



MODEL GOVERNMENT

DEGREE COLLEGE SHOPIAN



Learning Outcomes Based Curriculum Framework for BA, BSc, BCom, BBA and BCA Degree Programmes offered during the year 2020-21.

PREPARED BY
INTERNAL QUALITY ASSURANCE CELL

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PROGRAMME OUTCOMES FOR BA PROGRAMME

The BA programme offered by the Govt Degree College Shopian is recognised by University of Kashmir and follows the curriculum prescribed by the concerned university. Our students are allowed to choose the subjects from the pool of subjects. BA programme in our college meets the standards prescribed by general Humanities, Education and Social Sciences. This programme offers a wide range of subjects that helps our students to understand how cultural, historical, geographical, political, linguistic and environmental forces that shape the world and recognize the role of the individuals within our communities to effect change. The programme offers a variety of modes in terms of teaching and learning.

The programme is designed to achieve the following outcomes:

- The students are acquainted with knowledge in the fields of social sciences, literature, and humanities which makes them sensitive, conscious and sensible enough. Besides, they appreciate literary and cultural diversity.
- The BA students are well equipped to think critically about the issues of contemporary relevance and hold an informed opinion on them.
- The students learn two languages along with the major subjects. At the end of the programme they are capable in reading, writing, speaking and composition skills.
- The BA students apply for employment in different Govt. and non-governmental sectors. They appear for various competitive examinations conducted for various public sector jobs.
- The BA programme develops the base to be a good and responsible citizen and fostering in them national and emotional integration.
- The BA programme acquaints the students with various graduate attributes like deep discipline knowledge and intellectual breadth, intercultural and ethical competency, teamwork and communication skills etc.
- The BA passouts know the fundamental concepts in History, Political Science, Economics, Geography and other related disciplines of social sciences during their perusal of BA Programme
- The BA students imbibe the values of the Indian Constitution and their significance in everyday life. Besides, they understand historical diversity, political philosophies, which widen their outlook for international understanding and promotion of universal brotherhood.

- It cultivates ability among learners to evaluate critically the wider chain of network of spatial aspects from global to local level on various time scales as well.
- The students get well versed with the production and distribution system of goods and services. They attain the knowledge of cultures/thoughts and hence attain best skills to live with peace and strive for human development.

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Course structure and distribution of different courses with their credits for BA**Arabic**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Arabic Text and Grammar-I	Discipline Specific Course	6 credits
2.	II	Arabic Text and Grammar-II	Discipline Specific Course	6 credits
3.	III	Arabic Text and Grammar-III	Discipline Specific Course	6 credits
4.	IV	Arabic Text and Grammar-IV	Discipline Specific Elective	6 credits
5.	IV	Spken Arabic	Skill Enhancement Course	4 credits
6.	V	Grammar & Translation-I	Discipline Specific Elective	6 credits
7.	VI	Literary Arabic Text-II	Discipline Specific Elective	6 credits
8.	I	Reading and Writing Arabic-I	MIL Course	6 credits
9.	II	Reading and Writing Arabic-I	MIL Course	6 credits

Course Outcomes

The main objective of teaching Arabic at undergraduate level is to provide basic knowledge about Arabic language, its grammar and literature. The course acquaints students with exercise and training in four language skills viz. Listening/Understanding, Speaking, Reading and Writing. It help students to learn the language skills in a manner that may create professionals out of them in the fields of literature, language studies (linguistics), translation, media etc. It develops a taste for higher learning in Arabic language and literature by means of suitable study material as prescribed and suggested. Moreover, it provides an insight into Arab history, culture and civilization through various literary and textual works from different historical periods.

1. Arabic Text and Grammar-I (Discipline Specific Elective-I)

Semester	Core Course	Course Title	Credit
I	DSC-I	Arabic Text and Grammar-I	Theory: 06; Total: 06

Course Specific Outcomes

- Initiate the students into Arabic language starting right from the alphabet level-the base of any language.
- Go through the prescribed text and gradually move to the word and sentence level, simultaneously, focusing on the syntax and semantics.
- Learn basic grammatical and linguistic terms like Alphabet, Vowel signs, various parts of speech and some basic types of phrases used in Arabic language.

ARABIC TEXT & GRAMMAR-I**CREDITS: 06****THEORY: 06****Unit-I****(Text)**

Lesson No.1 to 8

دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم (الجزء الأول)

Unit-II**(Text)**

Lesson No.9 to 16

دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم (الجزء الأول)

Unit-III**(Grammar)**

1. حروف الهجاء (Arabic Alphabet)

2. الحركات الثلاث، السكون والشدة و المدة (Vowels and Orthographic Signs)

3. الحروف الشمسية و الحروف القمرية (Sun Letters and Moon Letters)

4. الكلمة و تقسيمها الي اسم و فعل و حرف (Word and its kinds: Noun, Verb and Particle)

5. حروف الجر (The Prepositions)

6. المعرفة والنكرة (Definite and Indefinite)

7. الضمائر المتصلة والمنفصلة (Attached and Detached Pronouns)

Unit-IV**(Grammar)**

(Demonstrative Pronouns)

1. أسماء الإشارة

(Masculine and Feminine)

2. المذكر والمؤنث

- | | |
|---------------------|--------------------|
| (Adjectival Phrase) | 3. التركيب التصفيي |
| (Possessive Phrase) | 4. التركيب الإضافي |
| (Nominal Sentences) | 5. الجملة الإسمية |

BOOK PRESCRIBED:

دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم(الجزء الأول)

Published by: Islamic Foundation Trust 78, Perambur High Road Chennai, 600012.

SUGGESTED READINGS:

- | | |
|--|--|
| 1. A Practical Approach to the Arabic language | Dr. Wali Akhter |
| 2. Arabic for Beginners | Dr. Syed Ali |
| علي الجارم و مصطفى أمين | 3. النحو الواضح للمدارس الابتدائية، الجزء الأول |
| علي الجارم و مصطفى أمين | 4. النحو الواضح للمدارس الابتدائية، الجزء الثاني |
| علي الجارم و مصطفى أمين | 5. النحو الواضح للمدارس الابتدائية، الجزء الثالث |

Govt. Model Degree College, Sholapur

2. Arabic Text and Grammar-II (Discipline Specific Elective-II)

Semester	Core Course	Course Title	Credit
II	DSC-II	Arabic Text and Grammar-II	Theory: 06; Total: 06

Course Specific Outcomes

- To learn the grammatical concepts as elaborated in various chapters of the prescribed textbook, sequentially from chapter to chapter.
- To learn new concepts related to various aspects of different parts of speech – noun, verb like their differentiation in terms of number, kind, tense and so on.
- To focus on the four language skills (listening, speaking, reading and writing) throughout the course.

ARABIC TEXT & GRAMMAR-II**CREDITS: 06****THEORY: 06**

Unit-I	(Text)	Lesson No. 17 to 23	
			دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم (الجزء الأول)
Unit-II	(Text)	Lesson No. 1 to 7	
			دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم (الجزء الثاني)
Unit-III	(Grammar)		
		The Singular, Dual and Plural	1. المفرد والمثنى والجمع
		Kinds of Plural	2. أقسام الجمع
		Perfect and Imperfect Tense	3. الفعل الماضي والفعل المضارع
		Transitive and Intransitive Verb	4. الفعل اللازم و الفعل المتعدي
		Verbal Sentences	5. الجملة الفعلية
Unit-IV	(Grammar)		
		Conjugation of Perfect and Imperfect Tense	1. تصريف الفعل الماضي والمضارع
		Imperative and Prohibitive Verbs	2. فعل الأمر و فعل النهي
		Conjugation of Imperative and Prohibitive verbs	3. تصريف فعل الأمر والنهي
		Active Participle and Passive Participle	4. الفاعل و المفعول به

BOOK PRESCRIBED:

دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم (الجزء الأول و الجزء الثاني)

Published by: Islamic Foundation Trust 78, Perambur High Road Chennai, 600012.

SUGGESTED READINGS:

1. النحو الواضح للمدارس الابتدائية، الجزء الأول
علي الجارم و مصطفى أمين
2. النحو الواضح للمدارس الابتدائية، الجزء الثاني
علي الجارم و مصطفى أمين
3. النحو الواضح للمدارس الابتدائية، الجزء الثالث
علي الجارم و مصطفى أمين
4. Let us speak Arabic
S.A. Rahman
5. A Practical Approach to the Arabic language
Dr. Wali Akhter
6. Teach Yourself Arabic
S.A. Rahman
7. Arabic Phrasebook
Harun Rashid & Khalid Perveez

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3. Arabic Text and Grammar-III (Discipline Specific Elective-III)

Semester	Core Course	Course Title	Credit
III	DSC-III	Arabic Text and Grammar-III	Theory: 06; Total: 06

Course Specific Outcomes

- To go through the different sections of the prescribed textbook and gradual learning of grammatical conceptual framework besides concentrating on the semantics.
- To learn higher concepts in the syntactical/sentence structure in Arabic by moving from simple sentences to the ones involving sentence transcribers (نواسخ الجملة) etc.
- To learn about different verb pronouncers (نواصب و جوازم الفعل) that change their case and the various groupings (ابواب) of tri-literal verb.
- Not to lose focus on the four language skills already mentioned.

ARABIC TEXT & GRAMMAR-III**CREDITS: 06****THEORY: 06****Unit-I (Text) Lesson No. 8 to 15**

دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم (الجزء الثاني)

Unit-II (Text) Lesson No. 16 to 23

دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم (الجزء الثاني)

Unit-III (Grammar)

1. إن و أخواتها

2. كان و أخواتها

3. أدوات الإستفهام

Unit-IV (Grammar)

1. أبواب الفعل المجرد

2. نواصب الفعل المضارع

3. جوازم الفعل المضارع

BOOK PRESCRIBED:

دروس اللغة العربية لغير الناطقين بها للدكتور ف عبدالرحيم (الجزء الثاني)

Published by: Islamic Foundation Trust 78, Perambur High Road Chennai, 600012.

SUGGESTED READINGS:

1. النحو الواضح للمدارس الابتدائية، الجزء الأول علي الجارم و مصطفى أمين
2. النحو الواضح للمدارس الابتدائية، الجزء الثاني علي الجارم و مصطفى أمين
3. النحو الواضح للمدارس الابتدائية، الجزء الثالث علي الجارم و مصطفى أمين
4. Let us speak Arabic S.A. Rahman
5. A Practical Approach to the Arabic language Dr. Wali Akhter
6. Teach Yourself Arabic S.A. Rahman
7. Arabic Phrasebook Harun Rashid & Khalid Perveez
8. Arabic Grammar Amanulla Vadakkangara

Semester	Core Course	Course Title	Credit
IV	DSC-IV	Arabic Text and Grammar-IV	Theory: 06; Total: 06

Course Specific Outcomes

- To move to the literary level and read the prescribed pieces of prose and poetry with focus on meanings as well as the grammatical concepts.
- To learn about the different genres and the techniques adopted in various forms of prose and poetry (prescribed ones) like short story and simple poems.
- To know about the history of Arabic literature and literary figures through the course of prescribed literary pieces.
- To learn about the different cases of noun- nominative, accusative, genitive in its different numbers (singular, dual, plural).

ARABIC TEXT & GRAMMAR-III

CREDITS: 06

THEORY: 06

Unit-I

(Prose)

بنيت الصباغ لكامل كيلاني (الفصل الأول والفصل الثاني)

Unit-II

(Prose)

بنيت الصباغ لكامل كيلاني (الفصل الثالث الي اخر القصة)

Unit-III

(Poetry)

اسم الشاعر	عنوان القصيدة	رقم
معروف الرصافي	الحرية في سياسة المستعمرين	1
احمد شوقي	الغزال والكلب	2
ابو نواس	الموت	3

Unit-IV

(Grammar)

1. اعراب المثني
2. اعراب جمع المذكر السالم
3. اعراب جمع المؤنث السالم
4. اعراب الجمع المكسر

BOOKS PRESCRIBED:

1. مجموعة القصص العربية لكامل كيلاني دار الإشاعت ديوبند
2. نخبة الأدب الناشر: قسم اللغة العربية جامعة عليكرة الإسلامية
3. Arabic Grammar Amanulla Vadakkangara, Goodword Books, Nizamuddin West market New Delhi, 110013

RECOMMENDED BOOKS:

1. النحو الواضح للمدارس الابتدائية، الجزء الأول علي الجارم و مصطفى أمين
2. النحو الواضح للمدارس الابتدائية، الجزء الثاني علي الجارم و مصطفى أمين
3. النحو الواضح للمدارس الابتدائية، الجزء الثالث علي الجارم و مصطفى أمين
4. ديوان أبي نواس
5. ديوان أحمد شوقي
6. ديوان معروف الرصافي
7. Let us speak Arabic S.A. Rahman
8. A Practical Approach to the Arabic language Dr. Wali Akhter
9. Teach Yourself Arabic S.A. Rahman
10. Arabic Phrasebook Harun Rashid & Khalid Perveez

5. Spoken Arabic (Skill Enhancement Course):

This course provides students with a detailed knowledge of Spoken Arabic.

Semester	Course	Course Title	Credits
IV	SEC	Spoken Arabic	4(2+2)

Course Specific Outcomes:

- Initiate the students into use of Arabic language in routine life starting from building up of basic vocabulary related to daily life.
- Go through the prescribed text and learn the techniques of spoken language in real life situations.
- Make rigorous exercise in using this language for practical purposes so that the real objectives of skill learning are achieved in true sense.
- Make enough use of ICT based tools and acclimatize the students to the changing trends and encourage them to make enough use of these for fulfillment of purpose of this course.

THEORY**(CREDITS: 02)****Unit-I**

Lesson No. 13-18

السكن

Unit-II

Lesson No. 19-24

الحياة اليومية

TUTORIALS**(CREDITS: 02)****Unit-III**

Lesson No. 1-6

والتعارف والتحية

Unit-IV

Lesson No. 7-12

الأسرة

PRESCRIBED BOOK:

العربية بين يديك (الجزء الأول)

Book can be downloaded along with audios from www.arabicforall.net**SUGGESTED READINGS:**

1. جديد عربي ايسى بوليے بدرالزمان الكيرانوى، مكتبه وحيديه دهلى
2. دروس فى الترجمة العربية د. حبيب الله دار سلمان للطباعة والنشر نيو دهلى
3. اللغة العربية الوظيفية د. شفيق أحمد خان، فرحانة صديقى، د. حبيب الله
4. Easy Steps to Functional Arabic Dr. S.K. Bahmani
Alif Books & Prints, Chennai.
5. Modern Letters in English and Arabic Maktaba Hadeetha, Beirut

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6. Grammar & Translation-I (Discipline Specific Elective-IB)

Semester	Course	Course Title	Credit
V	DSE-IB	Grammar & Translation-I	Theory: 06; Total: 06

Course Specific Outcomes

- To learn about some grammatical terms of higher standard and techniques involved in translating text from one language to other one.
- To learn about the various noun derivatives like the active participle, the passive participle, the superlative and the like.
- To learn the cardinal numbers in Arabic from 1 to 100 and the different rules involved in the phrase involving number and the countable noun (العدد والمعدود).
- To learn about five special nouns (الأسماء الخمسة) and the conditions for showing their cases in different manner.
- Translate phrases and simple sentences related to Education, Tourism, Politics from Arabic to English and vice versa.
- To develop the skill of writing in Arabic by paragraph writing about simple topics like My College, A Picnic, My Village etc.

