Credit		Total: 56 Credits	
Unit-1	The nature of Ethics: its concerns.	4 Credits	
Unit-11	The notion of Good, Right, Duty/ Obligation.	10 Credits	
Unit-111	Object of Moral Judgments	6 Credits	
Unit-1V	Teleological Ethics : Hedonism , Utilitarianism	10 Credits	

Individualistic Theory, Organic Theory, Idealistic Theory	10 Credit
Section 'D'	
Political Ideology	
Democracy and its different forms. Socialism: Utopia and Scientific	12 Credit
Section 'E'	
Social Change	
Marx and Ambedkar	10 Credits
Section 'F'	
Concepts of Gandhi	
swarāj, satyāgraha, sarvodaya.	10 Credit

Suggested Reading

- R. M. MacIver & C. H. Page : Society, Macmillan & CO LTD., London, 1957
- Morris Ginsberg : Sociology, Oxford University Press, 1950
- Tom Bottomore : Sociology, A Guide to Problems and Literature, Blackie & Son (India) L Bombay, 1972
- P. Gisbert : Fundamentals of Sociology, Oriental Longmans Private Ltd. 1959, Calcutta 13
- F. Engles : Socialism : Utopian and Scientific, Resistance Books, 1999
- Satyabrata Chakraborty(Etd.) : Bharatbarsha : Rastrabhabana, Ekushe, Kolkata, 2003
- Amal Kumar Mukhopadhyay : 'Secularism in the Present Indian Society' in Bulletin of the Ramkrishna Mission Institute of Culture, Vol. LVII No. II
- D.E. Smith : India as A Secular State, Princeton University Press, 2015
- P. Gisbert : Fundamental of Sociology
- Bhuddhadeb Bhattacharya : The Evolution of Political Philosophy of Gandhi
- D.D.Raphael : Problems of Political Philosophy
- Kyamlicka .W.: Contemporary Political Philosophy an Introduction
- Wolff, J.: An Introduction to Political Philosophy
- C.E.m. Joad : Introduction to Modern Political Theory
- Amal Kumar Mukhopadhyay : Rastra Darsaner Dhara
- Ambedkar: Annihilation of Caste
- Amelendu Mukhopadhyay : Samajik O Rajnitik Tattver Niti
- Shovanlal Duttagupta : Marxiya Rastrachinta
- Dilip Kr. Chattopadhyay : Adhunik Rastriya Matabader Bhumika (A Bengali translation of An Introduction to Modern Political Theory)

28

- • • •
- Nitividyar Tattvakatha: Somnath Chakrabarty (in Bengali)
- Prasanga manavadikara: Tattva o Satya: Anuradha Chattopadhyay (in Bengali)
- Vyavaharika Nitividya: Nabakumar Nandi O Manik Bal (in Bengali)
- Phalita Nitividya: Dikshit Gupta (in Bengali)

PHIL-H-DSE-T-04 Contemporary Indian Philosophy 56 Credits

Topic

- 1. Rabindranath Tagore- Surplus in Man, Education
- 2. M.N. Roy Radical Humanism
- 3. Aurobindo- Evolution, Involution
- 4. Vivekananda- Universal Religion, Practical Vedanta

Suggested Readings:

• Practical Vedanta: Swami Vivekananda

- Religion of Man: Rabindranath Tagore
- New Humanism and Materialism: M.N.Roy
- Radical Humanist: Selected Writings: M.N. Roy
- Muktisadhanar tin parva Shibnarayan Ray sampadita :Biplabibhabuk Manebendranath:

P

	PHIL-H-DSE-T-03 Practical Ethics	
Prescribed C	ourse	Total 56 Credits
Unit-I :	An Introduction to Moral Philosophy and Applied Ethics.	10
		Pa

Unit – II	Value of Human Life: Rights, Duties & Justice.	12
Unit – III	 a) Nature as Means & Ends b) Respect for Animal Ecology 	10
Unit IV	Medical Ethics: Surrogacy, Doctor-Patient Relation, Abortion	12
Unit V	Discrimination: Gender, Caste & Class	12

Suggested Readings:

- Applied Ethics: Peter Singer
- Practical Ethics Peter: Singer
- A Companion to Ethics: Peter Singer
- Practical Ethics: U.N. Ghosal
- Theory of Justice: John Rawls
- Redefining Ethics as Care: Bidisha Chatterjee
- Principles of Ethics: P.B.Chatterjee
- Phalita Nitividya: Santosh Kumar Pal (in Bengali)
- Nitividyar Tattvakatha: Somnath Chakrabarty (in Bengali)
- Prasanga manavadikara: Tattva o Satya: Anuradha Chattopadhyay (in Bengali)
- Vyavaharika Nitividya: Nabakumar Nandi O Manik Bal (in Bengali)
- Phalita Nitividya: Dikshit Gupta (in Bengali)

32

 $\frac{1}{\sqrt{2\pi\sigma^2}}\int e^{\frac{-(2-x)^2}{2\sigma^2}}(x+3)dx$, 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) 1. Frobenius method and Special functions: $\int_{-1}^{1} P_n(\mu) P_m(\mu) d\mu = \delta_{n,m}$, Plot $P_n(x) J_n(x)$

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 6*, Given Bessel's function at N

points find its value at an intermediate point. Complex analysis: Integrate $1/(x^2+2)$ 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^{-x}

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

• Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB:

Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernandez. 2014 Springer ISBN: 978-3319067896

- Scilab by example: M. Affouf, 2012. ISBN: 978-1479203444
- Scilab (A free software to Matlab): H.Ramchandran, A.S.Nair. 2011 S.Chand & Company

• Scilab Image Processing: Lambert M. Surhone. 2010 Betascript Publishing

PHY-H-CC-T-09: ELEMENTS OF MODERN PHYSICS

(Credits: Theory-04, Practicals-02) Theory: 60 Lectures **F.M. = 75(Theory - 40, Internal Assessment – 15**)

Internal Assessment : Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Tutorial) – 05, Practical (Sessional Viva-voce) - 05]

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.

(14 Lectures)

Position measurement- gamma ray microscope thought experiment; Waveparticle 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.

(5 Lectures)

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.

(10 Lectures)

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.

(10 Lectures)

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.

(6 Lectures)

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.

(8 Lectures)

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).

(3 Lectures)

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. (4 Lectures)

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.

• 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, Schauirf 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

PHY-H-CC-P-09: ELEMENTS OF MODERN PHYSICS

Practical – 20 marks (Lab. Note Book – 05, Viva-Voce-05, Experiment -10)

60 Lectures

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.

6133459274

PHY-H-DSE-T-02: NUCLEAR AND PARTICLE PHYSICS

(Credits: Theory-05, Tutorials-01) Theory: 75 Lectures F.M. = 75 (Theory - 60, Internal Assessment – 15) Internal Assessment [Class Attendance – 05, Class Test/ Assignment/ Tutorial – 10]

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.

(10 Lectures)

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.

(12 Lectures)

Radioactivity decay:(a) Alpha decay: basics of a-decay processes, theory of a-emission, Gamow factor, Geiger Nuttall law, a-decay spectroscopy. (b) (3-decay: energy kinematics for (3-decay, positron emission, electron capture, neutrino hypothesis. (c) Gamma decay: Gamma rays emission & kinematics, internal conversion. (9 Lectures)

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).

(8 Lectures)

Nuclear Astrophysics: Early universe, primordial nucleosynthesis (particle nuclear interactions), stellar nucleosynthesis, concept of gamow window, heavy element production: r- and s- process path. (5 Lectures)

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. **(6 Lectures)**

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. **(6 Lectures)**

Particle Accelerators: Accelerator facility available in India: Van-de Graaff generator (Tandem accelerator), Linear accelerator, Cyclotron, Synchrotrons.

(5 Lectures)

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.

(14 Lectures)

Reference Books:

- 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 High Energy Physics, D.H. Perkins, Cambridge Univ. Press
- 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).
- Physics and Engineering of Radiation Detection, Syed Naeem Ahmed (Academic Press, Elsevier, 2007).

• Theoretical Nuclear Physics, J.M. Blatt & V.F.Weisskopf (Dover Pub.Inc., 1991)

OR, PHY-H-DSE-T-02: ASTRONOMY & ASTROPHYSICS

(Credits: Theory-05, Tutorials-01) Theory: 75 Lectures

F.M. = 75 (Theory - 60, Internal Assessment – 15)

Internal Assessment [Class Attendance –05,

Class Test/ Assignment/ Tutorial – 10]

(Credits: Theory-04, Practicals-02) Theory: 60 Lectures F.M. = 75(Theory - 40, Internal Assessment – 15) Internal Assessment : Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Tutorial) – 05, Practical (Sessional Viva-voce-05)

General features of Earth's atmosphere: Thermal structure of the Earth's Atmosphere, Ionosphere, Composition of atmosphere, Hydrostatic equation, 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. (**12 Lectures**)

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, Mesoscale circulations, The general circulations, Tropical dynamics. (12 Lectures)

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

(12 Lectures)

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. (12 Lectures)

Atmospheric Aerosols: 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. (**12 Lectures**)

OR, PHY-H-DSE-T-02:

EARTH SCIENCE

(Credits: Theory-05, Tutorials -10) Theory: 75 Lectures F.M. = 75 (Theory - 60, Internal Assessment – 15) Internal Assessment [Class Attendance – 05, Class Test/ Assignment/ Tutorial – 10]

1. The Earth and the Universe:

(a) 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.

(b) 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.

(c) Energy and particle fluxes incident on the Earth.

(d) The Cosmic Microwave Background.

2 Structure:

(a) The Solid Earth: Mass, dimensions, shape and topography, internal structure, magnetic field, geothermal energy. How do we learn about Earth's interior?

(b) The Hydrosphere: The oceans, their extent, depth, volume, chemical composition. River systems.

(c) The Atmosphere: variation of temperature, density and composition with altitude, clouds.

(d) The Cryosphere: Polar caps and ice sheets. Mountain glaciers.

(e) The Biosphere: Plants and animals. Chemical composition, mass. Marine and land organisms.

3 **Dynamical Processes:**

(a) 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.

(b) 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.

(c) The Atmosphere: Atmospheric circulation. Weather and climatic changes. Earth's heat budget. Cyclones.

Climate:

- i. Earth's temperature and greenhouse ffect,
- ii. Paleoclimate and recent climate

(18 Lectures)

(18 Lectures)

(17 Lectures)
changes,

iii. The Indian monsoon system.

(d) Biosphere: Water cycle, Carbon cycle, Nitrogen cycle, Phosphorous cycle. The role of cycles in maintaining a steady state.

4. **Evolution:**

(18 Lectures)

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.

- 1. Time line of major geological and biological events.
- 2. Origin of life on Earth.
- 3. Role of the biosphere in shaping the environment.
- 4. Future of evolution of the Earth and solar system: Death of the Earth.

5. Disturbing the Earth - Contemporary dilemmas

(4 Lectures)

(a) Human population growth.

(b) Atmosphere: Green house gas emissions, climate change, air pollution.

- (c) Hydrosphere: Fresh water depletion.
- (d) Geosphere: Chemical effluents, nuclear waste.

(e) Biosphere: Biodiversity loss. Deforestation. Robustness and fragility of ecosystems.

Reference Books:

- Planetary Surface Processes, H. Jay Melosh, Cambridge University Press, 2011.
- Consider a Spherical Cow: A course in environmental problem solving, John Harte.

University Science Books

• Holme's Principles of Physical Geology. 1992. Chapman & Hall.

• Emiliani, C, 1992. Planet Earth, Cosmology, Geology and the Evolution of Life and

Environment. Cambridge University Press.

PHY-H-DSE-T-03: MEDICAL PHYSICS

(Credits: Theory-04, Practicals-02) Theory: 60 Lectures F.M. = 75(Theory - 40, Internal Assessment – 15) Internal Assessment : Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Tutorial) – 05, Practical (Sessional Viva-voce-05)

PHYSICS OF THE BODY-I

Mechanics of the body: Skeleton, forces, and body stability. Muscles and the dynamics of body movement, Physics of body crashing. **Energy household of the body:** Energy balance in the body, Energy consumption of the body, Heat losses of the body, **Pressure system of the body:** Physics of breathing, Physics of cardiovascular

- 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)

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

PHY—H-SEC-T-02: RENEWABLE ENERGY AND ENERGY HARVESTING (Credits: 02)

F.M. = 50 (Theory - 40, Internal Assessment – 10) Internal Assessment [Class Attendance (Theory) – 05, Theory

(Class Test/ Assignment/ Tutorial) - 05]

Theory: 30 Lectures

The aim of this course is not just to impart theoretical knowledge to the students but to provide them with exposure and hands-on learning wherever possible

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. (3 Lectures)

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. **(6 Lectures)**

Wind Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies. (3 Lectures)

OceanEnergy:OceanEnergy PotentialagainstWindandSolar,WaveCharacteristics and Statistics, Wave Energy Devices.(3 Lectures)

Tide characteristics and Statistics, Tide Energy Technologies, Ocean ThermalEnergy, Osmotic Power, Ocean Bio-mass.(2 Lectures)

Geothermal Energy: Geothermal Resources, Geothermal Technologies. (2 Lectures)

Hydro Energy: Hydropower resources, hydropower technologies, environmental impact of hydro power sources. (2 Lectures)

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 (4 Lectures)

Electromagnetic Energy Harvesting: Linear generators, physics mathematical models, recent applications (2 Lectures)

Carbon captured technologies, cell, batteries, power consumption (2 Lectures)

Environmental issues and Renewable sources of energy, sustainability. (1 Lecture)

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 Assessment Handbook, 2009
- J.Balfour, M.Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).
- http://en.wikipedia.org/wiki/Renewable_energy

OR, PHY—H-SEC-T-02: TECHNICAL DRAWING

(Credits: 02) F.M. = 50 (Theory - 40, Internal Assessment – 10) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Tutorial) – 05]

Theory: 30Lectures

Introduction: Drafting Instruments and their uses. lettering: construction and uses of various scales: dimensioning as per I.S.I. 696-1972. Engineering Curves: Parabola: hyperbola: ellipse: cycloids, involute: spiral: helix and loci of points of simple moving mechanism.2D geometrical construction. Representation of 3D objects. Principles of projections. (4 Lectures)

Projections: Straight lines, planes and solids. Development of surfaces of right and oblique solids. Section of solids. (6 Lectures)

Object Projections: Orthographic projection. Interpenetration and intersection of solids. Isometric and oblique parallel projection of solids. (4 Lectures)

CAD Drawing: Introduction to CAD and Auto CAD, precision drawing and drawing aids, Geometric shapes, Demonstrating CAD- specific skills (graphical user interface. Create, retrieve, edit, and use symbol libraries. Use inquiry commands to extract drawing data). Control entity properties. Demonstrating basic skills to produce 2-D and 3-Ddrawings. 3D modeling with Auto CAD (surfaces and solids), 3D modeling with sketch up, annotating in Auto CAD with text and hatching, layers, templates & design center, advanced plotting (layouts, viewports), office standards, dimensioning, internet and collaboration, Blocks, Drafting symbols, attributes, extracting data. basic printing, editing tools, Plot/Print drawing to appropriate scale. (16 Lectures)

Reference Books:

• K. Venugopal, and V. Raja Prabhu. Engineering Graphic, New Age International

 AutoCAD 2014 & AutoCAD 2014/Donnie Gladfelter/Sybex/ISBN:978-1-118-57510-9

 Architectural Design with Sketchup/Alexander Schreyer/John Wiley & Sons/ISBN:
978-1-118-12309-6

OR, PHY—H-SEC-T-02: RADIATION SAFETY

(Credits: 02) F.M. = 50 (Theory - 40, Internal Assessment – 10) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Tutorial) – 05] Theory: 30 Lectures

The aim of this course is for awareness and understanding regarding radiation hazards and safety. The list of laboratory skills and experiments listed below the course are to be done in continuation of the topics

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.