GRAMMAR & TRANSLATION-I

CREDITS: 06

THEORY: 06

Unit-I

المشتقات

1. اسم الفاعل، اسم المفعول
2. اسم الصفة، اسم التفضيل
3. اسم الظرف، اسم الآلة

Unit-II

- (الف) العدد والمعدود و تطبيقهما
(ب) الأسماء الخمسة و شروط اعرابها

Unit-III

Translation of phrases and simple sentences.

(Arabic into English & vice versa)

1. Tourism
2. Education
3. Politics

Unit-IV

Paragraph Writing

1. قريتي

2. كليتي

3. الإسلام في كشمير

4. حديقة الحيوانات

BOOKS PRESCRIBED:

النحو الواضح للمدارس الابتدائية (الجزء الأول والجزء الثاني والجزء الثالث) علي الجارم و مصطفى أمين

RECOMMENDED BOOKS:

- | | | |
|--|-------------------------------|-----------------------|
| 1. كتاب النحو | عبدالرحمان امرتسري | كتب خانه رشيدية، دلهي |
| 2. كتاب الصرف | عبدالرحمان امرتسري | كتب خانه رشيدية، دلهي |
| 3. Let us speak Arabic | S.A. Rahman | |
| 4. A Practical Approach to the Arabic language | Dr. Wali Akhter | |
| 5. Teach yourself Arabic | S.A. Rahman | |
| 6. Arabic Phrasebook | Harun Rashid & Khalid Perveez | |

7. Literary Arabic Text-II (Discipline Specific Elective-IIA)

Semester	Core Course	Course Title	Credit
VI	DSE-IIA	Literary Arabic Text-II	Theory: 06; Total: 06

Course Specific Outcomes

- To go through the different pieces of prose and poetry from different historical eras, as prescribed, with focus on semantics and conceptual learning.
- To mark and try to understand the difference between the literary works of different historical periods in terms of form, structure, theme and subject matter.
- To know about the life and works of distinguished literary figures whose works are prescribed in the syllabus.
- To develop a taste for reading literature and draw aesthetic pleasure out of it.
- To develop the four language skills of listening/understanding, speaking, reading and writing throughout the course.

LITERARY ARABIC TEXT-II

CREDITS: 06

THEORY: 06

Unit-I (Classical Prose)

- | | |
|----------------------|---------------------------------------|
| القرآن الكريم | 1. سورة الفرقان (من الآية 67 الي 77) |
| نفحة اليمن | 2. كما تدين تدان |
| روض الرياحين لليافعي | 3. رجل صالح |

Unit-II (Classical Poetry)

- | | |
|-------------------------|---|
| حسان بن ثابت | 1. و قال يمدح النبي صلي الله عليه و سلم |
| ابو العتاهية | 2. و قال في زوال الدنيا |
| (و ما بعض الإقامة.....) | 3. و قال قيس بن الخطيم |

Unit-III (Modern Prose)

- | | |
|----------------------|--|
| جبران خليل جبران | 1. في مدينة الأموات |
| مصطفى لطفي المنفلوطي | 2. الكوخ و القصر |
| شكيب أرسلان | 3. المدنية الإسلامية
(من البداية إلي يتيمة الدهر إلي اليوم) |

Unit-IV (Modern Poetry)

- | | |
|-------------------|--------------------|
| عبد الرحمان شكري | 1. عصفور الجنة |
| جميل صدقي الزهاوي | 2. إنا غريبان ههنا |
| خليل مطران | 3. عروس |

BOOKS PRESCRIBED:

1. نخبة الأدب ، الناشر: قسم اللغة العربية جامعة عليكرة الإسلامية
2. شعر العرب من النهضة إلى الإنتفاضة محمد أيوب تاج الدين الندوي، مطبعة البلاغ، دلهي الجديدة

SUGGESTED READINGS:

1. ديوان جميل صدقي الزهاوي

2. ديوان عبدالرحمان شكري

3. ديوان أبي العتاهية

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These include a battery of language courses open for all the students of Arts stream for semesters I and II. The students are free to choose one among the given languages as per their own interest and liking. The main aim of these courses is to provide an insight into the rich linguistic heritage of India other than English and some other dominant languages. The focus is mainly on the regional or the foreign languages that have helped in the cultural enrichment of the sub-continent. Arabic is also offered under this category.

8. Reading and Writing Arabic-I (Modern Indian Languages -I)

This course provides students with an in-depth knowledge of the Reading and Writing Arabic-I

Semester	MIL Course	Course Title	Credit
I	MIL-I	Reading and Writing Arabic-I	Theory: 06; Total: 06

Course Specific Outcomes

- To provide basic knowledge about Arabic language, its script/alphabet and the different orthographic signs used.
- To develop basic vocabulary about different day to day related things like house, school, college, fruits, vegetables, days of week, cardinal numbers etc.
- To understand the relation between Urdu and Arabic by learning some words of Arabic origin used in Urdu.
- To develop basic conversation skill in Arabic using simple nominal and verbal sentences.

READING AND WRITING ARABIC-I

CREDITS: 06

THEORY: 06

Unit-I

1. Arabic Alphabet with different shapes
2. The Moon and the Sun letters
3. Short vowels and Long vowels

Unit-II

Frequently used Urdu words of Arabic origin (75 Words)

Unit-III

Frequently used vocabulary of the following (150 words)

1. House, Kitchen, Class Room, College
2. Vegetables, Fruits

3. Names of Days, Names of Months
4. Numbers (1 to 10)

Unit-IV

Conversation by using following words:

في- إلي- من- علي-ل

ما- لا- هل- أ

من- ما- أين- كم

أسماء الإشارة: هذا- هذه

BOOKS RECOMMENDED:

- | | |
|--|-----------------|
| 1. A Practical Approach to the Arabic Language | Dr. Wali Akhter |
| 2. Arabic for Beginners | Dr. Syed Ali |
| 3. A New Arabic Grammar | John A. Haywood |
| 4. Essential Arabic | I.A.Faynan |
| 5. Teach Yourself Arabic | S.A.Rahman |
| 6. Arabic Made Easy | Abdul Hashim |
| 7. Let's Speak Arabic | S.A.Rahman |

9. Reading and Writing Arabic-II (Modern Indian Languages -II)

Semester	MIL Course	Course Title	Credit
II	MIL-II	Reading and Writing Arabic-II	Theory: 06; Total: 06

Course Specific Outcomes

- To learn about the different parts of speech like the noun in terms of number, kind-singular, dual, plural, masculine, feminine, definite, indefinite noun etc.
- To learn about other parts of speech like different types of pronouns, adjective and so on.
- To learn about the different types of verb and the verbal sentence.
- To learn about the various types of phrases like the adjective and possessive phrases.
- Try to develop the minimum possible level skills of Listening/Understanding, Speaking, Reading and Writing, which lie at the core of any language learning course.

READING AND WRITING ARABIC-II

CREDITS: 06

THEORY: 06

Unit-I

1. Masculine and Feminine
2. Singular and Plural
3. Adjective Phrase
4. Cardinal Numbers (1-10)

Unit-II

1. Definite and Indefinite
2. Possessive Phrase
3. Nominal Sentence
4. Preposition

Unit-III

1. Demonstrative Pronouns
2. Detached Pronouns
3. Attached Pronouns
4. Words of Proclamation

Unit-IV

1. Perfect Tense
2. Imperfect Tense
3. Verbal Sentence
4. Imperative Verb

BOOKS RECOMMENDED:

- | | |
|--|-----------------|
| 1. A Practical Approach to the Arabic Language | Dr. Wali Akhter |
| 2. Arabic for Beginners | Dr. Syed Ali |
| 3. A New Arabic Grammar | John A. Haywood |
| 4. Essential Arabic | I.A.Faynan |
| 5. Teach Yourself Arabic | S. A. Rahman |
| 6. Arabic Made Easy | Abdul Hashim |
| Let's Speak Arabic | S. A. Rahman |

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B.A. Economics

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Principles of Microeconomics-I	Core Course	6 credits 4(T)+2(T)
2.	II	Principles of Microeconomics-II	Core Course	6 credits 4(T)+2(T)
3.	III	Principles of Macroeconomics-I	Core Course	6 credits 4(T)+2(T)
4.	IV	Principles of Macroeconomics-II	Core Course	6 credits 4(T)+2(T)
5.	IV	Statistics for Economics	Skill Enhancement Course	4 credits 2(T)+2(T)
6.	V	Development Economics	Discipline Specific Elective-I	6 credits 4(T)+2(T)
7.	V	Mathematical Economics	Discipline Specific Elective-II	4 credits 2(T)+2(T)
8.	V	Money and Banking	Skill Enhancement Course	6 credits 4(T)+2(T)
9.	V	Microeconomics	Generic Elective	6 credits 4(T)+2(T)
10.	VI	Public Finance & International Trade	Discipline Specific Elective-I	6 credits 4(T)+2(T)
11.	VI	Economic Development and Policy in India	Discipline Specific Elective-II	6 credits 4(T)+2(T)
12.	VI	Entrepreneurship for Self Employment	Skill Enhancement Course	4 credits 2(T)+2(T)
13.	VI	Financial Economics	Skill Enhancement Course	4 credits 2(T)+2(T)
14.	VI	Macroeconomics	Generic Elective	6 credits 4(T)+2(T)

Course outcomes

The main objective of the course is to provide a comprehensive understanding of the discipline of economics to the students who join the B.A. at the undergraduate level in the affiliated colleges' of University of Kashmir.

The course aims at making students understand the fundamental concepts, theories, perspectives, and ideological discourses in Economics.

The course aims at making students understand the economic problems which the world and India in general, and valley of Kashmir in particular are facing, and the resolution thereof.

The course has been designed in such a way that every student is equipped with certain practical skills which can be used for seeking gainful employment if one exits after completing the graduation. The aim is also to train the students in research design and application of tools and techniques for empirical and normative research.

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1. Principles of Microeconomics-I (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Principles of Microeconomics-I	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- This course intends to acquaint the students with the basic Principles in Microeconomic Theory and illustrations with applications.
- To provide students with a thorough knowledge and understanding of foundations of Microeconomic concepts, laws, theories and their applicability.

PRINCIPLES OF MICROECONOMICS-I

THEORY

(CREDITS 4)

Unit 1 Conceptual Framework

Nature and Scope of Economics; Scarcity and Choice; Opportunity Cost; Demand: Law of Demand, Determinants of Demand, Shifts in Demand & Movements along the Demand Curve; Market Demand; Supply: Law of Supply; Determinants of Supply; Shifts in Supply Curve versus Movements along the Supply Curve; Market Supply; Market Equilibrium; Elasticity of Demand; Price, Income and Cross Elasticities; Degrees of Price Elasticity.

Unit 2 Consumer Theory

Utility-Concept; Cardinal Utility -measurement, Total and Marginal Utility; Diminishing Marginal Utility; Ordinal Utility - Assumptions; Indifference Curves; Marginal Rate of Substitution; Properties of Indifference curves; Budget Constraint; Consumer's Equilibrium.

Unit 3 Production Theory

Production function; Law of Variable Proportions; Economies and Diseconomies of Scale; Returns to Scale; Isoquant-Types and Properties; Iso-cost lines; Producer's Equilibrium Output Maximization and Cost Minimization.

Unit 4 Costs and Revenue

Cost-Concept and Types; Short-run and Long-run costs; Traditional and Modern Theory of Costs. Revenue-Concept and Types; Revenue Curves under Perfect and Imperfect (Monopoly) Markets; Equilibrium of a firm using Total Revenue and Total Cost approach; Marginal Revenue and Marginal Cost approach.

TUTORIAL

(CREDITS 2)

1. Applications of Demand and Supply: Consumer surplus; Producers surplus.
2. Determinants of Price Elasticity.
3. Derivation of Demand Curve through Cardinal and Ordinal approaches.
4. Objectives of firm: Revenue Maximization, Profit Maximization.
5. Relationship between Total Cost, Average Cost and Marginal Cost.
6. Relationship between Total Revenue, Average Revenue and Marginal Revenue.

SUGGESTED READINGS

- Koutsoyiannis A. (2006), Modern Microeconomics, Macmillan Press Ltd; 7th Edition.
- Nicholson, Walter, and Christopher M. Snyder (2012), Microeconomic theory: Basic principles and extensions. Nelson Education.
- Dwivedi D. N. (2005), Microeconomics; Tata McGraw Hill, New Delhi
- Ahuja H. L. (2016), Principles of Microeconomics based on UGC model curriculum; S. Chand; 22nd Edition.
- Case, Karl E. & Ray C. Fair, Sharon M Oster (2014), Principles of Microeconomics, Pearson Education, Inc., 11th Edition.

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2. Principles of Microeconomics-II (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Principles of Microeconomics-II	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- This is a sequel to Principles of Microeconomics–I covered in the first semester.
- The objective of the course is same as in Principles of Microeconomics-I.

PRINCIPLES OF MICROECONOMICS-II

THEORY

(CREDITS 4)

Unit 1 Market Structure

Market Structure: Perfect and Imperfect Markets; Perfect Competition- Characteristics; Demand and Revenue; Equilibrium of the firm in Short-run and long-run under Identical and Differential cost conditions; Supply Curve of the Firm and the Industry; Short-run and Longrun Industry Equilibrium.

Unit 2 Imperfect Competition I

Monopoly-Concept and types; Characteristics; Demand and Revenue under Monopoly; Shortrun and Long-run Equilibrium under Monopoly; Economic costs of Monopoly; Deadweight loss; Price Discrimination- Concept.

Unit 3 Imperfect Competition II

Monopolistic Competition-Concept and Characteristics; Short-run & Long-run Equilibrium under Monopolistic Competition; Oligopoly- Concept and Characteristics; Duopoly- Concept Characteristics and Equilibrium.

Unit 4 Income Distribution and Factor Pricing

Distribution- Concept; Marginal Productivity Theory of Distribution; Wages- Modern Theory of Wages; Wage Differentials; Rent- Ricardian Theory of Rent; Profit- Innovation Theory; Interest- Keynesian Theory.

TUTORIAL

(CREDITS 2)

1. Long-run Industry Supply Curve: Increasing, Decreasing and Constant Cost Industries.
2. Efficiency of Competitive Markets.
3. Comparison of Monopoly and Perfectly Competitive Markets.
4. Degrees or Types of Price Discrimination.
5. Kinked Demand Curve.
6. Economic and Quasi Rent.

SUGGESTED READINGS

- Koutsoyiannis A. (2006), Modern Microeconomics, Macmillan Press Ltd; 7th Edition.
- Nicholson, Walter, and Christopher M. Snyder (2012). Microeconomic theory: Basic principles and extensions. Nelson Education.
- Dwivedi D. N. (2018), Microeconomics; Tata McGraw Hill, New Delhi
- Ahuja H. L. (2016), Principles of Microeconomic, based on UGC model curriculum; S Chand; 22th Edition.
- Case, Karl E. & Ray C. Fair, Sharon M Oster (2014), Principles of Microeconomics, Pearson Education, Inc., 11th Edition.