(6 Lectures)

Interaction of Radiation with matter: Types of Radiation: Alpha, Beta, Gamma and Neutron and their sources, sealed and unsealed sources,

Interaction of Photons - Photo electric 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. (7 **Lectures**)

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).

Radiationdetection: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.(7 Lectures)

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. (5 Lectures)

Application of nuclear techniques:Application in medical science (e.g., MRI, PET,Projection Imaging Gamma Camera, radiation therapy), Archaeology, Art, Crimedetection, Mining and oil. Industrial Uses: Tracing, Gauging, Material Modification,Sterization, Food preservation.(5 Lectures)

Experiments:

- 1. Study the background radiation levels using Radiation meter
- Characteristics of Geiger Muller (GM) Counter:
- 2) Study of characteristics of GM tube and determination of operating voltage and plateau

length using background radiation as source (without commercial source).

VivaBooks

- 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.
- Opto electronic 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

OR, PHY—H-SEC-T-02: WEATHER FORECASTING

(Credits: 02) F.M. = 50 (Theory - 40, Internal Assessment – 10) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Tutorial) – 05] Theory: 30 Lectures

The aim of this course is not just to impart theoretical knowledge to the students but to enable them to develop an awareness and understanding regarding the causes and effects of different weather phenomenon and basic forecasting techniques

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; temperature sensors: types; atmospheric pressure: its measurement; cyclones and anticyclones: its characteristics. (9 Periods)

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. (4 Periods)

Weathersystems:Global wind systems; air masses and fronts:classifications; jet streams; local thunderstorms; tropical cyclones:classification; tornadoes; hurricanes.(3 Periods)

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. **(6 Periods)**

Basics of weather forecasting: Weather forecasting: analysis and its

CBCS CURRICULUM OF B.A. IN

POLITICAL SCIENCE (HONOURS)

B.A. Political Science (Honours)

SEMESTER-I

POL-H-CC-T-1: Understanding Political Theory : Concepts Core Course; Credit-6; Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Understand certain key aspects of conceptual analysis in political theory
- Develop the skills required to understand and assess the critical concepts in Political Theory.

Unit 1: What is Politics? Meaning of Political.

Unit 2: Key concepts I: State; Nation; Sovereignty (evolution); Power and Authority--- types and linkages;

Unit 3: Key concepts II: Law. Liberty, Equality-Their interrelationships.

Unit 4: Key concepts III: Rights; Justice (with special reference to Rawls); Freedom.

Unit 5: Key concepts IV: Democracy (with special reference to David Held); Authoritarianism.

Unit 6: Key concepts V: Citizenship.

Suggested Readings:

1. Bhargava, R. and Acharya, A. (eds.) Political Theory: An Introduction, Delhi, Pearson Longman, 2008.

2. Swift, Adam, Political Philosophy: A Beginners' Guide for Students and Politicians, Cambridge: Polity Press, 2006.

3. Held, David, Models of Democracy, Stanford University Press, California, 2006.

4. Daniels, Norman, *Reading Rawls: Critical Studies on Rawls' 'A Theory of Justice'*, Stanford University Press, California, 1989.

5. Heywood Andrew, Key Concepts in Politics, Palgrave Macmillan, 04-Nov-2000.

6. Gauba, O. P., Introduction to Political Theory:, New Delhi, Macmillan, 2009.

7. Johari, J. C., Contemporary Political Theory: New Dimensions, Basic Concepts and Major Trends, New Delhi, Sterling Publishers, 2006.

8. Ramaswamy, S., Political Theory: Ideas and Concept, Delhi, PHI,2015.

9. Roy, A. & Bhattacharya, M., Political Theory: Ideas and Institutions, Kolkata, World Press, 1962.

10. Verma, S.P., Modern Political Theory, New Delhi, Vikash Publishing House, 1975.

11. 7 ŭĒY Lw fü L D fi ŭl LY L ŭ (Y LŭL: D: : Lw7 D A DY)

12. , ŭ7£ c Lø. L ŭ (Y LŭL: D: : Lw7 D A D/Y)

B.A. Political Science (Honours) SEMESTER-I

POL-H-CC-T-II: Understanding Political Theory: Approaches and Debates

Core Course; Credit-6; Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- · Understand the contemporary approaches to the study of politics. .
- Develop a critical and reflective analysis and interpretation of social practices through the use of relevant conceptual too kit..
- · Assess the critical and contemporary debates in Political Theory.

Unit 1: Approaches I: Normative; Legal-Institutional; Empirical-Behavioual---Systems Analysis; Structural - Functionalism.

Unit 2: Approaches II: Liberalism; Social Welfarism; Neo-Liberalism.

Unit 3: Approaches III: Postcolonial; Feminist.

Unit 4: Marxian approach--- Dialectical Materialism and Historical Materialism.

Unit 5: Key ideas: State (focus on Relative Autonomy); Class and Class Struggle; Surplus Value; Alienation.

Unit 6: Party--- Democratic Centralism; Lenin-Rosa Luxemburg debate; Revolution--- Lenin and Mao. Hegemony and Civil Society: Gramsci.

- 1. Bottomore, Tom, A Dictionary of Marxist Thought; UK, Wiley Publishers, 1992.
- 2. McLellan, David, Marxism after Marx, UK, Palgrave Macmillan, 2007.
- 3. Kolakowski, Leszek, Main Currents of Marxism; Founders : The Founders, the Golden Age, the Breakdown, New York, W.W. Norton Publishers, 1978.
- 4. Avineri, Shlomo, *The Social & Political Thought of Karl Marx*; Cambridge, Cambridge University Press, 1968.

B.A. Political Science (Honours)

SEMESTER-I

POL-H-GE-T-1(B): Nationalism in India

Core Course; Credit-6 Full Marks-75

Course Objectives:

After end of this course learner will able to-

- Understand historically the advent of colonialism in India and the emergence of the discourse on nationalism as a response to it.
- Engage with theoretical explanations of colonialism and nationalism in India at the same time study the social, political and institutional practices that unfolded in that period, gradually paving way towards independence and democracy in India.

Unit 1: Approaches to the study of nationalism in India: Nationalist, Imperialist, Marxist, and Subaltern interpretations.

Unit 2: Colonial Rule in India and its impact: On agriculture, land relations, industry and administration system.

Unit 3: Reform and Resistance: a. The Revolt of 1857 b. Major social and religious movements c. Education and the rise of the new middle class in India.

Unit 4: Nationalist Politics and Expansion of its Social Base: a. Phases of the Nationalist Movement: Birth of INC & Liberal constitutionalist phase, Swadeshi and the Radicals, Formation of the Muslim League b. Gandhi and mass mobilization: Non-cooperation, Civil Disobedience, and Quit India Movements c. Socialist alternatives: Congress socialists, Communists.

Unit 5: Social Movements - The Women's Question: participation in the national movement and its impact - The Caste Question: anti-Brahmanical Politics - Peasant, Tribal, and Workers movements in Colonial India.

Unit6: Partition and Independence: Communalism in Indian Politics – The Two-Nation Theory, Negotiations over Partition.

Suggested Readings:

1. Chandra, B., Essays on Colonialism, Hyderabad, Orient Blackswan, 1999.

 Chandra, B., Mukherjee, M., Mukherjee, A., Panikkar, K.N. & Mahajan S., India's Struggle for Independence (1857-1947), New Delhi, Penguin, 2016.

 Young, R., Postcolonialism : A Very Short Introduction. Oxford: Oxford University Press, 2003.

5. Bandopadhyay, S., From Plassey to Partition and After: A History of Modern India, New Delhi: Orient Longman, 2015. (revised edition)

6. Sarkar, S., Modern India (1885-1847), New Delhi: Macmillan, 1983.

8. Desai, A.R., Social Background of Indian Nationalism, Bombay, Popular, 1987.

B.A. Political Science (Honours)

SEMESTER-II

POL-H-CC-T-3: Politics in India Core Course; Credit-6; Full Marks-75

Course Objectives:

After completion the course the learners will be able to:

- · Develop a basic understanding about the Indian party system and electoral politics.
- Identify the major challenges to the process of Nation-building in India.
 - It also familiarizes students with the working of the Indian state, paying attention to the contradictory dynamics of modern state power.

Unit 1. Approaches to the Study of Indian Politics – Marxist and Liberal- Indian Political Culture-Various Interpretations.

Unit2. The Indian Party System – Main Features- Major National Political Parties – Major Regional Political Parties- From the Congress System to Multi-Party Coalitions.

Unit 3. Identity Politics and Social Cleavages in India- Role of Caste, Class and Religion in politics.

Unit 4. Electoral Politics in India: The Election Commission- Electoral Reforms in India – Voting Behaviour in India- Its major determinants- Defection Politics in India – Crime and Politics in India.

Unit 5. Nation Building in India – Major Challenges - Regionalism in India- Main Components-Regionalism versus Nationalism Debate- Major Regional movements in India – Gorkhaland and Bodoland movement.

Suggested Readings:

1. Z. Hasan (ed.) Parties and Party Politics in India, Delhi, Oxford University Press, 2002.

2. E. Sridharan, Coalition Politics and Democratic Consolidation in Asia, Delhi, Oxford University Press, 2013.

3. Frankel F., Hasan, Z., and R. Bhargava (eds.) Transforming India: Social and Political Dynamics in Democracy, Delhi, Oxford University Press, 2002.

4. Baruah, S. ed., Ethnonationalism in India: A Reader, Delhi: Oxford University Press, 2012.

5. Brass, P., *The Politics of India Since Independence*, Delhi: Cambridge University Press and Foundation Books, 1990.

6. Vora, R. and Palshikar, S. (eds.) Indian Democracy: Meanings and Practices, New Delhi, Sage, 2004.

7. Menon, Nivedita & Nigam Aditya, Power and Contestation: India since 1989, London: Fernwood

Publishing, Halifax and Zed Books, 2007.

 Mehta, P. and Jayal N. (eds.) The Oxford Companion to Politics in India, Delhi: Oxford University Press, 2010.

9. R. Kothari, Caste in Indian Politics, Delhi: Orient Longman, 1970.

10. Kohli Atul (ed.), The Success of India's Democracy, New Delhi, Cambridge University Press, 2001.

B.A. Political Science (Honours) SEMESTER-II POL-H-CC-T-4: Indian Constitution Core Course; Credit-6; Full Marks-7

Course Objectives:

After completion the course the learners will be able to:

- Develop a basic understanding about the structure of the Indian Constitution. ٠
- Understand the nature of federalism in India.
- Get an idea about the Fundamental rights of the Indian citizens' and the role that the Indian ٠ judiciary play in protecting and upholding these rights.

Unit 1: Framing of the Indian Constitution: Role of the Constituent Assembly, the Preamble and Philosophy of Indian Constitution.

Unit 2: Rights and Duties: Fundamental Rights and Duties, Directive Principles of State Policy.

Unit 3: Federalism and Decentralization in India: Nature of Indian Federalism: Union-State Relations -Nature and Evolving Trends of Federalism in India, 5th and 6th Schedules, Panchayati Raj and Municipalities.

- Unit 4: Union Executive: President and Vice President. Prime Minister and Council of Ministers, Relationship between President and Prime Minister
- Unit 5: Union Legislature: Rajya Sabha and Lok Sabha: Composition and Functions, Speaker.
- Unit 6: The Judiciary: Supreme Court and High Courts Composition and Functions, Judicial Activism & Public Interest Litigation (PIL).

Suggested Readings:

1. Basu, D.D., Manohar, V.R., Banerjee B.P., Khan S. A., Introduction to the Constitution of India, Nagpur, Lexis Nexis Butterworths Wadhwa, 2008.

2. Kashyap, S.C., Our Constitution: An Introduction to India's Constitution and Constitutional Law, New Delhi, National Book Trust, 1994.

3. Chakrabarty, Bidyut & Pandey, Rajendra Kumar, Indian Government and Politics, New Delhi, Sage, 2008.

4. Kochanek, Stanley A. & Hardgrave Robert L.(Jr), India: Government and Politics in a Developing Nation, USA, Thomson Wadsworth, 2008.

- 5. Johari J.C., Indian Government and Politics: Basic Framework and State Structure, New Delhi, Vikash Publication, 1974.
- 6. Austin, Granville, The Indian Constitution: Cornerstone of a Nation, Oxford, 1966.

7. Austin, Granville, Working a Democratic Constitution: A History of the Indian Experience, New Delhi, Oxford University Press, 2003





B.A. Political Science (Honours) SEMESTER-II

POL-H-GE-T-2(A):- Human Rights, Gender and Environment

Generic Elective Course: Credit-6. Full Marks-75

Course Objectives:

After completing of the course the students will be able to-

- Enabling the students to understand the issues concerning the rights of citizens in general and the marginalized groups in particular.
- Help us to assess the institutional and policy measures which have been taken in response to ٠ the demands of various movements.
- Help us to understand the conceptual dimensions, international trends and the Indian experience

Unit 1: Understanding Social Inequality: Caste, Gender, Ethnicity and Class as distinct categories and their interconnection. Globalization and its impact on workers, peasants, dalits, adivasis and women.

Unit 2: 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.

Unit 3: 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.

Unit 4: 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:

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, Stree 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.

B.A. Political Science (Honours) SEMESTER-III

POL-H-CC-T-5: Indian Political Thought (Ancient and Medieval)

Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Understand the key concepts of ancient Indian political thought.
- Identify the key concerns of medieval Indian political thinkers

Unit 1: Ancient Indian Political ideas: overview, Ideas on Brahmanic and Shramanic traditions.

Unit 2: Shantiparva with special reference to Rajdharma.

Unit 3: Buddhist political thought: Kingship and the relations between politics and Ethics.

Unit 4: Kautilya's Political Thought: Saptanga Theory of State - Mandala Theory and Diplomacy.

Unit5: Medieval Political Thought in India: A broad outline- Zia Barani: Good Sultan and Ideal Polity. Principle of Syncretism.

Unit6: Abul Fazl: Governance and Administration, Kabir: Syncretism.

Suggested Readings:

1. Altekar A. S., The state and government in ancient India, Delhi, Motiram Banarasidas, 1973.

2. Bhandarkar D. R., Some aspects of ancient Indian polity. Banaras, Banaras Hindu University, 1963.

3. Drekmeier C. Kingship and Community in early India, Burklay, University of California, 1962.

4. Ghoshal U. N., A history of Indian Political Ideas, Mumbai, Oxford University Press, 1966.

5. Jayaswal K. P., Hindu Polity, Calcutta, Butterworth Publishers, 1924.

6. Kangle R. D., The Arthashastra of Kautilya, 3 Vols., Mumbai, University of Mumbai, 1975.

7. Krishna Rao M. V.; Studies in Kautilya, Delhi, Munshiram Manoharlal, 1979.

8. Saletore B. A., Ancient Indian Political thought and Institutions, Bombay, University of Bombay, 1963.

11. Sharma J. P.; Republics in ancient India, London, E. J. Brill Publishers, 1968.

12. Singh, Mahendra Prasad & Roy, Himanshu eds., Indian Political Thought: Themes and Thinkers, New Delhi, Pearson, 2011.

13. Mehta, V.R. & Mehta Vrajendra Raj, Foundations of Indian Political Thought: An Interpretation: from Manu to the Present Day, New Delhi, Manohar Publishers, 1996.

14. 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.



B.A. Political Science (Honours) SEMESTER-III POL-H-CC-T-6: Indian Political Thought (Modern)

Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

• Understand the key concerns of major political thinkers of modern India.

Unit 1: Rammohan Roy- Views on rule of law, Rights, freedom of thought and social justice.

Unit 2: Vivekananda: Views on Cultural nationalism, Society and Education.

Unit 3: Syed Ahmed Khan and Iqbal: views on colonialism and nationalism.

Unit4: Rabindranath Tagore: Critique of Nationalism and his views on Internationalism.

Unit 5: M.N.Roy: Views on National and Colonial Questions and Radical Humanism.

Unit 6: B.R. Ambedkar : Views on social justice and Constitutionalism.

Unit 7: Pandita Ramabai : Her views on Gender & Social Justice.

Unit 8: Pt. Nehru: Views on Socialism

Unit 9: Ram Manohar Lohia : Views on Socialism.

Suggested Readings:

1. Verma, V.P., Modern Indian Political Thought, Agra, Lakshmi Narain Agarwal Educational Publishers, 1974.

2. Pantham, T.and Deutsch, K. eds., Political Thought in Modern India, New Delhi, Sage publications, 1986.

3. Appadorai, A., *Documents on political thought in Modern India*, 02 Vols. Bombay, Oxford University Press, 1970.

4. Chakrabarty, B. & Pandey, R.K., Modern Indian Political Thought : Text and Context, New Delhi, Sage Publication, 2009.

5.K.N. Kakan (ed) Dr. B.R. Ambedkar, New Delhi, Sage Publication, 1992.

6. Pramanik Nimai (ed), Adhunik Bharater Samajik o Rajnitik Bhabna, Kolkata, Chaya Prakasani, Vol.1, 2009.

7. Jayapalan, N., Indian Political Thinkers: Modern Indian Political Thought, New Delhi, Atlantic Publishers, 2003.

B.A. Political Science (Honours) SEMESTER-III

POL-H-CC-T-7: Understanding International Relations: Theories and Concepts.

Core Course; Credit-6. Full Marks-75

Course Objectives-

After completion the course the learners will be able to:

- Understand the major approaches to the study of International Relations
- Comprehend the main theories in International Relations
- Develop an idea about some major concepts of International Relations.

Unit 1: International Relations: outline of its evolution as academic discipline - What is International Relations Theory?

Unit 2: The Great Debates in the discipline of International Relations: First, Second and Third.

Unit 3: Mainstream International Relations Theories: (a) Classical Realism and Neo-Realism (b) Liberalism and Neo-Liberalism (c) Marxian - Dependency & World Systems theory (d) Feminist Approach (e) Eurocentricism and Perspectives from the Global South.

Unit 4: National Power- Definition, Elements and Limitation - Balance of Power- Devices of maintaining Balance of Power- Collective Security.

Unit 5: Foreign Policy- Objectives - Instruments of foreign policy- Diplomacy, Propaganda and Foreign Aid.

- 1. Griffiths, Martin, International Relations Theory for the Twenty-First Century: An Introduction, NewYork, Routledge, 2007.
- 2. Jackson R & Sorensen G., Introduction to International Relations: Theories and Approaches, Oxford, Oxford University Press, 2010.
- 3. Daddow, Oliver, International Relations Theory, Sage Publications, 2017.
- 4. Roach, Steven C., Griffiths, M & O'Callaghan, T., International Relations: The Key Concepts, Routledge, 2008.
- 5. Chatterjee A., International Relations Today: Concepts and Applications, New Delhi, Pearson, 2010.

B.A. Political Science (Honours)

SEMESTER-III

POL-H-SEC-T-1(B): Democratic Awareness with Legal Literacy

Skill Enhancement Course; Credit-2. Full Marks-50

Course Objectives:

After completion of the course the learners will be able to:

- Understand the structure and manner of functioning of the legal system in India.
- Develop an understanding of the formal and Alternate Dispute Redressal (ADR) mechanisms that exist in India, public interest litigation.

Unit1: Constitution – fundamental rights, fundamental duties, other constitutional rights and their manner of enforcement and the expansion of certain rights under Article 21 of the Constitution.

Unit 2: Laws relating to criminal jurisdiction – Provision relating to filing of an FIR, arrest, bail, search seizure- Understanding the question of evidence procedure in Cr.P.C. and related laws - dowry, sexual harassment and violence against women – laws relating to consumer rights – Juvenile Justice- Prevention of atrocities on Scheduled Castes and Scheduled Tribes.

Unit3: Anti-terrorist laws: Implication for security and human rights. Laws relating to cyber crimes. Unit 4: 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- Alternate dispute such as Lokadalats, non-formal mechanisms.

Unit 5: Critical Understanding of the Functioning of the Legal System – Legal Service Authorities Act and Right to Legal aid, ADR system – Concepts like Burden of Proof, Presumption of Innocence, Principles of Natural Justice – Fair Comment under Contempt Law.

Unit 6: Human Rights - emerging trends; Role of legal aid agencies, Human Rights Commissions, NGOs and Civil liberties groups- Role of Police and Executive in criminal law administration.

- Basu, D. D & Others, Introduction to the Constitution of India, Nagpur: LexisNexis Butterworths, 2008.
- Kashyap, S, Our Constitution: An Introduction to India's Constitution and Constitutional Laws, New Delhi, National Book Trust, 1994.
- Gender Study Group, (1996) Sexual Harassment in Delhi University, A Report, Delhi: University of Delhi.
- 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.
- 5. B.L. Wadhera, Public Interest Litigation A Handbook, Universal, Delhi, 2003.
- 6. Aggarwal, N., Women and Law in India, New Century, Delhi, 2002.

B.A. Political Science (Honours) SEMESTER-IV

POL-H-CC-T-8: Public Administration (Theories & Concepts)

Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Understand the nature of Public administration and distinguish it from private administration.
- Trace the evolution of Public administration as an academic discipline.
- Develop an understanding of the major concept & theories of public administration.

Unit 1: Public Administration: Definition, Nature and Scope; Difference between Private and Public Administration; Evolution of the Discipline of Public Administration.

Unit 2: Classical Theories of Administration: Classical Theory, (Fayol, Urwick and Gulick) Scientific Management Theory, (F.W.Taylor) Bureaucratic Theory, (Max Weber).

Unit 3: Neo-Classical Theories of Administration: Elton Mayo and Human Relations Theory; Decision-making with special reference to H.Simon,

Unit 4: Contemporary Theories of Administration: Ecological Approach of Fred Riggs; Innovation and Entrepreneurship of Peter Drucker.

Unit 5: Public Policy: Concept and Relevance – Approaches to the Study of Public Policy; Public Policy Formulation, Implementation and Evaluation.

Unit 6: Major Approaches in Public Administration: New Public Administration, New Public Management, New Public Service Approach and Good Governance.

Suggested Readings:

1. Bhattacharya Mohit, New Horizons of Public Administration, New Delhi, Jawahar Publishers, 2011.

2. Chakraborty, Bidyut & Bhattachrya, Mohit, Public Administration : A Reader, New Delhi, Oxford University Press, 2006.

3. Nigro, F.A. and Nigro, L.G., Modern Public Administration, New York: Harper and Row, 1984.

 Naidu, S.P., Public Administration: Concepts and Theories, New Delhi, New Age International (P) Ltd. Publishers, 2005.

5. Mishra, S. & Dhameja, A. eds., Public Administration: Approaches & Applications, New Delhi, Pearson, 2016.

6. Robbins, S., Judge, T.A., Millett, B. & Boyle, M., Organizational Behaviour, Australia, Pearson, 2014.

7. Henry, N, Public Administration and Public Affairs, New Jersey, Pearson, 2013.

B.A. Political Science (Honours) SEMESTER-IV POL-H-CC-T-9: Public Policy and Indian Administration Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to:

- Trace the evolution of Indian administrative system.
- Understand the maladies in Indian civil service and identify the major reforms made.
- Identify the major issues affecting Indian administrative system in contemporary period.

Unit 1: Evolution of Indian Administration – Ancient-Medieval and Modern period: brief historical overview -Continuity and change in Indian administration.

Unit 2: Civil Service in India (Bureaucracy): Recruitment & training- Role of UPSC and SPSC-Minister - Civil Servant Relationship - Generalists and Specialists Debate.

Unit 3: Social Welfare Policies in India: Concept and Approaches of Social Welfare – Social Welfare Policies – a) Education: Right to Education, b) Health: National Health Mission, c) Food: Right to Food Security and d) Employment: MNREGA.

Unit 4: Citizen and Administration: Concept of Accountability- Major forms of administrative accountability- Legislative- Executive & Judicial- Citizen's Charter- Right to Information Act, 2005, E-Governance.

Unit 5: Financial Administration and Budget: Concept and Significance of Budget – Budget Cycles in India- Various Approaches and Types of Budget - Public Accounts Committee, Estimates Committee – role of CAG.

- 1. Maheshwari, S.R., Indian Administration, New Delhi, Orient Longman Pvt. Ltd., 2001.
- Chakrabarty, B. & Chand, P., Indian Administration: Evolution and Practice, New Delhi, SAGE Publications, 2016.

- Arora, R.K.& Goyal, R., Indian Public Administration: Institutions & Issues, New Delhi, Wishwa Prakashan, 1996.
- Prasad, K., Indian Administration: Politics, Policies, and Prospects, New Delhi, Pearson-Longman, 2006.
- 5. Singh, H. & Singh, P., Indian Administration, New Delhi, Pearson, 2011.





B.A. Political Science (Honours) SEMESTER-IV POL-H-CC-T-10: Global Politics & Issues since 1945 Core Course; Credit- 6. Full Marks-75

Course objectives:

After completing of the course, the student will be able to

- Understand the major issues influencing International politics
- Identify the major regional organizations and their policies

Unit 1: Contemporary Global Issues I: Proleferation of Nuclear Weapons- Arms race, arms control and Disarmament Policy: PTBT, NPT and CTBT; Ecological Issues – Historical Overview of International Environmental Agreements – Climate Change- Global Commons Debate.

Unit 2: Contemporary Global Issues II: Understanding Globalization and Its alternative Perspectives – Debates on Sovereignty and Territoriality – Cultural and Technological Dimensions of Globalization; Political Economy of International Relations: New International Economic Order- North-South Dialogue- South-South Cooperation- World Bank- IMF- WTO- TNCs- Global trade & Finance- Neo-Colonialism and Dependency.

Unit 3: Contemporary Global Issues III: Terrorism & International System: Conceptual Framework – Challenges to Global Security – Post 9/11 Developments - Counter Terrorist Strategies and War on Terror; Human Rights: The politics of human rights promotion – UN and Human Rights- Human Security- Migration.

Unit 4: Cold War and its evolution: Different Phases- Collapse of USSR and End of Cold War-Emergence of Third World: NAM; Pan Africanism. Post-Cold War Developments: overview. West Asia and the Palestine question.

Unit 5: Europe in transition: European Union, Brexit (overview).

Unit 5: Major regional organizations: ASEAN, OPEC, SAFTA, SAARC and BRICS.

- Baylis John & Smith Steve, The Globalization of World Politics: An introduction to International Relations, New Delhi, Oxford University Press, 2005.
- Salmon, Trevor C. & Imber Mark F. eds., *Issues in International Relations*, New York, Routledge, 2000.
- Larche, Rene A. edt., Global Terrorism Issues and Developments, New York, Nova Science Publishers, 2008.
- Forsythe, David P., Human Rights in International Relations, Cambridge, Cambridge University Press, 2012.
- 8. Grugel, Jean & Hout Wil, Eds. Regionalism across the North/South Divide: State Strategies and Globalization, New York, Routledge, 1999.
- 9. Footer, Mary E., An Institutional and Normative Analysis of the World Trade Organization, Leiden, Martinus Nijhoff Publishers, 2006.

B.A. Political Science (Honours)

SEMESTER-V

POL-H-CC-T-11: Western Political Thought (Ancient & Medieval)

Core Course; Credit-6. Full Marks-75

Course Objectives:

After completion of the course the learners will be able to -

- Have an insightful knowledge about the ancient and medieval western political thought. ٠
- Understand the key ideas of western political thinkers of ancient and medieval period. ٠

Unit 1: Background of Western Political Thought: A Brief Outline with special reference to Stoics and Sophists of ancient Greece.

Unit 2: Plato - Philosophy and Politics- Theory of Forms, Justice, Philosopher King/Queen, Communism- Women and Guardianship- Critique of Democracy - Censorship.