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3. Principles of Macroeconomics-I (Core Course-III)

Semester	Core Course	Course Title	Credit
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III	CC-III	Principles of Macroeconomics-I	Theory: 04 Tutorial: 02 Total: 06
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Course specific outcomes

- In this course the students are introduced to the concepts and measurement of the macroeconomic variables like GDP, Consumption, Savings, and Investment.
- The course also discusses the determination of income and employment in the Classical and Keynesian framework.
- In addition, it introduces students to the Post-Keynesian theories of Consumption.
- To familiarize the students with the various theories explaining the macroeconomic behaviour and make them understand the importance and relevance of various economic policies.

PRINCIPLES OF MACROECONOMICS-I

THEORY

(CREDITS 4)

Unit 1 National Income

Introduction to Macroeconomics; National Income Aggregates; Circular Flow of Income; Two Sector; Three Sector and Four Sector Economy; Measurement of National Income- Value Added Method, Income Method, Expenditure Method; Nominal and Real Income; Green Accounting.

Unit 2 Classical Theory of Output and Employment

Classical Postulates; Classical Theory of Income and Employment- Say's law of market; Wage Price flexibility and full employment; Classical Model- without and with saving and investment; Keynes criticism of Classical Theory.

Unit 3 Keynesian Theory of Income and Employment

Effective Demand- Concept and Determinants; Keynesian Theory of Consumption-APC; MPC; Saving Function- APS; MPS; Investment- Concept and Types; Determination of Equilibrium Output (Income); Saving/Investment Approach to Equilibrium; The Investment Multiplier.

Unit 4 Theories of Consumption and Investment

Theories of Consumption- Absolute; Relative; Permanent and Life-Cycle Hypotheses; Theories of Investment- Marginal Efficiency of Capital and Rate of Interest; Concept and Principle of Accelerator; Multiplier and Accelerator interaction.

TUTORIAL

(CREDITS 2)

1. Limitation of GDP as a measure of National Income.
2. National Income Accounting and its associated concepts.

3. Paradox of Thrift.
4. Foreign Trade Multiplier.
5. Sources of Wage-Price rigidity
6. Kuznets Puzzle

SUGGESTED READINGS

- Richard T. Froyen (2013), Macroeconomics Theories and Policies, Pearson Education, New Delhi.
- Edward Shapiro (2013), Macroeconomic Analysis, Galgotia Publications, New Delhi.
- Gardner Ackley (2008), Macroeconomic Theory, Surjeet Publications, Delhi.
- Ahuja H.L (2016), Macroeconomic Theory and Policy based on UGC model curriculum; S Chand; Latest Edition.
- Dwivedi D.N. (2018), Macroeconomics Theory and Policy Tata McGraw Hill New Delhi.
- Case, Karl E. & Ray C. Fair, Sharon M Oster (2012), Principles of Macroeconomics, Pearson Education, Inc., 10th Edition.

4. Principles of Macroeconomics-II (Core Course-IV)

Semester	Core Course	Course Title	Credit
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IV	CC-IV	Principles of Macroeconomics-II	Theory: 04 Tutorial: 02 Total: 06
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Course specific outcomes

- This is a sequel to Principles of Macroeconomics–I.
- It analyses various theories of determination of National Income in greater detail.
- It also introduces students to the concept of Inflation & its relationship with Unemployment and Business Cycles.
- The objective of the course is same as in Macroeconomics-I.

PRINCIPLES OF MACROECONOMICS-II

THEORY

(CREDITS 4)

Unit 1 Money Supply, Money Demand and the Interest Rate

Money–Meaning and Evolution; Money Supply- Concept and its Measurement; Four Measures of Money Supply; Interest Rates and Bond Prices; Keynes Theory of Demand for Money and Rate of Interest; Determination of Interest Rate: Equilibrium in the Money Market.

Unit 2 IS-LM Analysis

Goods Market Equilibrium; Derivation of IS curve; Slope and Shifts in IS curve; Money Market Equilibrium: Derivation of LM Curve; Slope and Shifts in LM Curve; IS-LM Model Equilibrium.

Unit 3 AD-AS Model with Variable Prices

Derivation of Aggregate Demand curve using IS-LM; Aggregate Demand Curve with variable prices; Multiplier analysis with AD curve and changes in price levels; Slope and Shifting of AD Curve; Aggregate supply in the Short-run and Long-run; AS-AD model; Short-run and Long-run Equilibrium.

Unit 4 Inflation and Business Cycles

Inflation -Concept and Types; Causes of Inflation -Demand Pull and Cost-Push Inflation; Relationship between Inflation and Unemployment: Phillips Curve; Business Cycles-Concept; Causes and Phases.

TUTORIAL

(CREDITS 2)

1. Liquidity Measures of Money- L1, L2 and L3.
2. IS-LM model: Explaining the role of Fiscal and Monetary Policies.
3. Role of Fiscal and Monetary Policies in AD-AS Model.
4. Real Balance Effect, Rate of interest and Foreign Trade effect.
5. Phillips Curve in Short-run and Long-run.
6. Measures to control Business cycles by Classical and Keynesian economics.

SUGGESTED READINGS

- Richard T. Froyen (2013), Macroeconomics Theories and Policies, Pearson Education, New Delhi.
- Edward Shapiro (2013), Macroeconomic Analysis, Galgotia Publications, New Delhi.
- Gardner Ackley (2008), Macroeconomic Theory, Surjeet Publications, Delhi.
- Ahuja H. L. (2016), Macroeconomic Theory and Policy based on UGC model curriculum; S Chand; Latest Edition.
- Dwivedi D. N. (2018), Macroeconomics Theory and Policy Tata McGraw Hill New Delhi.
- Case, Karl E. & Ray C. Fair, Sharon M Oster (2012), Principles of Macroeconomics, Pearson Education, Inc., 10th Edition.

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5. Statistics for Economics (Skill Enhancement Course -I)

Semester	Core Course	Course Title	Credit
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IV	SEC-I	Statistics for Economics	Theory: 02 Tutorial: 02 Total: 04
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Course specific outcomes

- This course introduces the students to the basic statistical methods used for analyzing and drawing Statistical inferences which include Measures of Central Tendency, Dispersion, Skewness, Correlation, Regression, Index Numbers and Time series.
- To enable the students to understand basic and advanced concepts of Statistics and their application in Economics.

STATISTICS FOR ECONOMICS

THEORY

(CREDITS 2)

Unit 1 Statistics – Conceptual Framework

Relationship of Statistics with Economics; Measures of Central Tendency- Mean; Median and Mode; Measures of Dispersion- Mean Deviation; Quartile Deviation; Standard Deviation and Coefficient of Variation; Distributions- Normal; Binomial and Poisson.

Unit 2 Correlation and Regression

Correlation- Meaning and Types; Coefficient of Correlation- Karl Pearson's; Spearman's Rank Correlation; Regression- Meaning; Regression Coefficients; Regression Equations- Two and Three variable Regression; Correlation vs Regression.

TUTORIAL

(CREDITS 2)

1. Index Numbers- Meaning, Uses; Merits and Demerits.
2. Methods of constructing Index Number's - Laspeyres, Paasche's and Fisher's methods.
3. Moment generating function: Mean and Variance.
4. Time Series- Meaning; Components of Time Series.
5. Measurement of Trends- Graphic method, least square method, Semi-average method; Moving average method.
6. Random Variables and Types.

SUGGESTED READINGS

- Elhance and Elhance (2016), Fundamentals of Statistics, Kitab Mahal New Delhi.
- Gupta S. C. (1993), Fundamentals of Applied Statistics, S. Chand & Sons, New Delhi.
- Gupta S. P. (2010), Fundamentals of Statistics. Himalaya Publishing House.
- Gupta S. C and V.K. Kapoor (latest addition), Fundamentals of Mathematical Statistics. S. Chand & Sons, New Delhi

6. Development Economics (Discipline Specific Elective-I)

Semester	Discipline Specific Elective	Course Title	Credit
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V	DSE-I	Development Economics	Theory: 04 ; Tutorial: 02 Total: 06
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Course specific outcomes

- This course covers the social and political aspects of development.
- A section is also devoted to the study of approaches to development and some models and policy issues.
- It aims to familiarize students with alternative approaches to economic development and the associated contemporary issues in economic growth and development.

DEVELOPMENT ECONOMICS

THEORY

(CREDITS 4)

Unit 1 Economic Growth and Development

Concept of Economic Growth and Development; Inclusive Growth- Concept and Significance; Sustainable Development -Meaning and Objectives; Characteristics of an underdeveloped country; Obstacles to Economic Development; Measurement of Development- GNP; PCI; PQLI and HDI.

Unit 2 Theories of Economic Growth and Development

Classical Theory; Marxian Theory; Schumpeter's Theory; Nurkse's Theory; Rostow's Stages of Economic Growth; Balanced and Unbalanced Growth Strategy; Leibenstein's Critical Minimum Effort Hypothesis and Theory of Big Push.

Unit 3 Domestic Aspects of Development

Economic Development through- Agriculture; Industry; Capital Formation; Population Growth; Fiscal & Monetary policies.

Unit 4 International Aspects of Development

International Trade and Economic Development; Role of Foreign Borrowings; Dual Gap analysis; International Capital Flows-Types and Motives; A critique on International Aid; Role of World Bank and IMF in Economic development of Less Developed countries (LDC's).

TUTORIAL

(CREDITS 2)

1. New Economic view of Development- Sen's Capability Approach.
2. Human Capital and Economic Development.
3. Deficit Financing and Economic Development.
4. Macroeconomic Impact of Aid.
5. New International Economic Order
6. Millennium Development Goals.

SUGGESTED READINGS

- Thirlwal A. P (2011), Growth and Development, Palgrave Macmillan, Replika Press Pvt. Ltd., India.
- Todaro & Smith (2008), Economic Development, Longman, London.
- Y. Hayami (2005), Development Economics, Oxford University Press, New York.
- Jhingan M. L. (2016), The Economics of Development and Planning, Vrinda Publications, New Delhi.
- Misra and Puri (2018), Development Economics, Himalayan Publishing House, New Delhi

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7. Mathematical Economics (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-II	Mathematical	Theory: 02; Tutorial: 02

		Economics	Total: 04
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Course specific outcomes

- This course introduces students to the Mathematical Techniques to be applied in core subjects of Economics like Microeconomics, Macroeconomics, Public Economics and Econometrics at advanced stages.
- To enable the students to apply various mathematical techniques to a multitude of Economic discourse.

MATHEMATICAL ECONOMICS**THEORY****(CREDITS 2)****Unit 1 Matrices & Determinants**

Types of Matrices; Operations of Matrices-Addition; Subtraction and Multiplication. Determinants; Characteristics and Applications. Inverse of a Matrix; Solution of Simultaneous Equations, Cramer's Rule and Cofactor Method.

Unit 2 Differentiation

Limits; Continuity and Derivative-Definition and Evaluation; Rules of Differentiation; Partial Differentiation; Uses of Differentiation in Economics- Marginal concepts and Elasticities.

TUTORIAL**(CREDITS 2)**

1. Role of Mathematics in Economics.
2. Gradient and Equation of a Straight line.
3. Functions- Concept and Types.
4. Different Functions used in Economics.
5. Concept of Integration and use in Economics.
6. Introduction to Optimization- Concept of Maxima and Minima.

SUGGESTED READINGS

- Edward T. Dowling (2011), Introduction to Mathematical Economics, Schaum's Outline.
- Chiang A.C. (2017), Fundamental Methods of Mathematical Economics, Tata McGraw Hill, New Delhi.
- Allen R. G. D. (2008), Mathematical Analysis for Economists, The Macmillan Press, New Delhi.
- Veerachamy R. (2018), Quantitative Methods for Economists, New Age International Publishers, New Delhi.

8. Money and Banking (Skill Enhancement Course-II)

Semester	Core Course	Course Title	Credit
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V	SEC-II	Money and Banking	Theory: 04 Tutorial: 02 Total: 06
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Course specific outcomes

- 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 Monetary Management and Instruments of Monetary control.
- To familiarize the students about the role of money in facilitating the economic transactions, various determinants of demand and supply of money and the overall structure and functioning of commercial and central banks.

MONEY AND BANKING

THEORY

(CREDITS 4)

Unit 1 Concept and Role of Money

Evolution of Money; Money- Meaning, different approaches to the definition of money; Functions and kinds of Money; Characteristics of good money; Money and Near Money; Significance of Near Money.

Unit 2 Demand and Supply of Money

Quantity Theory of Money – Fisher's Transaction Approach and Cambridge Cash Balance Approach; Keynes Theory of Demand for Money; Concept of Money Supply; Different approaches to the definition of Money Supply; Measures of Money Supply; Determinants of Money Supply- High Powered Money and Money Multiplier.

Unit 3 Commercial Banking

Origin and Evolution of Commercial Banking; Types of Banks; Functions of Commercial Banks; Balance Sheet of Commercial Banks ; Liability Asset Portfolio Management; Credit Meaning and Functions; Credit Creation Mechanism of Commercial Banks; Credit Multiplier Cash Reserve Ratio and Deposit Multiplier.

Unit 4 Central Banking

Evolution and Growth of Central Banking; Central Bank- Functions; Methods of credit control Quantitative vs Qualitative methods; Monetary Policy- Objectives; Instruments; Effectiveness and Limitations; Role of Central Banks in Developing Countries.

TUTORIAL

(CREDITS 2)

1. Investment policy of Commercial Banks in general.
2. Indian Money Market- Structure and Functions.
3. Instruments of Indian Money market.
4. An introduction to the Indian Capital market.

5. Development Banking in India- IFCI, IDBI and ICICI.
6. Recent Monetary policy of RBI.

SUGGESTED READINGS

- Mishkin F. S. and S. G. Eakins (2009), Financial Markets and Institutions, Pearson Education, 6th edition.
- Bhole L. M. and J. Mahukud (2011), Financial Institutions and Markets, Tata McGraw Hill, 5th edition. 3. Khan M. Y. (2011), Indian Financial System, Tata McGraw Hill, 7th edition.
- Gupta S. B (2010), Monetary Economics, S. Chand and Company, New Delhi.
- Jhingan M. L. (2013), Money, Banking, International trade and Public Finance, Vrinda Publications, New Delhi.
- Fabozzi, F. J., F. Modigliani, F. J. Jones, M. G. Ferri (2009), Foundations of Financial Markets and Institutions, Pearson Education, 3rd edition.

9. Microeconomics (Generic Elective -I)

Semester	Generic Elective	Course Title	Credit
V	GE-I	Microeconomics	Theory: 04

			Tutorial: 02 Total: 06
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Course specific outcomes

- This course introduces the students to basic principles in Microeconomic Theory.
- To develop a basic understanding of foundations of microeconomic concepts, laws, theories and their applicability among students from Non-Economic background

MICROECONOMICS

THEORY

(CREDITS 4)

Unit 1 Conceptual Framework

Definition and Scope of Economics; Microeconomics and Macroeconomics; Positive and Normative Economics; Demand- Law of Demand; Determinants of Demand; Supply- Law of Supply; Determinants of supply; Market Equilibrium.

Unit 2 Consumer Theory

Utility- Meaning and types, Cardinal Utility- Measurement, Total and Marginal Utility; Diminishing Marginal Utility. Ordinal Utility- Assumptions; Indifference Curve; Marginal Rate of Substitution; Properties of Indifference Curves; Budget Constraint; Consumer's Equilibrium.