Unit 3: Aristotle - Theory of State - Classification of Governments- Man as a Zoon Politikon- Justice-Citizenship.

Unit 4: Medieval Theological Thought: Basic Features, Conflict between Church and State- Contribution of St. Augustine, St. Thomas Aquinas and Marsiglio of Padua.

Unit 5: Machiavelli: Virtue & Vice – Morality and Statecraft – Religion- Republicanism.

- 1. Inwood B. ed. The Cambridge Companion to the Stoics, Cambridge, Cambridge University Press, 2003.
- 2. Sabine G.H. & T.L. Thorson, A History of Political Theory, New Delhi, Oxford and IBH Publishing Company Pvt. Ltd., 1993.

- 3. Mukhopadhyay, A. K., Western Political Thought: From Plato to Marx, Kolkata, K. P. Bagchi, 1980.
- 4. Mukherjee S and S. Ramaswamy, A History of Political Thought: Plato to Marx, New Delhi: Prentice Hall of India, 2004.
- Jha S., Western Political Thought: From Plato to Marx, New Delhi, Pearson, 2010. 5.
- 6. Barnes, Jonathan, ed. The Cambridge Companion to Aristotle, Cambridge University Press, 1995.
- 7. Kraut, Richard, ed. The Cambridge Companion to Plato, Cambridge University Press 1992.
- 8. Lee, Francis Nigel., A Christian Introduction to the History of Philosophy, Craig Press, 1969.
- 9. Leff, Gordon. Medieval Thought: St. Augustine to Ockham, Penguin Books, Middlesex, England, 1968.

B.A. Political Science (Honours)

SEMESTER-V

POL-H-DSE-T-2(A): Development Process and Social Movements in Contemporary India

Discipline Specific Elective Course; Credit-6. Full Marks-75

Course Objectives:

After end of this course learner will able to:

- To understand the development process in India since Independence.
- Understand a variety of protest movements in the context of development in India.

 To analyse the conditions, contexts and forms of political contestation over development paradigms.

Unit 1: Development Process in India since Independence: State and planning – Liberalization and reforms.

Unit 2: Industrial Development Strategy and its Impact on the Social Structure: Mixed economy, privatization, the impact on organized and unorganized labour - Emergence of the new Indian middle class.

Unit 3: Agrarian Development Strategy and its Impact on the Social Structure: Land Reforms, Green Revolution, Agrarian crisis since the 1990s and its impact on farmers.

Unit 4: Social Movements in India: Tribal, Peasant, Dalit and Women's movements - Maoist challenge - Civil rights movements in India.

Suggested Readings:

- A. 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.
- A. 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.

3. P. Chatterjee, (2000) 'Development Planning and the Indian State', in Zoya Hasan (ed.), *Politics and the State in India*, New Delhi: Sage.

- Nayar (1989) India's Mixed Economy: The Role of Ideology and its Development, Bombay: Popular Prakashan.
- L. Fernandes, (2007) India's New Middle Class: Democratic Politics in an Era of Economic Reform, Delhi: Oxford University Press.
- A. Desai, (ed.), (1986) Agrarian Struggles in India After Independence, Delhi: Oxford University Press.
- F. Frankel, (1971) India's Green Revolution: Economic Gains and Political Costs, Princeton and New Jersey: Princeton University Press.

8. 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.

Detail Course Core Course: B.A. (Hons.) Sanskrit

SANS-H-CC-T-01		
Classical Sanskrit Literature (Poetry)		
Prescribed Co	urse:	Total 56 Credits
Section 'A'	Raghuvamśam: Canto-I (Verse: 1-25)	12 Credits
Section 'B'	Kumārasambhavam: Canto-V (Verse: 1-30)	12 Credits
Section 'C'	Kirātārjunīvam: Canto I (1-25 Verses)	12 Credits
Section 'D'	Nītiśatakam (1-20 Verses, 1st two Paddhatis)-	08 Credits
(Precised Standard St	M. R. Kale Edition	
Section 'E'	Origin and Development of Mahākāvva and	12 Credits
	Gītikāvya	
Unit-Wise Div	vision:	
	Section 'A'	
	Raghuvamśam: Canto-I (Verse: 1-25)	
Unit: I	Raghuvamśam: Introduction (Author and Text),	06 Credits
	Appropriateness of title, Canto I, 1-10	
	Grammatical analysis, Meaning/translation,	
	Explanation, content analysis, Characteristics of	
	Raghu Clan.	
Unit: II	Raghuvainśam: Canto I (Verses 11-25)	06 Credits
	grammatical analysis, Meaning/translation,	
	Explanation, Role of Dilīpa in the welfare of	
	subjects.	
	Section 'B'	
	Kumārasambhavam: Canto-V (Verses: 1-2	30)
Unit: I	Kumārasambhavam: Introduction (Author and	06 Credits
	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	06 Credits
	Verses 16-30 (Grammatical analysis, Translation,	
	Explanation), Penance of Parvati, Poetic	
	anallance Dist	
	excellence, Plot.	
	excellence, Plot. Section 'C'	
II	excellence, Plot. Section 'C' Kirātār junīyam - Canto I (1-25 Verses) Kirātār junī untraduction (Author and Text)) Of Credite
Unit: I	excellence, Plot. Section 'C' Kirātār junīyam - Canto I (1-25 Verses Kirātārjunīyam: Introduction (Author and Text), Approprietoness of title, Baskground of sizer) 06 Credits
Unit: I	excellence, Plot. Section 'C' Kirātār junīyam - Canto I (1-25 Verses Kirātārjunīyam: Introduction (Author and Text), Appropriateness of title, Background of given contents) 06 Credits
Unit: I	excellence, Plot. Section 'C' <i>Kirātār junīyam</i> - Canto I (1-25 Verses <i>Kirātārjunīyam</i> : Introduction (Author and Text), Appropriateness of title, Background of given contents, Canto I Verses 1-16. Grammatical analysis) 06 Credits
Unit: I	excellence, Plot. Section 'C' <i>Kirātār junīyam</i> - Canto I (1-25 Verses <i>Kirātārjunīyam</i> : Introduction (Author and Text), Appropriateness of title, Background of given contents, Canto I Verses 1-16, Grammatical analysis, Translation Explanation Poetic avcellance) 06 Credits
Unit: I	excellence, Plot. Section 'C' <i>Kirātār junīyam</i> - Canto I (1-25 Verses <i>Kirātārjunīyam</i> : Introduction (Author and Text), Appropriateness of title, Background of given contents, Canto I Verses 1-16, Grammatical analysis, Translation, Explanation, Poetic excellence, thematic analysis) 06 Credits
Unit: I	excellence, Plot. Section 'C' <i>Kirātār junīyam</i> - Canto I (1-25 Verses <i>Kirātārjunīyam</i> : Introduction (Author and Text), Appropriateness of title, Background of given contents, Canto I Verses 1-16, Grammatical analysis, Translation, Explanation, Poetic excellence, thematic analysis. <i>Kirātāriunīyam</i> : Verses 17-25, Grammatical) 06 Credits
Unit: I Unit: II	excellence, Plot. Section 'C' <i>Kirātār junīyam</i> - Canto I (1-25 Verses) <i>Kirātārjunīyam</i> : Introduction (Author and Text), Appropriateness of title, Background of given contents, Canto I Verses 1-16, Grammatical analysis, Translation, Explanation, Poetic excellence, thematic analysis. <i>Kirātārjunīyam</i> : Verses 17-25, Grammatical analysis, Translation, Explanation, Poetic) 06 Credits 06 Credits

Section 'D'		
Nītiśatak	am (1-20 Verses, 1st two Paddhatis)-M. R.	Kale Edition
Unit: I	<i>Nītiśatakam</i> : Verses (1-10) Grammatical analysis	04 Credits
	Translation, explanation.	
Unit: II	<i>Nītiśatakam</i> : Verses (11-20) Grammatical	04 Credits
	analysis Translation, explanation, thematic	
	analysis Bhartrhari's comments on society.	
Section 'E'		
Orig	in and Development of <i>Mahākāvya</i> and C	Fītikāvya
Unit: I	Origin and development of different types of	06 Credits
	Māhākavya with special reference to Aśvaghosa,	
	Kālidāsa, Bhāravi, Māgha, Bhatti, Śriharsa.	
Unit: II	Origin & Development of Sanskrit Gītikāvayas	06 Credits
	with special reference to Kālidāsa, Bilhaņa,	
	Jayadeva, Amarūk, Bhartrhari and their works.	

SANS-H-CC-T-02		
Critical Survey of Sanskrit Literature		
Prescribed (Course:	Total 56 Credits
Section 'A'	Vedic Literature	20 Credits
Section 'B'	Rāmāyana	08 Credits
Section 'C'	Mahābhārata	08 Credits
Section 'D'	Purānas	06 Credits
Section 'E'	General Introduction to Vyākarana, Darśana	14 Credits
	and Sāhityaśāstra	
Unit-Wise I	Division:	
	Section 'A'	
	Vedic Literature	
Unit: I	Samhitā (Ŗk, Yajuḥ, Sāma, Atharva) time,	12 Credits
	subject- matter, religion & Philosophy, social life	
Unit: II	Brāhmana, Aranyaka, Upaniṣad, Vedānga (Brief	08 Credits
	Introduction)	
	Section B	
	Kamayaṇa	
Unit: I	$R\bar{a}m\bar{a}yana-time$, subject-matter, $R\bar{a}m\bar{a}yana$ as an	4 Credits
TT . TT	Adikavya.	4.0 114
	Importance	4 Credits
	Section 'C'	
	Mahābhārata	
Unit: I	Mahābhārata and its Time, Development, and	4 Credits
	subject matter	
Unit:II	Mahābhārata : Encyclopaedic nature, as a	4 Credits
	Source, Text, Cultural Importance.	
	Section 'D'	
-	Purāņas	
Unit: I	Purāņas : Subject matter, Characteristics	02 Credits
Unit: II	<i>Purānas</i> : Social, Cultural and Historical	04 Credits
	Importance	
a	Section 'E'	1 9-11 4-
Genera	al Introduction to Vyākaraņa, Daršana ar	id Sāhityaśāstra
Unit-l	General Introduction to Vyākaraņa- Brief Histor	y 04 Credits
TT : 4 TT	of Vyakaranasastra	05 0 114
Unit-II	General Introduction to Darsana-Major schools	05 Credits
	oi indian Philosophy Carvaka, Baudaha, Jaina,	
	wimārinā opd Littara mīmārinā	
IInit_III	General Introduction to Doction Six major	05 Credita
	Schools of Indian Poetics-Rasa Alamkāra Rīti	05 CICUIIS
	Dhvani Vakrokti and Aucitva	
	Dhvani, Vakrokti and Aucitya.	

SANS-H-CC-T-05		
Classical Sanskrit Literature (Drama)		
Prescribed Co	urse:	Total 56 Credits
Section 'A'	Svapnavāsavadattam– Bhāsa Act I & VI	10 Credits
Section 'B'	Abhijñānaśākuntalam– Kālidāsa I to IV	16 Credits
Section 'C'	Abhijñānaśākuntalam- Kālidāsa V to VII	20 Credits
Section 'D'	Critical survey of Sanskrit Drama	10 Credits
Unit-Wise Div	vision:	
	Section 'A'	
	Svapnavāsavadattam – Bhāsa Act I & V	/1
Unit: I	Svapnavāsavadattam: Act I &VI Story,	05 Credits
** *. **	Meaning/Translation and Explanation.	0.5.0
Unit: II	Svapnavāsavadattam: Unique features of Bhāsa's	05 Credits
	style, Characterization, Importance of 1st and 6th	
	regeine' <i>Bhāse hāse</i>	
-	regams. Bhaso haso	
	Abhijinānašākuntalam – Kālidāsa I to I	V
Unit: I	Abhijinānašākuntalam ·	08 Credits
	Act I- (a) Introduction Author Explanation of	ou cicults
	terms like <i>nāndī</i> , <i>prastāvanā</i> , <i>sūtradhāra</i> , <i>natī</i> ,	
	viskambhaka, vidūsaka, 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 II to IV- Text Reading	08 Credits
	(Grammar, Translation, Explanation), Poetic	
	excellence, Plot, Timing of action.	
	Section C	
	Abhijnānasākuntalam – Kālidāsa V to V	11
Unit: I	Abhijñānaśākuntalam Act V to VII Text	10 Credits
	Reading (Grammar, Translation, Explanation).	
Unit-II	Abhijñānaśākuntalam Act V to VII Poetic	10 Credits
	excellence, Plot, Timing of Action.	
	Personification of nature, Language of Kālidāsa,	
	dhvani in Upamā Kālidāsa, Purpose and design	
	behind Abhijnānašākuntalam and other problems	
	related to texts, popular saying about Kalidasa &	
	Sakuillalalli.	
	Critical survey of Sanskrit Drama	
Unit-I	Sanskrit Drama : Origin and Development Nature	05 Credits
	of <i>Nātaka</i> .	05 010010
Unit-II	Some important dramatists and dramas: Bhāsa.	05 Credits
	Kālidāsa, Śūdraka, Viśākhadatta, Śrīharsa,	
	Bhavabhūti, Bhattanārāyaņa and their works.	

SANS-H-CC-T-07		
Indian Social Institutions and Polity		
Prescribed Co	urse:	Total 56 Credits
Section 'A'	Indian Social Institutions : Nature and	12 Credits
	Concepts	
Section 'B'	Structure of Society and Value of Life	14 Credits
Section 'C'	Indian Polity : Origin and Development	18 Credits
Section 'D'	Cardinal Theories and Thinkers of Indian	12 Credits
a sea sea a company	Polity	
Unit-Wise Div	vision:	
	Section 'A'	
In	dian Social Institutions : Nature and Cor	icepts
Unit: I	Indian Social Institutions : Definition and	06 Credits
	Scope:	
	Sociological Definition of Social Institutions.	
	Trends of Social Changes, Sources of Indian	
	Social Institutions (Vedic Literature, Sūtra	
	Literature, Purāņas, Rāmāyaņa, Mahābhārata,	
	Dharmaśāstras, Buddhist and Jain Literature,	
	Literary Works, Inscriptions, Memoirs of	
	Foreign Writers)	
Unit: II	Social Institutions and Dharmaśāstra	06 Credits
	Literature:	
	Dharmaśāstra as a special branch of studies of	
	Social Institutions, sources of Dharma	
	(Manusmrti, 2,12; Yājňavalkyasmrti,1.7).	
	Different kinds of <i>Dharma</i> in the sense of Social	
	Ethics Manusmiti, 10,63; Vișnupurăna 2.16-17);	
	Six kinds of <i>Dharma</i> in the sense of Duties	
	(Mitaksarațika on Yajnavalkyasmrti,1.1).	
	Manuariti (02):	
	(Manusmiti, 0.92); Fourtoon Dharmasthānas (Vājā avallavasmiti 1.2)	
	Fourteen-Dharmasinanas (Tajnavaikyasmiti,1.5)	
	Section B	
	Structure of Society and Values of Lif	e
Unit: I	Varna-System and Caste System :	05 Credits
	Four-fold division of Varna System, (Rgveda,	
	10.90.12), Mahābhārata, Sāntiparva, 72.3-8);	
	Division of Varna according to Guna and Karma	
	(Bhagvadgita , 4.13, 18.41-44).	
	Origin of Caste-System from Inter-caste	
	Marriages (Mahabharata, Anusasanaparva, 48.3-	
	11), Emergence of non Argan tribos in Verma System	
	(Mahābhārata, Śāntinama, 65, 12, 22)	
	Contraction and down gradation and down gradation	
	of Caste System (Anastambadharmasūtra	
	2.5.11.10-11 Raudhāvanadharmasūtra	
	1 8 16 13-14 Manusurti 10 64	
	$Y_{\overline{a}i\overline{n}avalkvasmrti}$ 1 96)	
	rajnaranyasinin, 1.70)	

SANS-H-CC-T-11		
	Vedic Literature	
Prescribed Co	urse:	Total 56 Credits
Section 'A'	Samhitā and Brāhmaņa	30 Credits
Section 'B'	Vedic Grammar	10 Credits
Section 'C'	Brhadāraņyakopaniṣad	16 Credits
Unit-Wise Div	vision:	
	Section 'A'	
	Samhitā and Brāhmaņa	
Unit: I	<i>Rgveda-</i> Agni- 1.1, Ușas- 3.61, Akșa Sūkta 10.34, Hiranyagarbha- 10.121	20 Credits
Unit: II	Yajurveda- Śivasamkalpa Sūkta- 34.1-6	05 Credits
Unit: III	Atharvaveda- Sāmmanasyam- 3.30, Bhūmi-	05 Credits
	12.1-12	
	Section 'B'	
	Vedic Grammar	
Unit: I	Declensions (<i>śabdarūpa</i>), Subjunctive Mood	10 Credits
	(let), Gerunds (ktvārthaka, Tumarthaka), Vedic	
	Accent and Padapāțha.	
Section 'C'		
(Brħadāraṇyakopaniṣad)		
Unit: I	Brhadāranyakopanisad (4.4)	8 Credits
Unit: II	Brhadāraņyakopaniṣad (4.5)	8 Credits

SANS-H-CC-T-12 Sanskrit Grammar		
Prescribed C	ourse	Total 56 Credits
Section 'A'	Kārakaprakaraņam	28 Credits
Section 'B'	Samāsa-prakaraņam	28 Credits

All these sections shall be taught from Vaiyākaraņa-siddhānta-kaumudi.

SANS-H-CC-T-14		
Self Management in the Gītā		
[A] Prescribed	Course:	Total 56 Credits
Section 'A'	Gītā: Cognitive and emotive apparatus	16 Credits
Section 'B'	Gītā: Controlling the mind	24 Credits
Section 'C'	Gītā: Self management through devotion	16 Credits
Unit-Wise Div	vision:	
	Section 'A'	
	Gītā: Cognitive and emotive apparatus	
Unit: I	Hierarchy of <i>indriya</i> , manas, buddhi and ātman	8 Credits
	III.42; XV. 7	
	Role of the <i>ātman</i> –XV.7; XV.9	
Unit: II	Mind as a product of <i>prakrti</i> VII.4	8 Credits
	Properties of three gunas and their impact on the	
	mind – XIII. 5-6; XIV.5-8, 11-13; XIV.17	
	Section 'B'	
	Gītā: Controlling the mind	
Unit: I	Confusion and conflict	8 Credits
	Nature of conflict I.1; IV.16; I.45; II.6	
	Causal factors – Ignorance – II.41; <i>Indriya</i> – II.60,	
	Mind – II.67; <i>Rajoguņa</i> – III.36-39; XVI.21;	
** • **	Weakness of mind- II.3; IV.5	2 G 11
Unit: II	Means of controlling the mind Meditation–	8 Credits
	difficulties –VI.34-35; procedure VI.11-14	
	Balanced life- III.8; VI.16-17	
	Diet control- AVII. 8-10 Divisional and montal dissipling XVII 14-10 VI	
	Filysical and mental discipline $-X \vee \Pi$. 14-19, $\vee \Pi$.	
	Means of conflict resolution	
	Importance of knowledge – II 52 · IV 38-39· IV 42	
	Clarity of <i>buddhi</i> – XVIII.30-32	
	Process of decision making – XVIII.63	
Unit: III	Control over senses – IL 59 64	8 Credits
	Surrender of kartrbhāva – XVIII .13-16: V.8-9	
	Desirelessness- II.48; II.55	
	Putting others before self – III.25	
	Section (C)	
	Section C	
	Gita: Self management through devotion	1
Unit: I	Surrender of ego – II.7; IX.27; VIII.7; XI.55; II.47	16 Credits
	Abandoning frivolous debates – VII.21, IV.11;	1
	IX.26	
	Acquisition of moral qualities - XII.11; XII.13-19	

Discipline Specific Elective

SANS-H-DSE-T-01		
Philosophy, Religion and Culture in Sanskrit Tradition		
Prescribed Co	urse:	Total 48 Credits
Section 'A'	Dharma	20 Credits
Section 'B'	Saṃskāra and Puruṣārtha	14 Credits
Section 'C'	Svadharma	14 Credits
Unit-Wise Div	vision:	
	Section 'A'	
	Dharma	
Unit: I	Form of God, Mode of worship, Bhakta as a	07 Credits
	morally evolved person - Gita Chapter XII	
Unit: II	Dharma – ten-fold dharma and its versions,	06 Credits
	definitions of <i>satya, ahimsā, asteya, aparigraha</i> ,	
	<i>pañcha mahāyajña</i> ; theory of three debts.	05 G 11
Unit: III	Man's initiative and God's design; God's lila and	07 Credits
	Krpa, Daiva versus <i>purusakara</i> , <i>ad</i> rsta, three	
	types of karma – samenita, kriyamana and	
	Section 'B'	
	Samskāra and Purusārtha	
Unit: I	Process of acculturation – importance of	07 Credits
	Samskāra	07 credits
	Sunsulu	
Unit: II	Aim of human life – theory of <i>Purusārtha</i> .	07 Credits
	Section 'C'	
Svadharma		
Unit: I	An 'amoral' person – svadharma and karmayoga,	07 Credits
	sthita prajña in the Gita (Chapter II).	
Unit: II	<i>Prakrti</i> – three <i>gunas</i> and their impact on	07 Credits
	personality.	

SANS-H-GE-T-02		
Indian Culture and Social Issues		
Prescribed Co	urse:	Total 56 Credits
Section 'A'	Culture in a multi-cultural Society	16 Credits
Section 'B'	Cultural Roots of India	30 Credits
Unit-Wise Div	vision:	
	Section 'A'	
	Understanding Culture	
Unit: I	1. What is culture? Culture and Civilization?	06 Credits
	2. What is 'Indian' culture?	
	3. Culture in a multi-cultural society?	
Unit: II	1. Indus-Valley Civilization	09 Credits
	2. Vedic Civilization	
	3. Sanskrit in Indo-Islamic tradition – (Proceedings	5
	of the Sagar University Seminar on "Islām kā	
	Sanskrit Paramparā ko Yogadāna")	
Unit: III	1. Versions of the Rāma legend in Sanskrit	12 Credits
	literature – Valmiki's Ramayana, Bhasa's	
	Pratima natakam, Bhavabhuti's Uttaraarama-	
	Caritam, Ragnuvamsam of Kalidasa, Somadeva	s
	Ratnasaritsagara, Ramayana-manjari of	
	Rajasekhara etc.	
	2. Sanskrit themes in traditional dance forms in	
	Kerala 2 Valazzan	
	5. Takşagan 4. Citagovinde and Odissi	
	5 Major agricultural and Seasonal factivals of	
	J. Major agricultural and Seasonal Testivals of	
	Domgal Maker Samkränti Lohari Onom	
	Baisākhī, Śrāvanī Pūrnimā etc	
	Soction 'D'	
	Social Issues	
Unit: I	1. Law and Change – Dharma as an even	04 Credits
	evolving Phenomenon	
	2. Manusmrti, Chapter 2, verses 6 and 12 with	
	commentary of Medhātithi;	
	3. Lingat, Robert: Classical Law of India,	
	Chapter 1, pp 3-7; tradition – pp 9-14	
	4. Mathur, A.D.: Medieval Hindu Law, Chapter	
	I, pp 1-8	
Unit: II	1. Caste – Voice of Challenge	04 Credits
	2. Traditional Varna hierarchy	
	3. Vajrasūcī of Aśvaghosa	

Unit: III	Identity of Women in Ancient Indian Society	12 Credits
	(6 hrs.)	
	Draupadī's question – Mahābhārata, Sabhā-	
	Parvan – Dyūta Pārvan Chapter 66 –	
	Duryodhana asks Draupadī to be brought to the	
	court 1; Vidura's protest 2, 4;	
	Chapter 67 – Duryodhana asks Pratikāmī to fetch	
	Draupadī 2; Draupadīr's refusal and question 5-	
	10, 16; Yudhisthira's response 39-41; Bhīsma's	
	response 47-49; Draupadī's Rejoinder 50-52;	
	Vikarna's statement, Chapter 68, verse 12-17;	
	Karņa to Vikarņa – 27-31, 35.	
Unit: III	Struggle to Secure Women's right property	10 Credits
	(8hrs.)	
	Yājñavalkya Smrti, Vyāharāhādhyāya: Verse 135	
	with Vijñāneśvara's Commentary (Section on	
	Patnī)	

SANS-H-GE-T-03		
Ancient Indian Polity		
Prescribed Co	urse:	Total 56 Credits
Section 'A'	Name, Scope and Origin of Ancient Indian Polity	10 Credits
Section 'B'	Types and Nature of the State	12 Credits
Section 'C'	Kingship, Council of Ministers and Assemblies	16 Credits
Section 'D'	Law and Justice, Taxation and Inter-State	18 Credits
	Relations	
Unit-Wise Div	vision:	
	Section 'A'	
Na	me, Scope and Origin of Ancient Indian	Polity
Unit: I	Name, Scope and Sources of the Science of	05 Credits
	Polity	
	Name of Ancient Indian Polity: Dandanīti,	
	Dharmaśāstra, Nītišāstra;	
	Scope of Indian Polity: Relation with Dharma,	
	Arina and Null; Sources Vedia Literature, Durānas, Pāmāvana	
	Mahābhārata Dharmašāstra Kautilva's	
	Arthaśāstra and Nīti –śāstra	
Unit: II	Origin of the State ' $Dandan\overline{i}ti$ '	05 Credits
	Origin of State 'Dandanīti': <i>Mātsvanvāva</i> -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 :	06 Credits
	• Rājya, Svarājya, Bhojya, Vairājya,	
	Mahārājya, Sāmrājya concept in Aitreya	
	<i>Brāhmaņa</i> (8.3.13-14 and 8.4.15-16)	
	Republics in Buddhist Literature	
	(Dignanikaya, ManaparinibbanaSutta,	
IImite II	Augutalallikaya,1.215;4.252,250)	06 Credits
	With special reference to Saptānga—Theory : 1.	
	Svāmī, 2. Amātya, 3. Janapada, 4. Pura, 5. Kośa, 6.	
	Daņda and 7. Mitra (Arthaśāstra, 6.1; Manusmṛti,	
	9.294)	

SANS-H-SEC-T-02					
Basic Elements of <i>Ayurveda</i>					
Prescribed Co	Total 28 Credits				
Section 'A'	Introduction of Ayurveda	14 Credits			
Section 'B'	Carakasamhitā – (Sūtra-sthānam)	14 Credits			
Unit-Wise Div	vision				
	Section 'A'				
	Introduction of <i>Ayurveda</i>				
Unit: I	Introduction of Āyurveda, History of Indian Medicine in the pre-caraka period, The two schools of Āyurveda: <i>Dhanvantari</i> and <i>Punarvasu</i> .	07 Credits			
Unit: II	Main Ācāryas of Āyurveda – <mark>Caraka, Suśruta,</mark> Vāgbha <u>ț</u> ța, Mādhava, Sārńgadhara and Bhāvamiśra	07 Credits			
Section 'B'					
Carakasaṃhitā – (Sūtra-sthānam)					
Unit: I	Carakasamhitā – (Sūtra-sthānam): Division of Time and condition of nature and body in six seasons. Regimen of Fall Winter (<i>Hemanta</i>), Winter (Śiśira) & Spring (Vasanta) seasons. Regimen of Summer ($Grī$ sma), Rainy (Varṣā) and Autumn (Śarada) seasons.	14 Credits			

UNIVERSITY OF KALYANI



CBCS CURRICULUM FOR THREE YEARS UNDER-GRADUATE COURSE IN

ZOOLOGY (HONOURS)

COURSES EFFECTIVE FROM THE ACADEMIC SESSION

2018-19

SYLLABUS OF COURSES TO BE OFFERED

Core Courses (CC), Discipline-specific Elective (DSE), Generic Elective (GE), Skill Enhancement Courses (SEC) and Ability Enhancement Compulsory Courses (AECC) 3.2 **Skill Enhancement Course (SEC):** These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based instruction.

		Elective course		Ability enhancement course		Т
Types of course	Core course (CC)	Discipline specific elective course (DSE)	Generic elective course (GE)	Ability Enhancement compulsory course (AECC)	Skill Enhancement course (SEC)	O T A L
No. of course	14	4	4	2	2	26
Credit/course	6	6	6	2	2	140

A. TOTAL Number of courses in UG-CBCS (B.Sc. ZOOLOGY Honours):

Given that each credit/theoretical course will comprise 10 Lectures of 1hr duration each and each credit/practical course will comprise 10 hands-on classes of 2hr duration each.