Unit 3 Production Theory

Production Function, Law of Variable Proportions; Economies and Diseconomies of Scale; Returns to scale; Isoquant- Concept and Properties; Iso-cost lines; Equilibrium of the Firms Distribution- Concept, Marginal Productivity Theory of Distribution.

Unit 4 Market Structure

Market- Concept; Perfect and Imperfect markets; Demand and Revenue curves under Perfect and Imperfect Markets; Perfect Competition, Monopoly; Monopolistic Competition, Oligopoly and Duopoly- Concept and Characteristics.

TUTORIAL

(CREDITS 2)

1. Elasticity- Concept and Types.
2. Degrees and Determinants of price elasticity.
3. Cost- Concepts; Costs in Short-run and Long-run; Relationship between AC and MC.
4. Revenue- Concepts; Relationship between AR and MR.
5. Distribution- Concept; Marginal Productivity Theory of Distribution.
6. Comparison between Perfect Competition and Monopoly.

SUGGESTED READINGS

- Koutsoyiannis A. (2006), Modern Microeconomics, Macmillan Press Ltd; 7th Edition

- Dwivedi D. N. (2005), Microeconomics Tata McGraw Hill, New Delhi
- Ahuja H. L. (2016), Principles of Microeconomic based on UGC model curriculum; S. Chand; 22nd Edition.
- Case, Karl E. & Ray C. Fair, Sharon M Oster (2014), Principles of Microeconomics, Pearson Education, Inc., 11th Edition.

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10. Public Finance & International Trade (Discipline Specific Elective-I)

Semester	Discipline Specific	Course Title	Credit
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	Elective		
VI	DSE-I	Public Finance & International Trade	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- This course introduces the students to the working and functions of Government.
- It acquaints the student about the different sources of Revenue and the subsequent Expenditure of the same by the Government.
- It also highlights the basis of International Trade and Balance of Payments for a country.
- The course will be useful for students aiming towards career in the government sector, policy analysis and business.

PUBLIC FINANCE & INTERNATIONAL TRADE

THEORY

(CREDITS 4)

Unit 1 Public Finance and Public Expenditure

Public Finance- Meaning; Scope and Importance; Distinction between Public and Private Finance; Principle of Maximum Social Advantage; Public Expenditure- Classification; Wagner's law; Wiseman-Peacock Hypothesis.

Unit 2 Public Revenue and Taxation

Budget- Concept and types; Public Revenue-Types and Sources of Public Revenue; Public Debt Types; Sources of Public Borrowing; Taxation- Classification of Taxes; Characteristics of a good tax system; Impact, Incidence; Evasion and Effects of Taxation; Canons of Taxation- Adam Smith.

Unit 3 International Trade

Inter-regional and International trade; Theories of Absolute Advantage; Comparative Cost Advantage and Opportunity Cost theory; Terms of Trade; Gains from trade; Free trade vs Protection; Tariffs Meaning and Types; Quotas-Meaning and types.

Unit 4 Balance of Payments and Foreign Exchange

Balance of Payments- Current and Capital account; Disequilibrium in the Balance of Payments; Foreign Exchange- Meaning; Foreign Exchange Market; Rate of Exchange-Meaning and Types; Determination of Exchange rate- Demand and supply approach.

TUTORIAL

(CREDITS 2)

- Role of Public Finance in Economic Development of a country.
- Budget Deficit- Concept and Types.
- Classification of Public Revenue- Adam Smith, Taylor and Hugh Dalton.
- Direct Benefit approach and Ability to Pay approach.
- Concept and working of GST.

- Trade as an Engine of Economic Growth.

SUGGESTED READINGS

- Musgrave, R.A. and P.B. Musgrave (2017), Public Finance in Theory and Practice, Mc-Graw Hill, New Delhi.
- Lekhi, R.K & Joginder Singh (2015), Public Finance, Kalyani publishers, New Delhi.
- Chand S.N. (2008), Public Finance, Atlantic Publishers, New Delhi.
- Jhingan M.L (2013), Money, Banking, International Trade & Public Finance, Viranda Publishers, New Delhi.
- Francis Cherunilam (2017), International Economics, Tata Mc-Graw Hill, New Delhi.
- Dominick Salvatore (2014), International Economics, John Wiley and Sons, New York.

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11. Economic Development and Policy in India (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-II	Economic Development and Policy in India	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- This course is designed to acquaint the students with a foundational level understanding of Indian Economy.
- Its approach is both historic and contemporary. Issues like Unemployment, Poverty, Agriculture, Industry and Human capital in the Indian economy are discussed to develop an informed outlook among students about Macroeconomic issues of Indian economy.
- To sharpen the analytical faculty of students by highlighting an integrated approach to the functioning of the Indian Economy and the scope for alternative policies imperative for a sustainable growth trajectory.

ECONOMIC DEVELOPMENT AND POLICY IN INDIA**THEORY****(CREDITS 4)****Unit 1 Indian Economy - An Overview**

Impact of British Rule on Indian Economy; the Drain Theory; Natural Resources- Land; Water and Forest Resources. Economic Planning in India; Types; Plan Models; Contemporary Status.

Unit 2 Unemployment and Poverty

Population Growth and Policy; Demographic Dividend; Unemployment in India; Nature; Measures; Causes and Remedies; Poverty and inequality in India- Nature; Estimates and Poverty Elevation Strategy.

Unit 3 Agriculture and Industry

Issues in Indian Agriculture; Land Reforms and Land Acquisition; Green Revolution; Food Security & PDS; Review of Industrial Development in India; Industrial Policy Resolution 1956 and 1991; Privatization and Disinvestment- Concept; Causes and Impact.

Unit 4 HRD – Conceptual Framework

Human Resource Development- Concept; Theories, Education and Human Development; Health and Human Development; Education in India with focus on Higher Education- Problems and Policy; Health in India- Problems and Policy.

TUTORIAL**(CREDITS 2)**

- Land Tenure System under Colonial Rule.
- Employment & Output in Agriculture.
- Demographic Transition Theory.

- Types and Measures of Poverty.
- Introduction to Human Capital .
- Role of Education to Economic Development.

SUGGESTED READINGS

- Misra, S. K., & Puri, V. K. (2011), Indian economy (p. 174). Himalaya Publishing House.
- Dutt, R., & Sundaram, K. P. M. (2008), Indian Economy, S Chand & Co. New Delhi.
- Kapila, U. (Ed.). (2019), Indian Economy since independence. Academic Foundation. 29th edition.
- Jalan, B. (2004), Indian Economy. Penguin UK.
- Brahmananda, P. R., & Panchamukhi, V. R. (Eds.). (2001), Development Experiences in the Indian Economy: Inter-state Perspectives. Bookwell Publications.

12. Entrepreneurship for Self Employment (Skill Enhancement Course -III)

Semester	Core Course	Course Title	Credit
VI	SEC-III	Entrepreneurship for Self Employment	Theory: 02 Tutorial: 02 Total: 04

Course specific outcomes

- The major thrust of this course is to introduce the students to various employment generation schemes and avenues available in Jammu and Kashmir.
- This course develops into a thorough practical guide to Self-employment and entrepreneurship processes of Jammu and Kashmir.

ENTREPRENEURSHIP FOR SELF EMPLOYMENT

THEORY

(CREDITS 2)

Unit 1 Entrepreneurship: Introduction & Main Concepts

Entrepreneurship- Concept and Definition; Nature and Importance of Entrepreneurship; Classification and Types of Entrepreneurs; Entrepreneurial Traits and Motivation; Entrepreneurship vs Entrepreneur; Entrepreneurship vs Professional Managers; Entrepreneurial Environment; Process of Entrepreneurial Development; Development of Women Entrepreneurs.

Unit 2 Entrepreneurship in J&K

Entrepreneurship in J&K -Role of Entrepreneurship Development Institute (EDI); Appraisal of Capital Fund Scheme– Objectives; Eligibility and Strategy; Sanctioning of Seed Capital; Mode of Payment of Seed Capital; Monitoring and Appraisal.

TUTORIAL

(CREDITS 2)

1. Self-employment – Concept and Importance.
2. Potential and Challenges of Dairy farming, Sheep Farming, Poultry in J&K.
3. Employment Opportunities for Educated Youth in Mushroom Cultivation; Bee Keeping and Fisheries in J&K.
4. Youth Startup Loan Scheme: Introduction; Objectives; Implementing Agency(s).
5. Eligibility Strategy; Sanctioning of Loan, Mode of Repayment; Security; other terms & conditions for Startup Loan Scheme
6. An Evaluation and Appraisal of Microfinance in J&K.

SUGGESTED READINGS

- Bakal G. M. (1993), Entrepreneurship Development for Small-Scale Industries.
- Kuratko and Rao (2012), Entrepreneurship: A South Asian Perspective, Cengage Learning.
- Robert Hisrich (2006), Michael Peters, Dean Shepherd, Entrepreneurship, McGraw-Hill Education

- Desai, Vasant (2011), Dynamics of Entrepreneurial Development and Management. Mumbai, Himalaya Publishing House.
- Khanka S. S. (2006), Entrepreneurial Development, S. Chand & Co, Delhi.
- Ramachandran K (2008), Entrepreneurship Development, McGraw-Hill Education
- Government of Jammu and Kashmir Department of Labour and Employment Guidelines for Seed Capital Fund Scheme, available at: <http://jkedi.org/Seed-Capital.aspx>
- Government of Jammu and Kashmir Labour & Employment Department Civil Secretariat Srinagar/ Jammu Guidelines for Youth Startup Loan Scheme, available at <http://jkedi.org/ypls.aspx> A guide to opening up self-employment venture.

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13. Financial Economics (Skill Enhancement Course):

This course provides students with a detailed knowledge of Financial Economics.

Semester	Core Course	Course title	Credit
1 st	SEC-I	Financial Economics	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- This course introduces students to the economics of finance.
- The course is designed to impart the essential aspects of financial asset valuation.
- The course will impart skills that will be useful in a variety of business settings including investment banks, asset management companies and in the field of financial and business journalism.

FINANCIAL ECONOMICS

THEORY (CREDITS: 02)

Unit I: Financial Markets and cash-flow streams

Financial Markets- concept, classification and functions; Instruments of developed money and capital markets; characteristics of Financial Instruments; Financial derivatives.

Basic theory of interest; discounting and present value; internal rate of return; bond prices and yield.

Unit II: Capital Asset Pricing Model (CAPM)

The capital market line; the capital asset pricing model; the beta of an asset and of a portfolio; Security market line; use of the CAPM model in investment analysis and as a pricing formula.

TUTORIALS (CREDITS: 02)

Financial economics - meaning and scope

The term structure of interest rates

Portfolios of asset liability management.

Introduction to CAPM

SUGGESTED READINGS:

1. David G. Luenberger, Investment Science, Oxford University Press, USA, 1997.
2. Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw- Hill, 7th edition, 2002.
3. Burton G. Malkiel, A Random Walk Down Wall Street, W.W. Norton & Company, 2003.
4. Simon Benninga, Financial Modeling, MIT Press, USA, 1997.

14. Macroeconomics (Generic Elective-II)

Semester	Generic Elective	Course Title	Credit
VI	GE-II	Macroeconomics	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- This course intends to acquaint the students with the basic principles in Macroeconomic Theory.
- To familiarize students with various theories explaining the macroeconomic behaviour and make them understand the importance and relevance of various economic policies.

MACROECONOMICS

THEORY

(CREDITS 4)

Unit 1 National Income and Related Aggregates

Macroeconomics - Concept and Evolution; National Income- Meaning; Concepts of National Income; Measurement of National Income- Value Added Method; Income Method; Expenditure Method; Nominal and Real income.

Unit 2 Classical and Keynesian Theory

Classical postulates; Classical Theory of Income and Employment- Say's law of markets; Keynes criticism of Classical Theory. Aggregate Expenditure; Keynesian Theory of Consumption- APC and MPC; Saving Function- APS and MPS.

Unit 3 Concept and Role of Money

Money- Meaning, Evolution and Functions; Kinds of Money; Characteristics of good Money; Four Measures of Money Supply; Money and Near Money; Significance of Near Money.

Unit 4 Inflation and Business Cycle

Inflation- Concept and Types; Causes of Inflation- Demand pull and Cost Push Inflation; Consequences of Inflation; Business cycle- Concept, Causes and Phases.

TUTORIAL

(CREDITS 2)

- Limitations of GDP as a measure of National Income.
- Circular flow of Income in Two-sector, Three-sector and Four-sector economy.
- Investment- Concept and types.
- Determination of Equilibrium output in Keynesian framework.
- Concept of Investment Multiplier.
- Measures to control Inflation.

SUGGESTED READINGS

- Richard T. Froyen (2013), Macroeconomic Theories and Policies, Pearson Education, New Delhi.
- Edward Shapiro (2013), Macroeconomic Analysis, Galgotia Publications, New Delhi.
- Gardner Ackle (2008), Macroeconomic Theory, Surjeet Publications, Delhi.
- Ahuja H.L. (2016), Macroeconomic Theory and Policy based on UGC model curriculum; S Chand; Latest Edition.
- Dwivedi D.N. (2005), Macroeconomics Theory and Policy, Tata McGraw Hill New Delhi.
- Case, Karl E. & Ray C. Fair, Sharon M Oster (2012), Principles of Macroeconomics, Pearson Education, Inc., 10th Edition.

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Education

S. No.	Semester	Course Title	Course Type	Total Credits
1.	I	Educational Sociology	Core Course	6 credits
2.	II	Educational Psychology	Core Course	6 credits
3.	III	Educational Philosophy	Core Course	6 credits
4.	III	Early Childhood Care & Education	Skill Enhancement Course	4 credits
5.	IV	History of Education system in India	Core Course	6 credits
6.	V	Issues and trends in contemporary Indian Education-I	Core Course	6 credits
7.	V	Guidance and Counseling	Skill Enhancement Course	4 credits
8.	VI	Issues and trends in contemporary Indian Education-II	Core Course	6 credits
9.	VI	Educational Technology	Skill Enhancement Course	4 credits

Course Outcomes

Subject Education is being introduced at undergraduate level to acquaint students with necessary skills, aptitudes, etiquettes to pursue teaching as profession. After the completion of the course students develop an aptitude to go for B.Ed and Masters in Education to develop further efficiency in teaching. The course develops the basic insight and understanding of accepted principles of teaching and learning and widens their horizon to understand the basic foundations of Education viz philosophical, sociological, psychological bases of Education. Besides, various skill enhancement courses have been introduced in subject Education to develop various skills in undergraduates related to Early Childhood Care and Education (ECCE) and Guidance and Counseling.

1. Educational Sociology (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Educational Sociology	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- To develop basic understanding of concept, aims and functions of Education.
- To enable students to get basic idea, concept of Sociology, Educational Sociology and relationship between the two.
- To acquaint students with concept, factors and barriers of social change and role of education in bringing social change.
- To enable students to understand the basic idea of culture, it's components, types and characteristics; also the role of Education towards Culture and Culture towards Education.
- To acquaint students to understand various social processes and social problems like child labour, drug abuse, Gender Discrimination which our country India is facing.