Structure of B.Sc. Honours Zoology under CBCS

Core Courses (CC) - 14 compulsory courses

Semester	Course Name	Course Detail	Credits
I	ZOOL-H-CC-T-01	Non-chordates I: Protista to Pseudocoelomates	4
	ZOOL-H-CC-P-01	Non-chordates I: Protista to Pseudocoelomates Lab	2
	ZOOL-H-CC-T-02	Non-chordates II: Coelomates	4
	ZOOL-H-CC-P-02	Non-chordates II: Coelomates Lab	2
п	ZOOL-H-CC-T-03	Perspectives in Ecology	4
	ZOOL-H-CC-P-03	Perspectives in Ecology Lab	2
	ZOOL-H-CC-T-04	Cell Biology	4
	ZOOL-H-CC-P-04	Cell Biology Lab	2
ш	ZOOL-H-CC-T-05	Diversity of Chordates	4
	ZOOL-H-CC-P-05	Diversity of Chordates Lab	2
	ZOOL-H-CC-T-06	Animal Physiology: Controlling and Coordinating Systems	
	ZOOL-H-CC-P-06	Animal Physiology: Controlling and Coordinating Systems Lab	
	ZOOL-H-CC-T-07	Fundamentals of Biochemistry	4
	ZOOL-H-CC-P-07	Fundamentals of Biochemistry Lab	2
IV	ZOOL-H-CC-T-08	Comparative Anatomy of Vertebrates	4
	ZOOL-H-CC-P-08	Comparative Anatomy of Vertebrates Lab	2
	ZOOL-H-CC-T-09	Animal Physiology: Life Sustaining Systems	4
	ZOOL-H-CC-P-09	Animal Physiology: Life Sustaining Systems Lab	2
	ZOOL-H-CC-T-10	Immunology	4
	ZOOL-H-CC-P-10	Immunology Lab	2

Semester	Course Name	Course Detail	Credits
V	ZOOL-H-CC-T-11	Molecular Biology	4
	ZOOL-H-CC-P-11	Molecular Biology Lab	2
	ZOOL-H-CC-T-12	Principles of Genetics	4
V	ZOOL-H-CC-P-12	Principles of Genetics Lab	2
VI	ZOOL-H-CC-T-13	Developmental Biology	4
	ZOOL-H-CC-P-13	Developmental Biology Lab	2
	ZOOL-H-CC-T-14	Evolutionary Biology	4
	ZOOL-H-CC-P-14	Evolutionary Biology Lab	2

Discipline Specific Elective Courses (DSE) – Six courses offered, any four to be opted for in Semesters V and VI, two in each semester*

Semester V (any two from below)		Semester VI (any two from below)*			
ZOOL-H- DSE – 1	ZOOL-H- DSE – 2	ZOOL-H- DSE – 3	ZOOL-H- DSE – 4	ZOOL-H- DSE – 5	ZOOL-H- DSE – 6
Fish and Fisheries	Microbiology	Wildlife conservation and Management	Parasitology	Endocrinology	Biology of Insecta
*Provided that a candidate will, in Sem. VI, be able to opt for a Dissertation <i>in lieu</i> of a DSE paper, on a topic to be chosen from the paper that was opted out of.					

Generic Elective Courses (GEC) - Courses offered to students of other Departments

Semester I	Semester II	Semester III	Semester IV ZOOL-H-GE-4	
ZOOL-H-GE-1	ZOOL-H-GE-2	ZOOL- H-GE-3		
Animal Diversity and Taxonomy	Comparative Anatomy, Developmental Biology of Vertebrates and Ecology	Cell Biology, Genetics and Evolutionary Biology	Physiology and Biochemistry	

Ability Enhancement Compulsory Courses (AECC) – Two compulsory courses in Semesters I & II

(i) Environmental Science (Sem I for Hons.),

(ii) Compulsory English/Bengali/Hindi/Arabic as MIL (Sem II for Hons.)

Skill Enhancement Courses (SEC): Two courses in Semesters III and IV, any one to be chosen from choices given below for each semester

Semester III		Semester IV		
ZOOL-H-SEC – 1	ZOOL-H-SEC – 2	ZOOL-H-SEC – 3	ZOOL-H-SEC – 4	
Aquarium Fish Keeping	Apiculture	Sericulture	Medical Diagnostic Techniques	
Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
--------------------	----------------------------	-----------------------	--------------------------	-----------------------
ZOOL-H-CC- T-03	Perspectives in Ecology	4 (40)	60	60

Unit 1: Introduction to Ecology

Autecology and synecology, Levels of organization, Laws of limiting factors.

Unit 2: Population

- 1. Unique and group attributes of population: Demographic factors, life tables, fecundity tables, survivorship curves, dispersal.
- 2. Geometric, exponential and logistic growth, equation, r and K strategies Population regulation density-dependent and independent factors.
- 3. Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition, predator-prey cycling.

Unit 3: Community

Community characteristics: species diversity, abundance, dominance, richness, Vertical stratification, Ecotone and edge effect. Ecological succession with one example

Unit 4: Ecosystem

- Pond ecosystem in detail, Food chain: Detritus and grazing food chains, Linear and Yshaped food chains, Food web, Energy flow through the ecosystem, Ecological pyramids and Ecological efficiencies
- 2. Nitrogen cycle

Unit 5: Applied Ecology

- 1. Wildlife Conservation (in-situ and ex-situ conservation).
- 2. Management strategies for tiger conservation; Wild life protection act (1972).

- 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

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-H-CC- P-03	Perspectives in Ecology Lab	2 (20)	30	60

List of Practicals

- 1. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided
- Determination of population parameters (dominance, diversity, frequency) in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index and Importance Value Index for the same community.
- Study of an aquatic ecosystem: Phytoplankton and zooplankton, 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

1, 2: Theoretical, dry-lab.

4: Major excursion.

13

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-H-DSE- T-03	Wildlife conservation and Management	4 (40)	60	60

Unit 1: Introduction to Wild Life

Brief introduction to Conservation: Importance of conservation; Causes of depletion.

Unit 2: Evaluation and management of wild life

Habitat analysis: Physical parameters – Topography, soil and water; Biological Parameters – food and cover estimation; Brief idea on remote sensing and GIS in wildlife status estimation.

Unit 3: Management of habitats

Setting back succession; Advancing the successional process; Cover construction; 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

Necessity for wildlife conservation; modes of conservation – in-situ conservation and ex-situ conservation.

Unit 6: Management planning of wild life in protected areas

Estimation of carrying capacity; Eco tourism / wild life tourism in forests.

Unit 7: Man and Wildlife

Causes and consequences of human-wildlife conflicts.

Unit 8: Protected areas

National parks & sanctuaries. Tiger conservation - Tiger reserves in India; Management challenges in Tiger reserve.

- Caughley, G., and Sinclair, A.R.E. (1994). Wildlife Ecology and Management. Blackwell Science.
- Woodroffe R., Thirgood, S. and Rabinowitz, A. (2005). People and Wildlife, Conflict or Co- existence? Cambridge University.
- Bookhout, T.A. (1996). Research and Management Techniques for Wildlife and Habitats, 5 th edition. The Wildlife Society, Allen Press.
- Sutherland, W.J. (2000). The Conservation Handbook: Research, Management and Policy. Blackwell Sciences
- 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.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-H-DSE- P-03	Wildlife conservation and Management Lab	2 (20)	30	60

List of Practicals

- 1. Identification (at least 5 each) of flora, mammalian fauna, avian fauna, herpeto-fauna of locality; field notebook with pictures/sketches and brief description.
- 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); note book with pictures/sketches and short description.
- 3. Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers, etc. Descriptions to be noted in field notebook.
- 4. Monitoring for estimation of faunal abundance and diversity in locality (direct and indirect evidences): setting pitfall, spring and light traps and recording results from collections therein; pellet collection, dissection and recording; bird counts, migratory bird counts.

Animals collected from traps should be released back into their own habitat as far as possible; only pictures/sketches and descriptions should be retained submitted. Nests/eggs should not be disturbed/collected unless abandoned. In no case should wildlife be harmed – only non-invasive recording and data collection is permitted.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-H-GE- T-02	Comparative Anatomy, Developmental Biology of Vertebrates and Ecology	4 (40)	60	60

Unit 1: Integumentary System

Structure, function and derivatives of integument in mammals

Unit 2: Skeletal System

Jaw suspensions.

Unit 3: Digestive System

Teeth.

Unit 4: Circulatory System

Comparative account of heart and aortic arches

Unit 5: Urinogenital System

Succession of kidney, Types of mammalian uteri.

Unit 6: Nervous System

Cranial nerves in mammals.

Unit 7: Early Embryonic Development

Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Planes and patterns of cleavage; Embryonic induction and organizers

Unit 8: Late Embryonic Development

Fate of Germ Layers; Extra-embryonic membranes in birds.

Unit 9: Post Embryonic Development

Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each)

Unit 10: Introduction to Ecology

Autecology and synecology, Levels of organization.

Unit 11: Population and Community

Geometric, exponential and logistic growth, equation, Gause's Principle with laboratory and field examples.

Community characteristics: species diversity, abundance, dominance, richness. Vertical stratification. Ecological succession with one example.

Unit 12: Ecosystem

Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow through the ecosystem, Ecological pyramids.

Unit 13: Applied Ecology

Wildlife Conservation (in-situ and ex-situ conservation). Management strategies for tiger conservation; Wild life protection act (1972)

62

Reference Books

- Gilbert, S. F. (2010). Developmental Biology, IX Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA
- Slack JMW, Essential Developmental Biology.
- 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.
- 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

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-H-GE- P-02	Comparative Anatomy and Developmental Biology of Vertebrates Lab	2 (20)	30	60

List of Practicals

- 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 OR
- 4. Identification of mammalian skulls: One herbivorous (Guineapig) and one carnivorous (Dog) animal
 - a. Dissection of Tilapia: Circulatory system, Brain, pituitary, urinogenital system.
 - b. Study of whole mounts of developmental stages of chick through permanent slides: 24, 48, 72, and 96 hours of incubation.
- 5. Study of an aquatic ecosystem: Phytoplankton and zooplankton, determination of pH, and Dissolved Oxygen content (Winkler's method) and free CO₂.
- 6. Report on a one-day visit to Sanctuary/Zoo/Sericulture station/Fishery/apiculture station/pond ecosystem/agroecosystem.

Either 3 or 4. Lab note book, with labelled diagrams and identifications, with reason.

Separate Lab Notebooks for Identification and Ecology. Separate Field Notebook.



UNIVERSITY

OF

KALYANI

SYLLABUS & STRUCTURE

for

Under Graduate (UG) General Course of B.Sc. with Zoology

under

CHOICE BASED CREDIT SYSTEM (CBCS)

Effective from the academic session 2018-19

Type of courses to be offered

 $\Box \quad Core\left(CC\right)$

- □ Discipline Specific Elective (DSE)
- □ Skill Enhancement (SEC)
- □ Ability Enhancement Core (AECC)

PREAMBLE

The University Grants Commission (UGC) has taken various measures by means of formulating regulations and guidelines and updating them, in order to improve the higher education system and maintain minimum standards and quality across the higher educational institutions in India. The various steps that the UGC has initiated are all targeted towards bringing equity, efficiency and excellence in the higher education system of country. These steps include introduction of innovation and improvements in curriculum structure and content, the teaching-learning process, the examination and evaluation systems, along with governance and other matters. The introduction of Choice Based Credit System (CBCS) is one such attempt towards improvement and bringing in uniformity of system with diversity of courses across all higher education institutes in the country. The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising of core, elective, skill enhancement and ability enhancement courses. The courses shall be evaluated following the grading system, is considered to be better than conventional Points system. This will make it possible for the students to move across institutions within India to begin with and across countries for studying courses of their choice. The uniform grading system shall also prove to be helpful in assessment of the performance of the candidates in the context of employment.

	Discipline		Ability Enhancem	Т	
Type of course	Core Course (CC)	Specific Elective Course (DSE)	Ability Enhancement compulsory course (AECC)	Skill Enhancement course (SEC)	T A L
No. of course	12	6	2	4	24
Credit/course	6	6	2	2	120

TOTAL NUMBER OF COURSES

DETAIL OF COURSES

Sl. No.	Particulars of Course	Credit Point Theory + Practical
1.	Core Course: 12 Papers	
1. A.	Core Course: (Theory)*(12 papers)	4x12 = 48
1. B.	Core Course: (Practical)*(12 papers)	2x12 = 24

Sl. No.	Particulars of Course	Credit Point Theory + Practical
2.	Elective Courses: (6 papers)	
2. A.	DSE: (Theory)*(6 papers)	4x6 = 24
2. B.	DSE: (Practical)*(6 papers)	2x6 = 12
3.	Ability Enhancement Courses	
3. A.	Ability Enhancement compulsory course (AECC): (Theory)*(2 papers) (2 papers of 2 credits each)	2x2 = 4
3. B.	Skill Enhancement Course (SEC): (Theory)*(4 papers) (4 papers of 2 credits each)	2x4 = 8
Total (Credit:	120

DESCRIPTION OF COURSE TYPES INTRODUCED IN CBCS CURRICULUM

- □ **Core Course (CC):** A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.
- Discipline Specific Elective Course (DSE): Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/subject of study or which provides an extended which enables scope or an exposure to some other discipline/subject/domain or nurtures the student's proficiency/skill is termed as an Elective Course and if the Elective courses that are offered by the main discipline/subject of study are referred to as Discipline Specific Elective.
- Skill Enhancement Course (SEC): These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based instruction.
- Ability Enhancement Compulsory Course (AECC): Ability enhancement courses are the courses based upon the content that leads to Knowledge enhancement. Two compulsory courses in Semesters I & II.
 - Compulsory English/Bengali/Hindi/Arabic as MIL (Sem I for Prog./Genl.),
 - Environmental Science (Sem II for Prog./Genl.)

Courses/	Semesters						Total No. of	Total	
(Credits)	Sem-I	Sem-II	Sem-III	Sem-IV	Sem-V	Sem-VI	Course	Credit	
CC-1, 2, 3 (6)	3 (1A,2A,3A)	3 (1B,2B,3B)	3 (1C,2C, 3C)	3 (1D,2D, 3D)	-	-	12	72	
DSE - 1, 2, 3 (6)	-	-	-	-	3 (1A,2A,3A)	3 (1B,2B,3B)	6	36	
AECC (2)	1 (MIL)	1 (ENV)	-	-	-	-	2	04	
SEC (2)	-	-	1	1	1	1	4	08	
Total No. of									
Courses/	4	4	4	4	4	4	24	-	
Semester									
Total Credits	20	20	20	20	20	20	_	120	
/Semester	20	20	20 20	20	20	20	20	-	120

SEMESTER WISE DISTRIBUTION OF COURSES & CREDITS

Full marks of a course, having 6 credits/ 2credits, along with distribution of marks:

Full marks of each course of B.Sc. (Gen.), carrying 6 credits, be 75

Full marks of each course B.Sc. (Gen.), carrying 2 credits, be 50

For practical, distribution of 75 marks be as follows:

Class **Attendance cum Internal Assessment: 20% of 75 marks = 15 marks** of which 5 marks be reserved for theoretical class attendance in the following manner:

Attendance 50% & above but below 60% - 2 marks

Attendance 60% & above but **below 75%** - 3 marks

Attendance 75% & above but **below 90% - 4** marks

Attendance 90% & above - 5 marks

and **10 marks** be reserved for **class test/ assignment/ seminar** (theoretical -5 & practical -5). **Semester-end-Practical** Examination of each course = **20 marks**, distribution of which may be as under:

a) Lab. Note Book	= 05
b) Viva- voce	= 05
c) Experiment	= 10

Semester-end-Theoretical Examination of each course = **40 marks**, distribution of which may be as under:

a) Answer 05 questions out of 08 carrying 02 marks each	$= 05 \ge 02 = 10$
b) Answer 02 questions out of 04 carrying 05 marks each	$= 02 \ge 0.05 = 10$
c) Answer 02 questions out of 04 carrying 10 marks each	$= 02 \times 10 = 20$

However, questions, carrying 5 or 10 marks, need not necessarily to be a single question.

In the Semester-end-Examination of AECC, carrying 2 credits (ie. FM 50):

MCQ be set and OMR sheet be used. Under AECC, ENVS be taught in the 1st Semester and Compulsory English/Bengali/Hindi/Arabic as MIL be taught in the 2nd Semester.

Distribution of 50 marks (for each SEC) be as follows:

Internal Assessment: 20% of 50 marks = 10 marks be reserved for class test/ assignment/ seminar.

40 marks be allotted for Semester-end-Theoretical Examination of each course, distribution of which may be as under:

a)	Answer	05 ques	stions	out of 08 o	carrying	; 02 n	narks e	each	= 05 x	: 02 =	= 10
		~ ~				~ -				~ -	10

- b) Answer 02 questions out of 04 carrying 05 marks each $= 02 \times 05 = 10$
- c) Answer 02 questions out of 04 carrying 10 marks each $= 02 \times 10 = 20$

However, questions, carrying 5 or 10 marks, need not necessarily to be a single question.

Distribution of **total marks** (1650), equivalent to 132 credits, of all courses to be studied by a student of B.Sc. (Gen).

a) CC	=75x12	= 900
b) DSE	=75x6	= 450
c) GE	=75x4	= 300
d) AECC	= 50x2	= 100
e) SEC	= 50x4	= 200

STRUCTURE OF CURRICULUM

Core Courses (CC): 12 compulsory courses – 04 courses to be taken, one each in Semesters I, II, III, IV.

- 1. Animal Diversity and Taxonomy
- 2. Comparative Anatomy, Developmental Biology of Vertebrates and Ecology
- 3. Cell Biology, Genetics and Evolutionary Biology
- 4. Physiology and Biochemistry

Discipline Specific Elective Courses (DSE): 02 courses to be taken, one each in Semesters V and VI.

- 1. Fish and fisheries
- 2. Wildlife conservation and Management
- 3. Parasitology
- 4. Biology of Insecta

Ability Enhancement Compulsory Courses (AECC): 2 compulsory courses – to be taken in **Semesters I and II (one in each semester)**

English Communication / MIL

Environmental Science

Skill Enhancement Courses (SEC): to be taken in Semesters III, IV, V and VI.

- 1. Aquarium fish keeping
- 2. Apiculture
- 3. Sericulture
- 4. Medical Diagnostics Techniques

SEMESTER & COURSEWISE CREDIT DISTRIBUTION

		Credits		
Course Type	Total Papers	Theory + Practical	Theory*	
Core Courses	12	12*4 =48 12*2 =24	12*5 =60 12*1=12	
Discipline Specific Electives	6 (from 3 subjects)	6*4=24 6*2=12	6*5=30 6*1=6	
Ability Enhancement Language Courses	2	2*2=4	2*2=4	
Skill Enhancement Courses	4	4*2=8	4*2=8	
Totals	24	120	120	

(6 Credits: 75 Points; L: Lecture; P: Practical)

*Tutorials of 1 Credit will be conducted in case there is no practical component

- All Pass courses will have 3 subjects/disciplines of interest. Student will select 4 core courses each from disciplines of choice including Zoology as one of the disciplines.
- Student will select 2 DSE courses each from disciplines of choice including Zoology as one of the disciplines.
- Student may also choose Skill Enhancement courses in Zoology.

3

Scheme for CBCS Curriculum with Course Details

Semester	Course Name	Course Detail	Credits
T	ZOOL-G-CC-T-01	Animal Diversity and Taxonomy	4
I	ZOOL-G-CC-P-01	Animal Diversity and Taxonomy Lab	2
п	ZOOL-G-CC-T-02 Biology of Vertebrates and Ecolo		4
11	ZOOL-G-CC-P-02	Comparative Anatomy, Developmental Biology of Vertebrates and Ecology Lab	2
III	ZOOL-G-CC-T-03	Cell Biology, Genetics and Evolutionary Biology	4
	ZOOL-G-CC-P-03	Cell Biology, Genetics and Evolutionary Biology Lab	2
	ZOOL-G-SEC-T-01 Aquarium Fish Keeping		2
ZOOL-G-CC-T-04 Physiology and Biochemistr		Physiology and Biochemistry	4
IV	ZOOL-G-CC-P-04	Physiology and Biochemistry Lab	2
	ZOOL-G-SEC-T-02	Apiculture	2
	ZOOL-G-SEC-T-03	Sericulture	2
V	ZOOL-G-DSE-T-01	Fish and Fisheries	4
	ZOOL-G-DSE-P-01	Fish and Fisheries Lab	2
	ZOOL-G-SEC-T-04	Medical diagnostics Lab	2
VI	ZOOL-G-DSE-T-02	Parasitology	4
	ZOOL-G-DSE-P-02	Parasitology Lab	2

Core Subjects Syllabus

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-CC- T-01	Animal Diversity and Taxonomy	4 (40)	60	60

Unit 1: Basics of Animal Classification

Codes of Zoological Nomenclature; Principle of priority; Synonymy and Homonymy.

Unit 2: Protista

Protozoa. Outline of classification (salient features and classification scheme upto subphylum only).

- a. Locomotion in Amoeba; Conjugation in Paramoecium.
- b. Life cycle and pathogenicity of *Entamoeba histolytica*.

Unit 3: Porifera

Outline of classification (salient features and classification scheme upto subclass only). Canal system in sponges.

Unit 4: Cnidaria

Outline of classification (salient features and classification scheme upto subclass only). Metagenesis in *Obelia*.

Unit 5: Platyhelminthes

Outline of classification (salient features and classification scheme upto subclass only). Life cycle and pathogenicity and control measures of *Fasciola hepatica*.

Unit 6: Nematoda

Outline of classification (salient features and classification scheme upto subclass only). Life cycle, and pathogenicity and control measures of *Ascaris lumbricoides*.

Unit 7: Annelida

Outline of classification (salient features and classification scheme upto subclass only). Excretion in Annelida through nephridia.

Unit 8: Arthropoda

Outline of classification (salient features and classification scheme upto class only). Social life in termite.

Unit 9: Mollusca

Outline of classification (salient features and classification scheme upto subclass only). Respiration in *Pila*.

Unit 10: Echinodermata

Outline of classification (salient features and classification scheme upto subclass only). Water-vascular system in Asteroidea

Unit 11: Protochordata

Retrogressive metamorphosis in Ascidia.

Unit 12: Pisces

Outline of classification (salient features and classification scheme upto subclass only). Swim bladder in fishes.

Unit 13: Amphibia

Outline of classification (salient features and classification scheme upto order only). Parental care in Amphibia.

Unit 14: Reptilia

Outline of classification (salient features and classification scheme upto order only). Poison apparatus and Biting mechanism in Snake.

Unit 15: Aves

Outline of classification (salient features and classification scheme upto subclass only). Exoskeleton and Migration in Birds.

Unit 16: Mammalia

Outline of classification (salient features and classification scheme upto infraclass only). Exoskeletal derivatives of mammals.

Classification scheme to be followed from Ruppert and Barnes for Invertebrates and Young for Vertebrates.

- Ruppert and Barnes, R.D. (2006). Invertebrate Zoology, VIII Edition. Holt Saunders International Edition
- The Invertebrates: A New Synthesis, III Edition, Blackwell Science
- Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford university press.
- Parker, T. J. & Haswell, W. (1972). Text Book of Zoology, Volume II: Marshall and Willam (Eds.) 7th Ed. Macmillan Press, London.
- Jordan, E.L. & Verma, P.S. (2003). Chordate Zoology. S. Chand & Company Ltd. New Delhi.
- Sinha, K. S., Adhikari, S., Ganguly, B. B. & BharatiGoswami, B. D. (2001). Biology of Animals. Vol. II. New Central Book Agency (P) Ltd.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-CC- P-01	Animal Diversity, Taxonomy Lab	2 (20)	30	60

List of Practicals

- 1. Identification of:
 - a. Porifera Sycon, Obelia, Physalia, Corallium, Metridium, Pennatula.
 - b. Annelids Nereis, Pheretima, Hirudinaria.
 - c. Arthropods *Limulus, Palaemon, Eupagurus, Scolopendra, Bombyx, Periplaneta*, termites and honey bees.
 - d. Onychophora Peripatus.
 - e. Molluscs Pila, Sepia.
 - f. Echinodermata Asterias, Echinus.
 - g. Protochordata Balanoglossus.
 - h. Fishes Sphyrna, Torpedo, Labeo, Exocoetus, Echeneis, Hippocampus.
 - i. Amphibia Hyla, Tylototriton.
 - j. Reptilia Trionyx, Hemidactylus, Chamaeleon, Draco, Naja.
 - k. Mammalia: Bat
- 2. Pecten from Fowl head
- 3. Dissection of brain and pituitary of Rohu/Catla/Mrigal
- 4. Identification and significance of adult *Fasciola hepatica*, and *Ascaris lumbricoides*

Identification upto Subclass in invertebrates and upto Order in vertebrates, with labeled diagrams, systematic position and characters, in Lab Notebook.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-CC- T-02	Comparative Anatomy, Developmental Biology of Vertebrates and E <mark>cology</mark>	4 (40)	60	60

Unit 1: Integumentary System

Structure, function and derivatives of integument in mammals

Unit 2: Skeletal System

Jaw suspensions.

Unit 3: Digestive System

Teeth.

Unit 4: Circulatory System

Comparative account of heart and aortic arches

Unit 5: Urinogenital System

Succession of kidney, Types of mammalian uteri.

Unit 6: Nervous System

Cranial nerves in mammals.

Unit 7: Early Embryonic Development

Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Planes and patterns of cleavage; Embryonic induction and organizers

Unit 8: Late Embryonic Development

Fate of Germ Layers; Extra-embryonic membranes in birds.

Unit 9: Post Embryonic Development

Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each)

Unit 10: Introduction to Ecology

Autecology and synecology, Levels of organization.

Unit 11: Population and Community

Geometric, exponential and logistic growth, equation, Gause's Principle with laboratory and field examples.

Community characteristics: species diversity, abundance, dominance, richness. Vertical stratification. Ecological succession with one example.

Unit 12: Ecosystem

Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow through the ecosystem, Ecological pyramids.

Unit 13: Applied Ecology

Wildlife Conservation (in-situ and ex-situ conservation). Management strategies for tiger conservation; Wild life protection act (1972) 7

Reference Books

- Gilbert, S. F. (2010). Developmental Biology, IX Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA
- Slack JMW, Essential Developmental Biology.
- 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.
- 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

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-CC- P-02	Comparative Anatomy and Developmental Biology of Vertebrates Lab	2 (20)	30	60

List of Practicals

- 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 OR
- 4. Identification of mammalian skulls: One herbivorous (Guineapig) and one carnivorous (Dog) animal
 - a. Dissection of Tilapia: Circulatory system, Brain, pituitary, urinogenital system.
 - b. Study of whole mounts of developmental stages of chick through permanent slides: 24, 48, 72, and 96 hours of incubation.
- 5. Study of an aquatic ecosystem: Phytoplankton and zooplankton, determination of pH, and Dissolved Oxygen content (Winkler's method) and free CO₂.
- 6. Report on a one-day visit to Sanctuary/Zoo/Sericulture station/Fishery/apiculture station/pond ecosystem/agroecosystem.

Either 3 or 4. Lab note book, with labelled diagrams and identifications, with reason.

Separate Lab Notebooks for Identification and Ecology. Separate Field Notebook.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-CC-T- 03	Cell Biology, Genetics and Evolutionary Biology	4 (40)	60	60

Unit 1: Overview of Cells

Basic structure of Prokaryotic and Eukaryotic cells

Unit 2: Plasma Membrane

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

1. Structure and Functions: Endoplasmic Reticulum, Golgi Apparatus, Lysosomes.

Unit 4: Cytoplasmic organelles II

Mitochondria: Structure, Mitochondrial Respiratory Chain.

Unit 5: Nucleus

Chromatin: Euchromatin and Heterochromatin and packaging (nucleosome).

Unit 6: Cell Division

Cell cycle and its regulation.

Unit 7: Cell Signaling

Cell signaling transduction pathways; Types of signaling molecules and receptors

Unit 8: Mendelian Genetics and its Extension

Principles of inheritance. Sex-linked, sex- influenced and sex-limited inheritance.

Unit 9: Linkage, Crossing Over and Chromosomal Mapping

Linkage and Crossing Over

Unit 10: Mutations

Types of gene mutations (Classification), Types of chromosomal aberrations (Classification with one suitable example of each)

Unit 11: Sex Determination

Mechanisms of sex determination in Drosophila

Unit 12: Evolution – 1: Idea

Geological time scale

Unit 13: Evolution - 2: Mechanism

Natural selection (concept of fitness, types of selection, selection coefficient, mode of selection heterozygous superiority).

Unit 14: Evolution - 3: Effect

Species concept, Isolating mechanisms, modes of speciation

Unit 15: Evolution - 4: Humans

Unique Hominid characteristics contrasted with primate characteristics.

Reference Books

- Campbell, N.A. and Reece J.B (2011). Biology. IX Edition. Pearson, Benjamin, Cummings.
- Douglas J. Futuyma (1997). Evolutionary Biology. Sinauer Associates.
- iGenetics: A Molecular Approach. 3rd edition. Peter.J.Russell.
- Developmental biology by Scott F. Gilbert, 9th edition.
- 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. 3d. ed. Benjamin Cummings
- 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.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-CC-P- 03	Cell Biology, Genetics and Evolutionary Biology Lab	2 (20)	30	60

List of Practicals

- 1. Study of various stages of meiosis.
- 2. Study of fossils from models/ pictures.
- 3. Chi-square analyses.