EDUCATIONAL SOCIOLOGY**THEORY****(CREDITS: 06)****Unit-I Educational Sociology & Culture**

- Education – Concept, Aims and Objectives
- Meaning and Scope of Sociology & Educational Sociology
- Meaning, Definitions, Characteristics and Components of Culture
- Relationship of Culture with Education.

Unit-II Social Change

- Meaning and Definitions
- Factors: Economic, Social and Political
- Resistance to Social Change
- Education and Social Change (Education as an Agent, Instrument & Effect of Social change)

Unit-III Social Process/Social Mobility

- Concept of Social Process
- Meaning of Social Interaction
- Kinds of Social Interaction – Conflict, Competition, Co-operation, Accommodation and Assimilation
- Social Norms and Values
- Social Mobility – Concept and Types (Vertical and Horizontal)

Unit-IV Social Problems – Consequences & Remedies

- a) Poverty
- b) Illiteracy
- c) Child Labour and Child Abuse
- d) Drug Abuse
- e) Gender Sensitization
- f) Urbanization

SUGGESTED READINGS

- Bhat, M. S. Educational Sociology APH Publishing House New Delhi (2012)
- Bhatt, B. D & Sharma, S. R. Sociology of Education, Kasnishka Publishing House
- Giddens, A. Sociology Wiley India Pvt. Ltd
- Haralambos, M. Sociology: Themes and Perspectives
- Khan, M. A. & Bhat, S. A Basics in Education Dilpreet Publishing House New Delhi (2013).
- Maclver, R. M. & Page, C. H. Society: An introductory Analysis Macmillan India Limited
- Mattoo, M. I. Foundation of Education, Mattoo Publication Srinagar (2003)
- Rao, Shankar, C. N. Sociology: Principles of Sociology with an introduction to social thought S. Chand and Company
- Sharma, Y. K Foundations in Sociology of Education Kanishka Publishers, Distributors New Delhi-110002
- Sollivan, E. E. Education in Social Change. Asia Publishing House
- Taneja, V. R. Socio-Philosophical Approach to Education Atlantic Publishers and Distributors.
- Shaker Rao, C. N. Principles of Sociology with an Introduction of Social Thoughts publication: S. Chand & Company Ltd. New Delhi.

2. Educational Psychology (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Educational Psychology	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- To enable students to get an insight of meaning, scope of Psychology and educational psychology and the relationship between Education and Psychology.
- To acquaint students with concept, nature and factors of learning. Besides, to understand the different theories of learning like Trial and Error, Classical conditioning, Operant Conditioning and Gestalt Theory and their educational implications.
- To acquaint undergraduate students with the basic idea of intelligence, I.Q. and various theories of intelligence.
- To enable students to understand the basic concept, determinants and theories of personality viz Sigmund Freud's Psycho-analytic theory, Allport's and Cattles Trait theory.

EDUCATIONAL PSYCHOLOGY**THEORY****(CREDITS: 06)****Unit-I Educational Psychology & Learning**

- Meaning, Scope of Educational Psychology
- Concept of Learning
- Trial and Error Theory – Thorndike
- Conditioning Theory – Pavlov
- Insightful Learning – Kohler et.al.

Unit-II Intelligence & Creativity

- Concept of Intelligence & I.Q.
- Theories of Intelligence – Two factor theory (Spearman)
 - Multi factor theory (Thorndike)
 - Group factor theory (Thurstone)
- Detailed description of the following tests
 - Simon – Binet Scale (Verbal test)
 - Cattell's Culture – Fair Test (Non-verbal test)
 - Bhatia Battery Test (Performance test)
- Creativity – Concept, Characteristics and its Nourishment

Unit-III Personality

- Meaning and Definitions
- Theories of Personality:
 - Type Theory – William Sheldon & Jung

- ii. Trait Theory – Allport
- iii. Self Theory – Carl Rogers
- iv. Psychoanalytical theory – Sigmund Freud

Unit-IV Adolescence & Mental Health

- a) Concept, Characteristics & Problems of Adolescents
- b) Role of Education in solving problems of Adolescents
- c) Concept and Characteristics of Mental Health
- d) Adjustment and Defense Mechanism – Sublimation, Compensation, Rationalization and Projection.

SUGGESTED READINGS

- Aggarwal, J. C. Essentials of Educational Psychology (2nd Revised Ed.) Vikas Publishing House Pvt. Ltd New Delhi
- Baron, R. A Psychology (5th Ed.) Published by Dorling Kindersley India) Pvt. Ltd.
- Chauhan, S. S. Advanced Educational Psychology (6th Revised Ed.) Vikas Publishing House Pvt. Ltd. New Delhi.
- Dandapani, S. Advanced Educational Psychology (4th Revised Ed.) Anmol Publications Pvt. Ltd New Delhi 110002 (India)
- Mangal, S. K. Advanced Educational Psychology (2nd Ed.) Published by Ashoke K. Ghosh
- Mattoo, M. I. Foundation of Education, Mattoo Publication Srinagar (2011)
- Parveen, A. Fundamentals of Education. Info-world, Srinagar (2011)
- Walia, J. S. Foundations in Educational Psychology (6th Revised Ed.) Vikas Publishing House Pvt. Ltd., New Delhi.

3. Educational Philosophy (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	Educational Philosophy	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- To enable students to get an insight of meaning, scope of Psychology and educational psychology and the relationship between Education and Psychology.
- To acquaint students with the meaning, nature and scope of philosophy and its relationship with Education, Religion and Science.
- To enable students to understand the major philosophies of Education like Idealism and Pragmatism and their bearings on Education.
- To enable students to understand the educational contribution of John Dewey, R.N Tagore, Dr. Sir Mohammed Iqbal, Moulana Abul Kalam Azad, M.K Gandhi with special reference to the concept, aims, curriculum, methods of teaching and role of teacher in Education.

EDUCATIONAL PHILOSOPHY**THEORY****(CREDITS: 06)****Unit-I Philosophy & Education:**

- Concept – Philosophy, Religion & Science
- Relationship between Philosophy with Science and Religion
- Relationship between Philosophy and Education.
- Branches of Philosophy – (Epistemology, Axiology, Ontology)

Unit-II Idealism

- Underlying Assumption of Idealism as a school of Philosophy
- Aims of Education
- Curriculum
- Methods of Teaching
- Concept of freedom and discipline.
- Role of Teacher

Unit-III Pragmatism

- Underlying Assumption of Pragmatism as a school of Philosophy
- Aims of Education
- Curriculum
- Methods of Teaching
- Concept of freedom and discipline.
- Role of Teacher

Unit-IV Educational thought of the following

- a). John Dewy
- b). Allama Iqbal
- c). M. K. Gandhi
- d). Tagore
- e). Maulana Abul Kalam Azad.

SUGGESTED READINGS

- Brubacher, J. S. Modern Philosophies of Education Tokyo: McGraw Hill Book Company, Inc.
- Butter, J. D. Four Philosophies and their practice in Education and Religion New York and London: Harper and Row.
- Khan, M. A. & Bhat, S.A. Basics in Education Delpreet Publishing House New Delhi (2013)
- Mattoo, M. I. Foundation of Education - II, Srinagar Book Vision (2005)
- Seetharamu, A. S..Philosophies of Education Ashish Publishing House.
- Sharma, P. Philosophy of Education New Delhi: APH Publications
- Sing, Y. K. Philosophical Foundations of Education APH Publishing Corporation.
- Walia, J. S. Philosophical Foundations in Educational Paul Publishing House Pvt. Ltd., New Delhi.

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4.. Early Childhood Care & Education (Skill Enhancement Course)

Semester	Skill Course	Course Title	Credit
III	SC-I	Early Childhood Care & Education	Theory: 04 Total: 04

Course specific outcomes

- To acquaint students with meaning, importance and objectives of ECCE in India.
- To understand the methods of child study viz Observation and Case study.
- To acquaint them to understand the growth and development of early childhood stage in domains viz, physical, mental, social and emotional.
- To equip students with the measures of fostering creativity among young children.
- To understand the role of ICDS, Balwardis and Anganwadi's in all round development of the child.
- To understand the role of NGOS in ECCE.

EARLY CHILDHOOD CARE & EDUCATION**THEORY****(CREDITS: 04)****Unit I****Concept & Methods**

- Meaning of Early Childhood Care & Education.
- Aims & objectives of Early childhood care and Education
- Need and importance of Early Childhood Care & Education
- Methods of studying child behavior— Observation and Case study—A case study shall be prepared by students (five to ten in each groups)

Unit II**Development of Childhood**

- Concept of Development
- Social and Personal Development
- Emotional and Motor development
- Development of Creativity.

Unit III**Recommendations and Programmes**

- Recommendations of NPE 1986
- Recommendation of NCF (2005)
- ECCE Programme in India with special reference to ICDS
- Role of NGOs in ECCE

Unit IV**Contribution of Education thinkers with reference to ECCE**

- Froebel
- Montessori
- Dewey

SUGGESTED READINGS:

- Austin, Gilbert R Early Childhood Education. An International Perspective, New York Academic Press.
- Banta, T. Are these Really a Montessori Method? Columbus, Ohio: Ohio Psychological Association and Ohio Psychiatric Association.
- Bloom, Benjamin, S. Stability and Change in Human Characteristics. New York: John Wiley & Sons Inc.
- Brown, G. Child Development. London: Open Books, Central Advisory Board of Education (CABE)
- Butts, R. Freeman. A Cultural History of Western Education. New York: McGraw-Hill Book, Co., Inc.
- Cole, Luella. A History of Education-Socrates to Montessori. New York: Holt Rinehart and Co.
- Gupta, M. S. Early Childhood Care and Education. Eastern Economy Edition. PHI Learning Private Limited, New Delhi.

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5. History of Education System in India (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	History of Education system in India	Theory: 06 ; Total: 06

Course specific outcomes

- To enable students to gain knowledge about the system of Indian education during Vedic, Buddhist and Medieval periods.
- To gain an insight of impact of various British Commissions and Committees on Indian Education.
- To enable students to understand growth and development of education in post-independence Era.
- To enable students to understand growth and development of education in J&K with special reference to Kazmi report, K.G Saiyadain report and Bhagwan Sahay Committee report.

HISTORY OF EDUCATION SYSTEM IN INDIA**THEORY****(CREDITS: 06)****Unit-I Education in Ancient and Medieval India**

- Vedic Education- Salient Features, Aims, Process of Education and Curriculum
- Buddhist Education- Salient Features, Aims , Process of Education and Curriculum
- Muslim Education- Salient Features, Process of Education and Curriculum

Unit-II Education in British India

- Macaulay's Minute (1835)
- Wood's Despatch (1854)
- Indian Education Commission (1882)
- Wardha Scheme (1937)
- Sargent Report (1944)

Unit-III Education in Post Independence Era

- Radha Krishnan Commission (1948-49)
- Mudaliar Commission (1952-53)
- Kothari Commission (1964-66)
- National Policy on Education NPE (1986) and Programme of Action (POA)

Unit-IV Education in J &K State

- Sharp Committee (1916)
- K.G.Sayiddin (1939)
- Kazmi Report (1950)
- Baghwan Sahai Committee (1972)

SUGGESTED READINGS:

- Aggarwal, A.K. Development of Education System in India Anmol Publication Pvt. Ltd.
- Altekar, A.S. Education in Ancient India ,New Delhi ,Motilal Banarsidass
- Ganie, M.Y and Bhat ,S.A. Development of Educational System in India.Dilpreet Publishing House New Delhi
- Jayapalan. History of Education in India, Atlantic Publishers
- Khan ,M.A and Parveen, A. Educational Philosophy and Educational Scenario, Kashmir Info Srinagar
- Kothari Education Commission (1964-66)
- Mehta, D.D. Development of Education System in India. Tandon Publications Ludhiana
- Mohanty, J. Current Issues in Education , Cosmos Publication New Delhi
- Mukherji, R.K. Ancient Indian Education New Delhi, Motilal Banarsidass
- National Policy on Education (1986)
- Rather, R.A. Development of Educational System in India
- Saini ,S.K. Development of Educational System in India. Cosmo Publishers New Delhi
- Secondary Education Commission (1952-53)
- University Education Commission (1948-49)
- Walia ,J.S. Development of Educational System in India. Paul Publishers
- Rasool and Chopra. Education System in J&K.

6. Issues and trends in Contemporary Indian Education-I (Core Course-V)

Semester	Core Course	Course Title	Credit
V	CC-V	Issues and trends in contemporary Indian Education-I	Theory: 06 ; Total: 06

Course specific outcomes

- To enable students in understanding the meaning, objectives and present status of secondary education in India.
- To enable them to understand the role of RMSA in secondary education.
- To acquaint them to understand meaning and objectives of higher education.
- To enable the students to understand the role of RUSA in higher education.
- To understand the major problems of quality control in higher education.
- To get an insight about the issues related to women Education, its causes and remedial measures and role of education in empowerment of women.
- To galvanize the minds of students to understand the need and importance of value education and environmental education.

ISSUES AND TRENDS IN CONTEMPORARY INDIAN EDUCATION-I**THEORY****(CREDITS: 06)****Unit-I Secondary Education**

- a) Objectives
- b) Present Status of Secondary Education Institutions
- c) Vocationalization of Secondary Education and its Remedial Measures
- d) Rashtriya Madhyamik Shiksha Abhiyan (RMSA)

Unit-II Higher Education

- a) Objectives
- b) Present Status of Higher Education Institutions
- c) Problems of Quality Control and Finances and Remedial Measures
- d) Private Initiative in Higher Education
- e) Rashtriya Uchachtra Shiksha Abhiyan (RUSA)

Unit-III Women's Education

- a) Need and Importance
- b) Problems of Women's Education and their Remedies
- c) Role of Education in Empowerment of Women

Unit -IV Value Education and Environmental Education

- a) Need, importance and Development of Human Values

- b) Education for Human Rights
- c) Nature, Meaning and Importance of Environmental Education
- d) Programmes of Environmental Education

SUGGESTED READINGS

- Aggarwal, A.K. Development of Education System in India Anmol Publication Pvt. Ltd.
- Bhat, B.D. Modern Indian Educational Planning and Development. Kanishka Publishers, Distributors
- Chand, J. Value Education Anshah Publication House Ghosh, D.N. A Textbook of Value Education Document Publishers and Distributors New Delhi
- Mukherji, R.K. Ancient Indian Education New Delhi Motilal Banarsidass
- Shrivastava, K.K. Environmental Education Principles Concept and Management Kanishka Publications, Distributors
- Sirohi, S.S. Environmental Education Tandon Publications

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7. Guidance and Counseling (Skill Enhancement Course-II)

Semester	Skill Course	Course Title	Credit
V	SC-II	Guidance and Counseling	Theory: 04 ; Total: 04

Course specific outcomes

- To enable students to understand the basic concept, objectives of guidance and counseling and the relationship between the two.
- To understand the basic idea of guidance services viz placement services and follow-up services.
- To enable students to understand the guidance services at secondary level.
- To give them an insight about the theories of counseling.
- To enable them to know the qualities of a good counsellor and teacher as a counsellor.

GUIDANCE AND COUNSELING**THEORY****(CREDITS: 04)****Unit I: Guidance**

- Concept of Guidance
- Need and importance
- Aims and objectives of Guidance
- History of Guidance Movement in India

Unit II: Foundation of Guidance

- Philosophical
- Psychological Foundation
- Socio-cultural Foundations
- Importance of Intelligence and Personality Tests

Unit III: Guidance Service

- Information Service - Educational, Occupational, Personal.
- Appraisal Service - Interview, Case study and Cumulative Record card
- Placement Service - Educational and occupational.
- Follow-up Service

Unit IV: Counseling

- Meaning, Purpose and process in Counseling
- Qualities of a Counsellor.
- Directive theory of Counseling
- Non-directive theory of Counseling.

SUGGESTED READINGS

- Crow and Crow; Introduction to guidance. Eurasia Publishing House (P) Ltd., New Delhi
- Gibson, R.L. & Mitchell, M.H. Introduction to Guidance. New York: McMillan
- Hasnain Quraishi Educational Counselling. Anmol Publications
- Hoppock, Robert Group Guidance: Principles, Techniques and Education, Tata McGraw Hill, New York.
- Kochhar, S.K, Hoppock, Robert; Occupational Information: Where to get it and how to use it in counselling in and in teaching. Tata McGraw Hill New York.
- Mehdi, B. & Stone Guidance in School, New Delhi NCERT, 1978.
- Miller, F. W. Guidance & Principles of Guidance, New York, McGraw Hill.

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8. Issues and Trends in Contemporary Indian Education-II (Core Course-VI)

Semester	Core Course	Course Title	Credit
VI	CC-I	Issues and trends in contemporary Indian Education-II	Theory: 06; Total: 06

Course specific outcomes

- To enable students to understand the need and importance of adult education.
- To understand the basic concepts of National Literacy Mission (NLM) and Total Literacy campaign (TLC).
- To enable students to understand the types of exceptionality, identification and educational provisions of gifted, mentally retarded and delinquents.
- To enable students to understand the basic principles of guidance and counseling.
- To enable students to understand and compute the measures of percentile and percentile rank.

ISSUES AND TRENDS IN CONTEMPORARY INDIAN EDUCATION-II**THEORY****(CREDITS: 06)****UNIT -I Adult Education & Distance Education**

- a) Concept, Need and Importance of Adult Education and Life Long Learning
- b) National Literacy Mission (NLM) and Total Literacy Campaign (TLC)
- c) Meaning, Need and Importance of Open and Distance Learning (ODL)
- d) Salient Features of Distance Education
- e) Open University System

Unit -II Exceptional Children

- a) Gifted – Concept, Identification and Education of the Gifted
- b) Mentally retarded- Concept, Identification and Education
- c) Delinquent – Concept, Identification and Education
- d) Concept of Inclusive Education

Unit -III Guidance and Counseling

- a) Concept and Principles of Guidance
- b) Types of Guidance: Education, Vocational and Personal
- c) Need and Importance of Guidance at Secondary Level
- d) Concept and Elements of Counseling

Unit IV Statistics in Education

- a) Relative Measures: Concept, Computation of Percentile and Percentile Rank, Standard Scores
- b) Bivariate Correlation: Meaning, Computation of Correlation by Rank Difference Method & Product Moment Method (Raw Score Only).

SUGGESTED READINGS:

- Aggarwal, R. Education, Vocational Guidance & Counselling Principles, Techniques and Programmes. Shipra Publication.
- Basu, N. Adult Education: Trends and Strategies Modern Book. Publication, New Delhi
- Garret, H.E. Statistics in Psychology & Education. Surjeet publication
- Malik, G.M. Understanding Adult Education, Crown Pub, N.D.Srinagar
- Mangal, S.K. Statistics in Psychology and Education.
- Mohanty ,J. Adult and Non-formal Education Deep and Deep Publication
- Mohanty,S. Libelons and Adult Education APH Publishing Corporation
- Nadeem,N.A and Farooq, F.A. Statistics in Education and Psychology Dilpreet Publishing House New Delhi.
- Sharma, R.N. Guidance and Counselling Surjeet publication
- Shrivastava, K.K. Foundation of Educational Psychology. Paul Publishers

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9. Educational Technology (Skill Course)

This course provides students with a detailed knowledge of electrical circuits and network skills

Semester	Core Course	Course title	Credit
1st	SEC	Educational Technology	Theory: 02; Practical:02 Total: 04

EDUCATIONAL TECHNOLOGY

THEORY

(CREDITS: 02)

Unit I: Understanding Educational Technology

- Meaning, Objectives and Types,
- Forms: Instructional technology, Teaching Technology, Behavioural Technology
- Relevance of Educational Technology

Unit II: ICT in Education

- Computer Applications in Education
- Computer Assisted Instruction - its Types
- Education implications of Internet, and E-learning.

TUTORIAL

(CREDITS: 02)

Unit I:

- Preparation of Power Point Presentation (PPT)
- Creating, and managing of email and social networking sites (SNS)
- Appearing on line examinations.
- LAN and WAN

Unit II:

- Visit to CIET web site
- Visiting other Educational Sites.
- On-line teaching and learning,
- Font size, formatting and creating of files/ folders

SUGGESTED READINGS:

- Dahiya, S. (2009). Educational Technology- Towards Better Teacher Performance. New Delhi: Shipra Publications (Shakarpur).
- Mattoo, M. I. (2019). Principles of Educational Technology - New Delhi: Swastik Publications.
- Parhar, Madhu (2006). Satellite in Education. New Delhi: Shipra Publications (Shakarpur).

- Agarwal, Rashmi (2010). Educational Technology, Management and Evaluation. New Delhi: Shipra Publications (Shakarpur).
- Sharma, R.A. (2009) Advanced Educational Technology Meerut.

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**Course Structure and distribution of different courses with their credits for B.A.
English Literature**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	British Poetry	Core Course	6 credits 4(T)+2(T)
2.	II	British Drama	Core Course	6 credits 4(T)+2(T)
3.	III	British Poetry-II	Core Course	6 credits
4.	IV	British Novel	Core Course	6 credits
5.	V	American Literature	Core Course	6 credits
6.	V	Literary Criticism	Core Course	6 credits
7.	VI	English literature: Indian writing in English	Core Course	6 credits
8.	VI	Post Colonial Literature	Core Course	6 credits

Course Outcomes:

English literature is being part of curriculum from 1st semester to 6th semester to acquaint students with the wide and varied cosmos of world literature. After completion of the course, the students are competent enough to speak and write professional English as well as try their hands in writing creative literature. Along with compulsory general English and communicative English, English literature is also part of curriculum with addition to it certain skill courses related to writing skills and translation are also taught to smooth the edges for future of students. The department has already groomed few young writers who have already published their books on national and international platforms.

1. British Poetry (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	British Poetry	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes:

- To introduce students of English literature to roots of English poetry
- To introduce students to G. Chaucer
- To familiarize students with narrative poetry
- To introduce to concept of sonnet and metaphysical poetry
- To familiarize with Neo-classical British literature
- To introduce to the world of John Milton

BRITISH POETRY**THEORY****(CREDITS 4)****Unit I:** Prologue to Canterbury tales by G. Chaucer**Unit II:** sonnets of Shakespeare and poems of John Donne Sonnet 12, 18, 66; Batter my heart valediction: forbidden mourning**Unit III:** John Dryden, Absalom and Achitophel, Macflecknoe**Unit IV:** Paradise lost book- John Milton**Tutorials:** *Unit III & IV*

2. British Poetry (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	British Drama	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes:

- To introduce students to world of British Drama
- To familiarize students with classical dramas of Marlowe and Shakespeare
- To familiarize students with realistic plays of G. B. Shaw
- To introduce students with plays of modern and postmodern age with reference to John Osborne

BRITISH DRAMA**THEORY****(CREDITS 4)****Unit I:** Tamburlaine the great part I Christopher Marlowe**Unit II:** Twelfth night - William Shakespeare**Unit III:** Pygmalion G.B Shaw**Unit IV:** Look Back in Anger- John Osborne**Tutorials:** *Unit III & IV*

3. British Poetry II (Core Course-III)

Semester	Core Course	Course title	Credit
III	CC-III	British Poetry II	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To introduce to world of Romanticism in poetry
- To familiarize with earlier and late romantic poetry writers
- To introduce to Victorian world of literature
- To familiarize with Tennyson A. L.
- To introduce to modern English poetry through W. B. YEATS

BRITISH POETRY-II**THEORY****(CREDITS 4)****UNIT I:** Tintern abbey, Ode on intimation of immortality -William Words worth**UNIT II:** Shelley: ode to the west wind, ozymand'ias; Keats: ode on Grecian urn, ode to a nightingale**Unit III:** Tennyson: Ulysses, the lady of shallot, The Defense of Lucknow**Unit IV:** Yeats: Easter 1916, A dialogue between self and soul

4. British Novel (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	British Novel	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To introduce students to concept of Novel
- To familiarize students with art of novel writing
- To develop patience in students for extended reading hours
- To develop habits of reading
- To introduce to world of Jane Austen ,Charles Dickens and D H Lawrence
- To familiarize students with feminist writings with reference to Virginia Woolf

BRITISH NOVEL**THEORY****(CREDITS 4)****Unit I:** Jane Austen -Pride and Prejudice**Unit II:** Charles Dickens -Oliver twist**Unit III:** D H Lawrence -Sons and Lovers**UNIT IV:** Virginia Woolf -Mrs Dalloway

5a. American Literature (Core Course-IV)

Semester	Core Course	Course Title	Credit
V	CC-V	American Literature	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To introduce students to world of American theater (post modern)
- To familiarize students with American classical writings (Mark Twain)
- To introduce students to the world of American novel
- To familiarize students with mysticism of EMILY DICKINSON
- TO familiarize students to world of Robert Frost

AMERICAN LITERATURE**THEORY****(CREDITS 4)****Unit I:** The Glass Menagerie-Tennessee Williams**Unit II:** The adventures of Tom-Sawyer Mark Twain**Unit III:** For whom the bell tolls-Ernest Hemingway**Unit IV:** Poetry: Emily Dickinson

Hope is the thing with feathers

Because I could not stop for Death

I am nobody; A bird came down the walk

Robert Frost

Mending wall

Home burial

Stopping by the woods

5b. Literary Criticism (Core Course-V)

Semester	Core Course	Course Title	Credit
V	CC-V	Literary Criticism	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To introduce students with concepts of literary criticism
- To introduce students to romantic criticism (Wordsworth and Coleridge)
- To introduce students with feministic experience
- To introduce students to modern school of critical thought
- To familiarize students with multiple levels of looking at a text

LITERARY CRITICISM**THEORY****(CREDITS: 4)**

Unit I: Wordsworth Preface to lyrical ballads 1802 S T Coleridge : Biographia Literaria chapter 4 ,13 ,14

Unit II: Virginia Woolf -Modern Fiction

T S Eliot -Tradition and individual talent

Unit III: I A Richards -Principles of literary criticism; Chapter 1, 2, 34

Unit IV: Cleanth Brooks-the heresy of paraphrase and the language of paradox

6a. English Literature: Indian writing in English (Core Course-VI)

Semester	Core Course	Course Title	Credit
VI	CC-VI	English literature: Indian writing in English	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To introduce students to Classics of Indian English literature
- To familiarize students with world of R. K. Narayan
- To introduce students to Indian history and literature
- To familiarize students with confessional poetry
- To familiarize students with voice of diaspora
- To familiarize students with Indian English drama

ENGLISH LITERATURE: INDIAN WRITING IN ENGLISH**THEORY****(CREDITS 4)****Unit I:** R K Narayan- Swami and friends**Unit II:** Anita Desai -Clear light of a day**Unit III:** Kamala Das-My grandmother's house

The stone age

The old playhouse

Agha shahid Ali

Postcard from kashmir

Dhaka Gauzes

I see Kashmir from New Delhi at midnight

Unit IV: Girish Karnad Tughlaq

6b. Post Colonial Literature (Core Course-VI)

Semester	Core Course	Course Title	Credit
VI	CC-VI	Post Colonial Literature	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To introduce students to the world of African English literature
- To familiarize students with tradition of African writing
- To familiarize students with postcolonial literature
- To familiarize students with world of different writings away from British literature
- To Globalize understand and perception of English literature students

POST COLONIAL LITERATURE**THEORY****(CREDITS 4)****Unit I:** Chinua Achebe Arrow of God**Unit II:** Salman Rushdie Midnight's Children**Unit III:** Short story ; Bessie Head ..The collector of treasures

Ama Ata Aidoo The Girl Who Can

Grace ogot ...the green leaves

Unit IV: Poetry

Pablo Neruda ...Tonight I can write , the way Spain was

Derek WalcottA far cry from Africa ..Names

David Malouf Revolving Days wild Lemons

Course Structure and distribution of different courses with their credits for B.A. English

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	English Communication Skills-I	Ability Enhancement Course	2 credits)
2.	II	English Communication Skills-II	Ability Enhancement Course	2 credits
3.	III	General English-I	Core Course	6 credits
4.	IV	General English-II	Core Course	6 credits
5.	V	General English-III	Core Course	2 credits
6.	V	English Writing Skills	Skill Enhancement Course	4 credits
7.	VI	General English-IV	Core Course	4 credits
8.	VI	English Translation Skills	Skill Enhancement Course	4 credits

Course Outcomes:

Subject English along is being part of curriculum from 1st semester to 6th semester to acquaint students with linguistic competence and other skills related to English language and English literature. After completion of the course, the students are competent enough to speak and write professional English as well as try their hands in writing literature. Along with compulsory general English and communicative English, English literature is also part of curriculum with addition to it certain skill courses related to writing skills and translation are also taught to smooth the edges for future of students.