Lab note book, with drawing and labelling; methods where applicable.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-CC-T- 04	Physiology and Biochemistry	4 (40)	60	60

Unit 1: Digestion and Absorption of Food

Structure and function of digestive glands; Digestion and absorption of carbohydrates, fats and proteins.

Unit 2: Functioning of Excitable Tissue (Nerve and Muscle)

Structure of neuron, Propagation of nerve impulse (myelinated and non-myelinated nerve fibre); Structure of skeletal muscle, Mechanism of muscle contraction (Sliding filament theory.

Unit 3: Respiratory Physiology

Transport of oxygen and carbon dioxide in blood, Factors affecting transport of gases.

Unit 4: Renal Physiology

Functional anatomy of kidney, Mechanism and regulation of urine formation

Unit 5: Cardiovascular Physiology

Structure of heart, Coordination of heartbeat, Cardiac cycle, ECG

Unit 6: Endocrine and Reproductive Physiology

Structure and function of endocrine glands (pituitary, thyroid, parathyroid, pancreas, adrenal, ovaries, and testes), Brief account of Menstrual cycle.

Unit 7: Carbohydrates

Glycolysis, Citric acid cycle

Unit 8: Lipids

Fatty acid biosynthesis

Unit 9: Proteins

Amino acids: Structure, Classification Proteins: Levels of organization; Protein metabolism: Urea cycle

Unit 10: Nucleic Acids

Structure: Purines and pyrimidines, Nucleosides, Nucleotides, Nucleic acids

Unit 11: Enzymes

Classification; Cofactors; Specificity; Isozymes; Mechanism of enzyme action; Enzyme kinetics; Factors affecting rate of enzyme-catalyzed reactions.

- Cox, M.M and Nelson, D.L. (2008). Lehninger's Principles of Biochemistry, V Edition, W.H. Freeman and Co., New York.
- Berg, J.M., Tymoczko, J.L. and Stryer, L.(2007). Biochemistry, VI Edition, W.H. Freeman and Co., New York.
- 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.

• Hames, B.D. and Hooper, N.M. (2000). Instant Notes in Biochemistry, II Edition, BIOS, Scientific Publishers Ltd., U.K.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-CC-P- 04	Physiology and Biochemistry Lab	2 (20)	30	60

List of Practical

List of Practicals

- 1. Preparation of temporary mounts: Blood film.
- 2. Estimation of haemoglobin using Sahli's haemoglobinometer.
- 3. Examination of permanent histological sections of mammalian duodenum, lung, kidney, thyroid, pancreas, adrenal, testis, ovary.
- 4. Qualitative tests of functional groups in carbohydrates, proteins and lipids.

Lab notebook with labelled diagrams, methods and results.

Discipline Specific Electives (DSE) Courses Syllabus

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-DSE- T-01	Fish and Fisheries	4 (40)	60	60

Unit 1: Introduction and Classification

- 1. Feeding habit, habitat and manner of reproduction
- 2. Classification of fish (up to Subclasses)

Unit 2: Morphology and Physiology

Types of fins and their modifications; 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.

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.

Unit 4: Aquaculture

Sustainable Aquaculture; Extensive, semi-intensive and intensive culture of fish; Pen and cage culture; Polyculture; Composite fish culture; Induced breeding of fish; Management of finfish hatcheries; 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

Reference Books

- Q Bone and R Moore, Biology of Fishes, Taylor and Francis Group, CRC Press, U.K.
- 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
- C.B.L. Srivastava, Fish Biology, Narendra Publishing House
- J.R. Norman, A history of Fishes, Hill and Wang Publishers
- S.S. Khanna and H.R. Singh, A text book of Fish Biology and Fisheries, Narendra Publishing House.

Note: Classification to be followed from: Romer A. S. (1959)

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-DSE- P-01	Fish and Fisheries Lab	2 (20)	30	60

List of Practical

List of Practicals

- 1. Morphometric and meristic characters of fishes.
- 2. Study of *Petromyzon*, *Myxine*, *Pristis*, *Chimaera*, *Exocoetus*, *Hippocampus*, *Gambusia*, *Labeo*, *Heteropneustes*, *Anabas*, *Echeneis*, exotic carps.
- 3. Study of different types of scales (through permanent slides/ photographs).
- 4. Study of crafts and gears used in Fisheries (Pictures/models). Characters.
- 5. Water quality criteria for Aquaculture: Assessment of pH, DO, free CO₂, productivity, alkalinity, hardness, chloride (by titration/refractometer).
- 6. Study of air breathing organs in *Channa*, *Heteropneustes*, *Anabas* and *Clarias*. Drawing with characters.
- 7. Project Report on a visit to any fish farm/ pisciculture unit/Zebrafish rearing Lab.

Lab notebook with labelled diagrams, methods and results.

1, 3, 4, 6: Identification with diagram, systematic position (where applicable) and diagnostic characters.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-DSE- T-02	Wildlife Conservation and Management	4 (40)	60	60

Unit 1: Introduction to Wild Life

Brief introduction to Conservation: Importance of conservation; Causes of depletion.

Unit 2: Evaluation and management of wild life

Habitat analysis: Physical parameters – Topography, soil and water; Biological Parameters – food and cover estimation; Brief idea on remote sensing and GIS in wildlife status estimation.

Unit 3: Management of habitats

Setting back succession; Advancing the successional process; Cover construction; 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

Necessity for wildlife conservation; modes of conservation – in-situ conservation and ex-situ conservation.

Unit 6: Management planning of wild life in protected areas

Estimation of carrying capacity; Eco tourism / wild life tourism in forests.

Unit 7: Man and Wildlife

Causes and consequences of human-wildlife conflicts.

Unit 8: Protected areas

National parks & sanctuaries. Tiger conservation - Tiger reserves in India; Management challenges in Tiger reserve.

- Caughley, G., and Sinclair, A.R.E. (1994). Wildlife Ecology and Management. Blackwell Science.
- Woodroffe R., Thirgood, S. and Rabinowitz, A. (2005). People and Wildlife, Conflict or Co- existence? Cambridge University.
- Bookhout, T.A. (1996). Research and Management Techniques for Wildlife and Habitats, 5 th edition. The Wildlife Society, Allen Press.
- Sutherland, W.J. (2000). The Conservation Handbook: Research, Management and Policy. Blackwell Sciences
- 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.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-DSE- P-02	Wildlife Conservation and Management Lab	2 (20)	30	60

List of Practicals

- 1. Identification (at least 5 each) of flora, mammalian fauna, avian fauna, herpeto-fauna of locality; field notebook with pictures/sketches and brief description.
- 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); note book with pictures/sketches and short description.
- 3. Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers, etc. Descriptions to be noted in field notebook.
- 4. Monitoring for estimation of faunal abundance and diversity in locality (direct and indirect evidences): setting pitfall, spring and light traps and recording results from collections therein; pellet collection, dissection and recording; bird counts, migratory bird counts.

Animals collected from traps should be released back into their own habitat as far as possible; only pictures/sketches and descriptions should be retained submitted. Nests/eggs should not be disturbed/collected unless abandoned. In no case should wildlife be harmed – only non-invasive recording and data collection is permitted.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-DSE- T-03	Parasitology	4 (40)	60	60

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 *Trypanosoma gambiense*, *Leishmania donovani*

Unit 3: Parasitic Platyhelminthes

Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Schistosoma haematobium*.

Unit 4: Parasitic Nematodes

Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Ascaris lumbricoides*, *Ancylostoma duodenale*, *Wuchereria bancrofti*.

Unit 5: Parasitic Arthropods

Biology, importance and control of ticks (Soft tick *Ornithodoros*, Hard tick *Ixodes*), mites (*Sarcoptes*), Lice (*Pediculus*), Flea (*Xenopsylla*).

Unit 6: Parasite Vertebrates

Brief account of Vampire bat

- Arora, D. R and Arora, B. (2001) Medical Parasitology. II Edition. CBS Publications and Distributors
- E.R. Noble and G.A. Noble (1982) Parasitology: The biology of animal parasites. V Edition, Lea & Febiger
- Ahmed, N., Dawson, M., Smith, C. and Wood, Ed. (2007) Biology of Disease. Taylor and Francis Group
- Parija, S. C. Textbook of medical parasitology, protozoology & helminthology (Text and colour Atlas), II Edition, All India Publishers & Distributers, Medical Books Publishers, Chennai, Delhi
- Rattan Lal Ichhpujani and Rajesh Bhatia. Medical Parasitology, III Edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi
- Meyer, Olsen & Schmidt's Essentials of Parasitology, Murray, D. Dailey, W.C. Brown Publishers
- K. D. Chatterjee (2009). Parasitology: Protozoology and Helminthology. XIII Edition, CBS Publishers & Distributors (P) Ltd.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-DSE- P-03	Parasitology Lab	2 (20)	30	60

List of Practicals

- 1. Study of life stages of any one: *Giardia intestinalis*, *Trypanosoma gambiense*, *Leishmania donovani* through permanent slides/micro photographs
- 2. Study of adult and life stages of any one: *Schistosoma haematobium*, *Taenia saginata* through permanent slides/micro photographs
- 3. Study of adult and life stages of any one: *Ancylostoma duodenale*, *Brugia malayi* and *Trichinella spiralis* through permanent slides/micro photographs
- 4. through permanent slides/micro photographs
- 5. Study of any one: *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

6 and 7: Wet lab.

Lab notebook with labelled diagrams, methods and results.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G-DSE- T-04	Biology of Insecta	4 (40)	60	60

Unit 1: Introduction to Biology of Insecta

General Features of Insects.

Unit 2: Insect Taxonomy

Classification of insects up to orders (according to Brusca and Brusca, 2016).

Unit 3: General Morphology of Insects

Head – Types of antennae, Mouth parts w.r.t. feeding habits; Thorax: Wings and wing articulation, Types of Legs adapted to diverse habitat.

Unit 4: Physiology of Insects

Structure and physiology of Insect digestive, reproductive, and nervous systems; Metamorphosis: Types and Neuroendocrine control of metamorphosis.

Unit 5: Insect Society

Social insects with special reference to termites. Trophallaxis.

Unit 6: Insect Plant Interaction

role of allelochemicals in host plant mediation. Major insect pests in paddy.

Unit 7: Insects as Vectors

Brief discussion on houseflies and mosquitoes as important vectors.

Reference Books

- A general text book of entomology, Imms , A. D., Chapman & Hall, UK
- The Insects: Structure and function, Chapman, R. F., Cambridge University Press, UK.
- The Insect Societies, Wilson, E. O., Harward Univ. Press, UK.
- Host Selection by Phytophagous insects, Bernays, E. A., and Chapman, R. F., Chapman and Hall, New York, USA.
- Medical Entomology, Hati A. K., Allied Book Agency, 2010.

Note: Classification to be followed from IMMS A. D. (1938).

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-H-DSE- P-06	Biology of Insecta Lab	2 (20)	30	60

List of Practicals

- 1. Study of life cycle of Mosquito, various castes of *Apis*, *Camponotus Odontotermes*. Diagrams and descriptions in note-book.
- 2. Methodology of collection and preservation. Key to common insect orders.
- 3. Mounting of wings, different kinds of antennae, legs and mouth parts of insects (at least 4, one of each).
- 4. Submission of collected, preserved and mounted representative insects from at least ten orders from locality.

Lab notebook with labelled diagrams (1 and 2); Submissions (3 and 4).

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G- SEC- 01	Aquarium Fish Keeping	2 (20)	30	30

Skill Enhancement Courses (SEC) Syllabus

Unit 1: Introduction to Aquarium Fish Keeping

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, 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.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G- SEC- 02	Apiculture	2 (20)	30	30

Unit 1: Biology of Bees

Biology and social organization of honey bees.

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

Report on a visit to an apiculture farm.

- Economic Zoology Chaki, Kundu, Sarkar, New Central Book Agency.
- Moumachhi o tader palonkotha Kishor Dhara,

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-G- SEC- 03	Sericulture	2 (20)	30	30

Unit 1: Introduction

- 1. Types of silkworms, Distribution and Races
- 2. Exotic and indigenous races
- 3. Mulberry and non-mulberry Sericulture

Unit 2: Biology of Silkworm

- 1. Life cycle of Bombyx mori
- 2. Structure of silk gland and secretion of silk

Unit 3: Rearing of Silkworms

- 1. Rearing house and rearing appliances.
- 2. Disinfectants: Formalin, bleaching powder,
- 3. Silkworm rearing technology: Early age and Late age rearing
- 4. Types of mountages
- 6. Spinning, harvesting and storage of cocoons

Unit 4: Pests and Diseases

- 1. Pests of silkworm: Uzi fly, dermestid beetles and vertebrates
- 2. Pathogenesis of silkworm diseases: Protozoan, viral, fungal and bacterial
- 3. Control and prevention of pests and diseases

Unit 5: Entrepreneurship in Sericulture

Report on a visit to various sericulture centre.

Reference Books:

• Economic Zoology – Chaki, Kundu, Sarkar, New Central Book Agency.

Course Code	Course Title	Total credits (FM)	Total no. of Lectures	Total no. of hours
ZOOL-H- SEC-04	Medical Diagnostic Techniques	2 (20)	30	30

Unit 1: 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 2: Diagnostic Methods Used for Urine Analysis

Urine Analysis: Physical characteristics; Abnormal constituents

Unit 3: Non-infectious Diseases

Testing of blood glucose using Glucometer/Kit

Unit 4: Infectious Diseases

Diagnosis of Tuberculosis and Hepatitis, Malarial parasite (Microscope based and ELISA based)

Unit 5: Clinical Biochemistry

LFT, Lipid profiling

Unit 6: Clinical Microbiology

Antibiotic Sensitivity Test

Unit 7: Tumors

Detection and metastasis; Medical imaging: X-Ray of Bone fracture, PET, MRI and CT Scan (using photographs).

Unit 8: Lab visit

Visit to Pathological Laboratory and Submission of Project.

- Godkar P.B. and Godkar D.P. Textbook of Medical Laboratory Technology, II Edition, Bhalani Publishing House
- Guyton A.C. and Hall J.E. Textbook of Medical Physiology, Saunders
- Prakash, G. (2012), Lab Manual on Blood Analysis and Medical Diagnostics, S. Chand and Co. Ltd.