1. English Communication Skills-I (Ability Enhancement Course-I)

Semester	Ability Enhancement Course	Course Title	Credit
II	AECC-II	English Communication Skills-I	Theory: 02; Total: 02

Course specific outcomes:

- To develop basic understanding of communication
- To familiarize students with phonetic sounds and symbols
- To develop skills like dialogue group discussions, presentation and interview
- To familiarize students with concept of listening
- To imbibe acquaintance with reading comprehension and skills
- To Familiarize with concept of translation
- To introduce students to art of paragraph writing
- To make students understand concept of book review and report writing
- To familiarize students with poetry and short story

ENGLISH COMMUNICATION SKILLS-II**THEORY****(CREDITS: 02)****Unit I: Introduction to communication**

- Process of communication
- Levels of communication
- Flow of communication
- Verbal and non verbal communication
- Barriers to communication

Unit II: Reading and writing skills

- Techniques of Reading, reading comprehension
- Translation from Urdu to English
- Paragraph writing and Letter writing
- Report writing, Book review
- Literature component
- Robert Frost: The Road not taken
- James Kirkup ... No men are foreign
- Saki the open window
- O, Henry The Romance of Busy Broker

2. English Communication Skills-I (Ability Enhancement Course-II)

Semester	Ability Enhancement Course	Course Title	Credit
II	AECC-II	English Communication Skills-II	Theory: 02; Total: 02

Course specific outcomes:

- To introduce to concept of Travel writing
- To familiarize students with Biographies
- To introduce students to world of human interest
- To introduce students to concept of Disaster Management
- To familiarize students with world of cinema and films

ENGLISH COMMUNICATION SKILLS-II**THEORY****(CREDITS: 02)****Unit I:***Travel*

Heaven's Gatepico Iyer

Biography

Sir C V Ramanshubashree Desikan

Human interest

The Connoisseur.....Nargis Dalal

Unit II:*Disaster Management*

The Cuddalore Experience Anu George

Humour

Bubbling Well RoadRudyard Kipling

Films

The Odds against us Satyajit Ray

3. General English-I (Core Course)

Semester	Core Course	Course title	Credit
III	CC	General English-I	Theory: 04; Tutorial: 02; Total: 06

Course specific outcomes

- To familiarize students with grammar in use
- To introduce tenses and use of articles and practice
- To Familiarize with phonetic sounds and symbols
- To Familiarize with use of punctuation
- To introduce students to Shakespearean sonnets
- To familiarize students with poetry of John Milton and William Blake
- To introduce concept of essay and short story
- To acquaint students with Charles Lamb ,Leo Tolstoy and Sadat Hassan Manto

GENERAL ENGLISH-I**THEORY****(CREDITS: 06)****Unit I: Grammar in use**

Tenses and articles

Unit II: Writing/English sound system

Use of punctuation

Phonetic symbols

Unit III: Poetry

William Shakespeare ...sonnet 2, 13, 18

John Milton..... ON HIS BLINDNESS, ON HIS HAVING ARRIVED AT THE AGE OF
TWENTY THREE

William Blake ...LONDON, GARDEN OF LOVE

Unit IV: Essay/ Short story

CHARLES LAMB....DREAM CHILDREN A REVERIE

LEO TOLSTOY..... HOW MUCH LAND DOES A MAN NEED

SAADAT HASAN MANTOToba Tek Singh

4. General English-II (Core Course)

Semester	Core Course	Course title	Credit
IV	CC	General English-II	Theory: 04; Tutorial: 02; Total: 06

Course specific outcomes

- To introduce students with use of grammar
- To familiarize with narration and Concord
- To familiarize students with Report writing and letter writing
- To familiarize students with poetry of Wordsworth, Arnold and TS ELIOT
- Introduction into world of Biography
- To familiarize students with life of greats in various fields

GENERAL ENGLISH-II**THEORY****(CREDITS: 06)****Unit I: Grammar in use**

Narration

Agreement of subject and verb

Unit II: writing skills

Report writing

Letter writing

Unit III: Poetry

Wordsworth.... Lucy Gray, The World is too much with us

Mathew Arnold ..Dover Beach , Growing Old

T S ELIOT.... Preludes

Unit IV: Biography

Abraham Lincoln

Sir Mohammad Iqbal

Mother Teresa

5. General English-III (Core Course)

Semester	Core Course	Course Title	Credit
V	CC-III	General English-III	Theory: 02; Total: 02

Course specific outcomes

- To introduce students with Grammar in use
- To familiarize students with use of models
- To familiarize students with concept of transformation of sentences
- To familiarize students with poems of Agha shahid Ali and A K Ramanujan

GENERAL ENGLISH-III**THEORY****(CREDITS: 02)****Unit I: Grammar in use**

- Models
- Transformation of sentences

Unit II: Poetry

Agha shahid Ali....POSTCARD from Kashmir, the wolf's postscript

A K Ramanujan..... of mothers among other things, Obituary

6. English Writing Skills (Skill Enhancement Course)

Semester	Skill Course	Course Title	Credit
V	SEC	English Writing Skills	Theory: 04; Total: 04

Course specific outcomes

- To familiarize students with letter writing
- To familiarize students with CV writing ,advertisement writing, poster writing and other skills

ENGLISH WRITING SKILLS**THEORY****(CREDITS: 4)****Unit I:** Paragraph writing**Unit II:** Letter writing**Unit III:** cv poster writing**Unit IV:** Report writing

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7. General English-IV (Core Course)

Semester	Core Course	Course Title	Credit
VI	CC	General English-IV	Theory: 02; Total: 02

Course specific outcomes

- To familiarize students with writing art with specific focus on Advertisement, i.e. mails and essays
- To familiarize students with concept of Globalization
- To familiarize students with political issues of world with specific references to Martin Luther king

GENERAL ENGLISH-IV**THEORY****(CREDITS 4)****Unit I:** writing skills Advertisement/e mails / Essay**Unit II:** Prose

Amartya Sen : How to Judge Globalism

Martin Luther king: I have a dream

8. English Translation Skills (Core Course)

Semester	Core Course	Course Title	Credit
VI	CC	English Translation Skills	Theory: 04; Total: 04

Course specific outcomes

- To introduce students to concept of translation
- To imbibe in students the urge to translate
- Creating writing skill and habits in students

ENGLISH TRANSLATION SKILLS**THEORY****(CREDITS 4)****Unit I:** Translation: meaning history**Unit II:** Types of translation**Unit III:** Machine translation**Unit IV:** Practice of translation

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Course Structure and distribution of different courses with their credits for B.A.**History**

S.No.	Semester	Course Title	Course Type	Credits
1.	I	Ancient India/Ancient Kashmir	Core Course	6 credits 4(T)+2(T)
2.	II	Medieval India/Medieval Kashmir	Core Course	6 credits 4(T)+2(T)
3.	III	Modern India/Modern Kashmir	Core Course	6 credits 4(T)+2(T)
4.	III	Archeology-An Introduction	Skill Enhancement Course	4 credits 2(T)+2(T)
5.	IV	Themes in World History	Core Course	4 credits 2(T)+2(T)
6.	V(a)	India Since Independence	Core Course	6 credits 4(T)+2(T)
7.	V(b)	Themes in Cultural and Religious Traditions of Kashmir	Core Course	6 credits 4(T)+2(T)
8.	V	Indian economy and Society through ages	Core Course	6 credits 2(T)+2(T)
9.	VI	Historiography: An Introduction	Core Course	6 credits 4(T)+2(T)

Course outcomes:

The undergraduate course in history covers major aspects of Indian and World History. In addition, 'Skill Enhancement' courses are also part of this curriculum. The aims and objectives/expected learning outcomes are as follows:

The undergraduate course in history aims to acquaint students with developments in human culture, polity, society and economy of Indian subcontinent from earliest times until present day. This in turn makes students aware about myriad developments that have occurred in various fields over the course of time and have moulded humans inhabiting Indian subcontinent, politically, socially, religiously, ideologically as well as economically. This gives a better understanding of past and present while enabling students to predict future course; and importantly making them responsible human beings. The portions on world history acquaint students with major developments that have occurred in different parts of the globe and have significantly altered the course of human history. Such knowledge makes students understand the present geo-political environment of the world. Further, various Skill Enhancement courses give students knowledge of technical aspects of the subject besides opening new job avenues for them in today's technical world.

1. Ancient India/Ancient Kashmir (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Ancient India/Ancient Kashmir	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes

The course deals with the remote past of ancient Indian subcontinent. One chapter of the course specially focuses on the development of various historical processes in ancient Kashmir. The course talks about the history and archaeology of ancient Indian subcontinent from stone ages up to the beginning of medieval ages. The students will be acquainted with the various Stone Age cultures, civilizations, kingdoms, chiefdoms and empires that flourished in the area. It focuses on the achievements of rulers especially in the field of polity, economy, culture and religion.

The paper aims to teach students various aspects of historical development particularly related to art of governance, growth of cultures, advancements made in art, architecture and learning etc.

The students are expected to understand:

- a. The origin and development of various cultures in ancient Indian subcontinent and their relations with various outside cultures.
- b. The students will be able to have an understanding of involvement of Indians in the growth and development of historic processes.
- c. It also aims to underline the contribution made by Indians in the field of polity, economy, culture, religion, art, architecture, technology etc.
- d. The students are expected to know about the glorious past of ancient Kashmir.

ANCIENT INDIA / ANCIENT KASHMIR**THEORY****(CREDITS: 04)****Unit – I (Pre and Proto- History)**

- I. Sources: Archaeological and literary- An Introduction
- II. Pre and Proto-History: Paleolithic, Mesolithic, Neolithic and Chalcolithic Cultures- Features.
- III. Indus Valley Civilization: Emergence, Features and Decline

Unit-II (From Vedic to Mauryas)

- I. Early Vedic and Later Vedic Age: Polity and Culture
- II. Second Urbanization: Features
- III. Rise of Magahda
- IV. Mauryas: Administration, Ashoka's Dhamma and Decline.

Unit-III (Post –Mauryan Period upto Harshavardhana)

- I. Central Asian Contacts: Indo-Greeks, Kushans: Polity and Cultures
- II. Gupta Empire: Polity and Culture
- III. Harshavardhana: Administration and Religion
- IV. Sangam Age: Features

Unit-IV (Ancient Kashmir)

- I. Pre-historic Kashmir: Paleolithic and Neolithic Culture.
- II. Kashmir Between 1000 BCE to 600 CE: Indo-Greeks, Kushanas and Huns
- III. Karkotas: Empire Building.
- IV. Utpal: Economy with special reference to Avantivarman
- V. Loharas: Polity

TUTORIALS**(CREDITS 02)**

Tutorials-I: Visit and Report writing on any ancient Monument/ Archaeological Site.

Tutorials-II: Brief report writing on any primary source of Ancient India/Ancient Kashmir

SUGGESTED READINGS:

- Agrawal, D.P. and Chakrabarti, D.K. 1979, Essays in Indian Proto-history, New Delhi: B.R. Publishing Corporation.
- Allchin, F.R.A. and Allchin, B. 1995, The Origins of a Civilization. Delhi: Viking.
- Singh, Upinder. 2009. A History of Ancient and Early Medieval India from the stone age to the 12th century. Delhi: Pearson Longman.
- Thapar, Romila, Interpreting Early India, Delhi, 1999. Oxford University Press.
- Jha, D. N., 1998, Ancient India: A Historical Outline, New- Delhi.
- Sharma, R. S., 2005, India's Ancient Past, Oxford University Press.
- Sharma, R.S. Indian Feudalism, 3rd edition, Macmillan India, Delhi, 2006.
- Sharma, R.S. : Early Medieval Indian Society : A Study in Feudalization, Orient Longman, Delhi, 2001.
- Sharma, Ram Sharan, Advent of the Aryans in India, Manohar, Delhi, 1999.
- Thapar, Romila, The Aryan: Recasting Constructs, Three Essays Collective, Gurgaon, 2008.
- Banday A. A. (2009) Prehistoric Kashmir: New Delhi Dilpreet Publishers
- Shali, S. L. (1993) Kashmir: History and Archaeology through the Ages, Delhi Indus Publishers
- Aggarwal, R. C. (1998) Kashmir and its Monumental Glory, New Delhi, Aryan Books.
- Bamzai, P. N. (1973) A History of Kashmir (2nded), New Delhi, Metropolitan Books

2. Medieval India/Medieval Kashmir (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Medieval India/Medieval Kashmir	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes

- A) To acquaint students with the rich Indo-Islamic heritage of Indian Sub-continent.
- B) An appreciation of Functioning of administrative apparatus of state in Medieval India
- C) Evaluation in lounge duree the evolution, change and continuities in political and economic structures of Medieval India

The course discusses the establishment of Delhi Sultanate; its polity and administration besides, the causes and consequences of its decline. The unification of Indian sub-continent under Mughal rule fostered a uniform pattern of governance that the paper highlights. The paper offers insights into the functioning of state institutions and policies.

The fall of Mughal Empire is surrounded by a highly informed scholarly debate that the paper discusses at length. The socio-cultural affloresces of Kashmir under Sultan Zain-ul-Abidin will be highlighted. The changes in polity and economy under Mughals in Kashmir; the tyrannies of Afghan rule and changes in economy under Lahore Darbar are addressed. In short, the paper offers the holistic view of rich history of medieval India.

After pursuing the course students are expected to:

- A) Identify and appreciate the prominent sources of medieval Indian History
- B) Analyse nature of state and politics in medieval India
- C) Understand socio-political developments and evolution of composite culture in Medieval India.

MEDIEVAL INDIA / MEDIEVAL KASHMIR**THEORY****(CREDITS: 04)****Unit-I (Sultanate Period)**

- I. Introduction to Prominent Primary Sources
- II. Foundation of Delhi Sultanate, Significance
- III. Polity: A Brief Survey
- IV. Administration: Central and Provincial

Unit –II (Mughal India)

- I. Introduction to Prominent Sources
- II. Foundation of Mughal Rule
- III. Consolidation under Akbar- Manasabdari System and Religious policy
- IV. Aurangzeb: Religious policy.
- V. Decline of Mughal Empire-Debate

Unit –III (Medieval Kashmir-I)

- I. Emergence of Sultanate
- II. Contribution of Zain-ul- Abidin to Economy and Culture
- III. Chak Rule: Main Developments

Unit-IV (Medieval Kashmir-II)

- I. Mughals and Kashmir-Changes in Polity and Economy.
- II. Kashmir under Afghans – An Assessment
- III. Lahore Darbar -Changes in Economy.

TUTORIALS**(CREDITS: 02)**

Tutorials-I: Site visit and Report writing on any medieval monument of Kashmir.

Tutorials-II: Reviewing excerpts on any Primary source of Medieval India/ Medieval Kashmir.

SUGGESTED READINGS:

- Chandra Satish, 2003, Medieval India, Orient Blackswan, New Delhi.
- Rizvi, S.A AA; 1993, The Wonder That was India, Delhi.
- Habib and Nizami, Comprehensive History of India Vol. V., Indian History Congress.
- Richards, J.F, The Mughal Empire, Oxford University Press.
- Bamzai, P. N. K., A History of Kashmir, 2nd edn. Metropolitan Book Co., Delhi, 1973.
- Hassan, Mohib-ul-, Kashmir under Sultans, Delhi, 1959.
- Kak, R. C., Ancient Monuments of Kashmir, New Delhi, 1971.
- Khan, M. Isaq, Kashmir's Transition to Islam: The Role of Muslim Rishi's, Fifteenth to Eighteenth Century, Manohar
- Mattoo, A. Majid, Kashmir under the Mughals, 1586-1752, New Delhi, 1988.
- Rafiqi, Abdul Qaiyum, Sufism in Kashmīr, from the fourteenth to the sixteenth century, Bharatiya Publication House, 2009.
- Kaw, M. A., Agrarian System of Kashmir, Aiman Publications, Srinagar, 2001.
- Wani, Muhammad Ashraf, Islam in Kashmir: Fourteenth to Sixteenth century, Oriental Publishing House, 2004
- Parmu, R. K., A History of Muslim rule in Kashmir, 1320-1819, People's Publishing House, 1969.

3. Modern India/Modern Kashmir (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	Modern India/Modern Kashmir	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes

This course intends to develop basic understanding of how India was colonized and what impact it had on the Indian economy and society. The course also underlines how the colonized people responded to policies of the colonizer. The movements launched by the colonized people are discussed to underline the role of masses in putting colonialism to end. The course also aims at acquainting the students with the forces that brought into existence the Princely state of Jammu and Kashmir. Political developments in the Princely state are discussed to make the students understand the complexities of Indian partition and the issue of accession.

After the successful completion of the course the students are expected to critically engage with some of the important contemporary political, economic and social issues. The students are also expected to appreciate the contribution of common masses in bringing big changes.

MODERN INDIA / MODERN KASHMIR**THEORY****(CREDITS: 04)****Unit-I (Modern India-I)**

- I. Foundation of British Rule
- II. Expansion of Empire with special reference to Subsidiary Alliance and Doctrine of Lapse
- III. Revolt of 1857: Nature, Causes and Failure

Unit-II (Modern India-II)

- IV. Formation of Indian National Congress and its Role
- V. Foundation of Muslim League
- VI. Era of Mass Politics: Khilafat and Non-Cooperation, Civil Disobedience and Quit India Movements
- VII. Partition of India- An Overview

Unit-III (Modern Kashmir-I)

- VIII. The Making of Jammu and Kashmir State- Treaty of Amritsar.
- IX. Nature of Dogra State
- X. British Residency-Establishment and Role

Unit-IV (Modern Kashmir-II)

- XI. Political Awakening - Causes
- XII. Muslim Conference: Foundation and Role

- XIII. Conversion of Muslim Conference into National Conference: Causes
 XIV. Lapse of Paramountcy and the Issue of Accession.

TUTORIALS**(CREDITS:02)**

Tutorials-I: Life sketches of any one of the following:

- a. M.K. Gandhi
- b. B.R. Ambedkar
- c. Abul Kalam Azad
- d. Shaikh Mohammad Abdullah
- e. Prem Nath Bazaz.

Tutorials-II: A critical Review of any one of the following:

- a. The valley of Kashmir by Walter Lawrence
- b. My Experiments with Truth by M.K. Gandhi
- c. Annihilation of Cast by B.R. Ambedkar
- d. History of Srinagar by M.I. Khan
- e. Kashmir Misgovernment by Robert Thorpe

SUGGESTED READINGS:

- Chandra, Bipin, Mridula Mukherjee, Aditya Mukherjee, K.N Panikar and Sucheta Mahajan. 1989. India's Struggle for Independence, New Delhi : Penguin Books India.
- Chandra, Bipin, Modern India, Orient Longman.
- Sarkar, Sumit, 1983, Modern India, 1885-1947. New Delhi: Macmillan
- Grover, B.L.; Advanced History of Modern India, S. Chand
- Chand, Tara. 1961, History of the Freedom Movement in India.
- Bamzai, P.N.K, Political and Cultural History of Kashmir, Vol. III, Srinagar.
- Bazaz, P.N; History of Freedom Struggle in Kashmir.
- Bose, Sumantra, The challenge in Kashmir: Democracy, Self Determination and a Just Peace, New Delhi and London: Sage and Thousand Oaks, 1997.
- Zutshi, Chitralekha, Languages of Belonging: Islam, Regional identity, and the Making of Kashmir, Delhi: Permanent Black, 2004.
- Ganai, M. Y., Kashmiris Struggle for Independence (1931-39), Moshin Publishers.
- Khan, G. H., Kashmir's Struggle for Freedom, Light and Life, New-Delhi, 1980.
- Rai, Mridu, Hindu Rulers, Muslim Subjects: Islam, Rights, and the History of Kashmir, New Delhi: Permanent Black, 2004.
- Zutschi, U.K; Emergence of Political Awakening in Kashmir.
- Dr. Dar Ali Mohd , Trade and Commerce during Dogra Rule in Kashmir 1846-1947.
- Khan, M. Isaq, History of Srinagar, Aamir Publications, Srinagar, 1978.

4. Archaeology: An Introduction (Skill Enhancement Course):

This course provides students with a detailed knowledge of Archaeology.

Semester	Skill Course	Course title	Credit
3 rd	SEC	Archeology-An Introduction	Theory:02; Tutorial:02 Total:04

Course Specific Outcomes:

- This course provides students with knowledge of ancient past
- It inculcates among students the ability to develop understanding of past events and their relevance in contemporary times.

ARCHAEOLOGY: AN INTRODUCTION**THEORY****CREDITS: 02****Unit-I**

1. Archaeology: Meaning, Scope and Limitation
2. Archaeology and other Disciplines

Unit-II

1. Exploration: Meaning and methods
2. Excavation: Methods
3. Dating Techniques

TUTORIAL**CREDITS: 02****Unit-III**

1. Archaeological sites and monuments of Kashmir
2. Tools of field exploration

Unit-IV

1. Classification of artefacts and ecofacts
2. Visit to Sri Pratap Singh Museum, Srinagar

SUGGESTED READINGS:

- Gamble, C., (2001 (Reprint 2003), Archaeology: The Basics. London: Routledge.
- Banning, E. B. (2002). The Archaeologist's Laboratory: The Analysis of Archaeological Data. New York: Kluwer Academic Publishers.
- Bandey, A. A. (2009). Prehistoric Kashmir. New Delhi: Dilpreet Publishing house.
- Shali, S. L. (1993). Kashmir: History and Archaeology through the Ages. Delhi: Indus Publishing Company.
- Kak, R. C. (1932). Handbook of the Archaeological and Numismatic in Kashmir. Srinagar: Gulshan Books.

5. Themes in World History (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Themes in World History	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes

This course aims at imparting basic knowledge to students about the different ideas, movements and revolutions that shaped the course of world history. The positives and negatives of revolutions are underlined to make the students to critically engage with different events of historical significance.

At the completion of the course the students are expected to have developed a nuanced understanding of different historical events and their impact on the world at large.

THEMES IN WORLD HISTORY**THEORY****(CREDITS: 04)****Unit –I (Beginning of the Modern World)**

- I. Renaissance: Emergence
- II. Reformation: Role of Martin Luther King
- III. Enlightenment: An Introduction

Unit-II (Age of Revolutions)

- I. American Revolution: Causes and Significance
- II. French Revolution: Causes and Significance
- III. Industrial Revolution: Causes and Impact
- IV. Russian Revolution: Causes and Consequences.

Unit –III (Era of Conflicts-I)

- I. World War-I; Causes and Impact
- II. League of Nations; Causes of Failure
- III. Rise of Nazism and Fascism

Unit-IV (Era of Conflicts-II)

- I. World War-II; Causes and Consequences
- II. Formation and role of UNO
- III. Cold War and its End.

TUTORIALS**(CREDITS: 02)**

Tutorials-I: Life sketch of any of the following:

- a. Issac Newton
- b. Michealangelo
- c. Emanuel Kant

d. Voltaire

Tutorials-II: Review of any one of the following works:

- a. Das Capital by Karl Marx
- b. History of Modern World by Arjun Dev
- c. Mastering World History by Norman Love
- d. Age of Empires by Eric Hobsbawn
- e. Age of Revolutions by Eric Hobsbawn

SUGGESTED READINGS:

- Lowe, Norman: Mastering World History
- Dev Arjun, Indra Arjun: History of Modern World
- Charravarty Ramjan: A History of Modern World
- Perry Marvin: Western Civilization
- Hobsbawn Eric: Age of Extremes
- Hobsbawn Eric: Age of Empires
- Burns Edward: A History of Modern World
- Hobsbawn Eric: Age of Revolutions
- Hobsbawn Eric: Age of Empires

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5a. India since Independence (Core Course-V)

Semester	Core Course	Course Title	Credit
V	CC-V	India Since Independence	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes

This course has been designed to acquaint students with some of the most important political and economic developments in India since 1947. The endeavor is to make the students understand that most of the economic and administrative problems of the post independent India were the legacies of colonialism. The course also aims to underline the legacies of Indian National Movement with the purpose to showcase that the progressive steps taken by the post 1947 state were guided by the values inculcated by the Indian National Movement during the course of its tussle with the colonial state. The course also discusses how the Nationalist Government in Jammu and Kashmir emancipated the lives of people through the radical restructuring of land relations. The course also aims at making the students to understand the intricacies of constitutional arrangement between Centre and the State of Jammu and Kashmir.

INDIA SINCE INDEPENDENCE**THEORY****(CREDITS: 04)****Unit-I (India after Independence-I)**

- I. Legacies of Colonialism
- II. Legacies of Nationalism
- III. Indian Constitution- Salient Features

Unit –II (India after Independence-II)

- I. Linguistic Re-organization of states
- II. Land Reforms
 - a. Tenancy Reforms
 - b. Abolition of Landlordism
 - c. Bhoodan Movement

Unit –III (Kashmir after 1947-I)

- I. Formation of Nationalist Government
- II. Article 370 and Delhi Agreement
- III. Land Reforms with special reference to Big Landed Estates Abolition Act- 1950.

Unit- IV (Kashmir after 1947-II)

- I. Praja Parsihad Agitation
- II. Plebiscite Movement
- III. Accord of 1975

TUTORIALS**(CREDITS: 02)**

Tutorial-I: Critical evaluation of any one of the following:

- a. Delhi Agreement of 1952.
- b. Big Landed Estates Abolition Act
- c. Article 370
- d. Accord of 1975

Tutorial-II: Life history interview of any two senior citizens of your locality along with report.

SUGGESTED READINGS:

- Bipin Chandra, Murdula Mukherjee, Aditya Mukherjee: India since Independence
- Ramchandra Guha: India after Gandhi
- Rudolph and Rudolph: In Pursuit of Laxmi
- Paul Brass: Politics of India Since Independence
- Chitralekha Zutshi: Languages and Belongings
- M. Y. Saarf: Kashmiri's Struggle for Freedom
- Mirdu Rai: Hindu Rulers, Muslim Subjects

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5b. Themes in Cultural and Religious Traditions of Kashmir (Core Course-V)

Semester	Core Course	Course Title	Credit
V	CC-V	Themes in Cultural and Religious Traditions of Kashmir	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes

- A) Create much needed awareness about literary, religious and architectural heritage of Kashmir
- B) Expose students to variegated sources of history writing from literary to architectural sources.
- C) Inculcate a sense of preservation and appreciation of rich repositories of knowledge and testimonies of literary and religious heritage of Kashmir.

The course highlights and brings forth the otherwise neglected literary, religious, architectural and cultural heritage of Kashmir. The course is expected to cultivate a sense of preservation and spread the knowledge in respect of heritage of Valley. The paper also enunciates role of religions and religious movements in promotion of a sense of cultural inclusivism, tolerance of dissent and unity in diversity. The appreciation of rich legacy of heritage as a potential source of history will guide the students to pursue the subject further and stimulate the interest of student community the responsible and informed citizens of tomorrow.

After undergoing the course students are expected to:

- A) Analyse and appreciate the historical value of literary and cultural heritage
- B) Study and situate religion in proper context and elucidate the teachings of various religions to inculcate a sense of appreciation of human values.
- C) To augment the heritage for bringing forth the un-narrated and untapped aspects of rich history of Kashmir.

THEMES IN CULTURAL AND RELIGIOUS TRADITIONS OF KASHMIR**THEORY****(CREDITS: 04)****Unit I: Literary Tradition:**

- I. Sanskrit Tradition: Nilmatapurana; Rajatarangini of Kalhana
- II. Persian Tariekh: Waqiat- i- Kashmir of Azam Deedmari; Tariekh-i-Hassan of HassanShah Khoihami

Unit II Architectural Tradition:

- I. Stone Architecture: Martand and Parihaspora- Main Features
- II. Wooden Architecture: Khankah-i-Moulla -Main Features
- III. Garden Architecture: Shalimar Garden

Unit III: Religious Traditions of Kashmir-I

- I. Naga Worship in Kashmir

II. Buddhism in Kashmir

III. Kashmiri Shaivism

Unit IV Religious Traditions of Kashmir-II

I. Conversion to Islam-Debate

II. Sufism in Kashmir: Major Silsilas

III. Rishi Movement of Kashmir: Main Proponents and Centres.

TUTORIAL

(CREDITS: 02)

Tutorial-I: Reviewing/Report writing on excerpts from any Sanskrit or Persian literary text mentioned in the course.

Tutorial-II: Site visit and report writing of any nearby Sufi/Rishi shrine, highlighting its importance for the local populace.

SUGGESTED READINGS:

- Aggarwal, R. C. (1998) Kashmir and its Monumental Glory, New Delhi, Aryan Books
- Bamzai, P. N. (1973) A History of Kashmir (2nded), New Delhi, Metropolitan Books
- Banday A. A. (2009) Prehistoric Kashmir: New Delhi Dilpreet Publishers
- Basu, Arabinda, Kashmiri Saivism” in The Cultural Heritage of India, Calcutta, 1937.
- Bhandarkar, R. G, Vaisnavism, Saivism and Minor Religious Systems, New-Delhi, 2000
- Chatteji, J.C. Kashmir Saivism, Chandigarh, 1981.
- Dwivedi, R. C. Kashmiri Saivism and Tantric Buddhism.” Proceedings of the 26th International Congress of Orientalises, 1969.
- Shali, S. L. (1993) Kashmir: History and Archaeology through the Ages, Delhi Indus Publishers
- Ganhar, J. N. And Ganhar, P. N., Buddhism in Kashmir and Ladakh, New-Delhi, 1956.
- Madan, T. N., Religious Ideology and Social Structure: The Muslims and Hindus of Kashmir”. In Imtiyaz Ahmad (ed.) Ritual and Religion among Muslims in India, New Delhi, 1981.

6a. Indian economy and Society through ages (Core Course-VI)

Semester	Core Course	Course Title	Credit
VI	CC-VI	Indian economy and Society through ages	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes

This course aims at acquainting the students with the forces and processes that transformed the Indian economy and society since the beginning of human settlements. The nature of various transformative processes is discussed with the intention to make the students understand that changes and continuities go hand in hand in any historical process.

After the completion of the course the students are expected to develop a nuanced understanding of some of the agrarian ideas and categories presently in vogue. Moreover, the course also aims at making the student's conscious of the everyday struggles of the marginalized communities with a purpose to make them a responsible citizen.

INDIAN ECONOMY AND SOCIETY THROUGH AGES**THEORY****(CREDITS: 04)****Unit-I (Ancient Period)**

I. Bronze Age Urbanism to Iron Based Agriculture (Harappan and Vedic):

Characteristic Features

II. State Production to Feudal Economy: Murayyas and Guptas

III. Religious Developments: Vedic, Buddhist and Jain Traditions

IV. Social Structure: Varna System

Unit-II (Medieval Period)

I. Changes in Agrarian Structure: Iqta and Jagirdari System

II. Non-Agrarian Economy: Trade and Crafts

III. The Medieval Society: Classes and Communities

IV. Sufi and Bhakti Movements: Main Teachings

Unit-III (Modern Period: Economy)

I. Agrarian Restructuring: Land Revenue Settlements

II. Drain of Wealth

III. De-Industrialization

Unit –IV (Modern Period: Society and Religion)

I. Introduction of Modern Education: Macaulay's Minute

II. Socio-Religious Reform Movements: Brahmo Samaj, Aligarh Movement and Arya Samaj

III. Dalit Movements: Jyotiba Phule and B.R. Ambedkar

TUTORIALS**(CREDITS: 02)**

Tutorial-I: Report on any one burning social or religious issue of contemporary relevance

Tutorial-II: Critical evaluation of any one movie/ documentary on Caste, Communalism or Politics.

SUGGESTED READINGS:

- Singh, Upinder. 2009. A History of Ancient and Early Medieval India from the stone age to the 12th century. Delhi: Pearson Longman.
- Thapar, Romila, Interpreting Early India, Delhi, 1999. Oxford University Press.
- Sharma, R. S., 2005, India's Ancient Past, Oxford University Press.
- Bandyopadhyay, Shekhar, 2004, From Plassey to Partition. Orient Longman.
- Jones, Kenneth W., 1994, Socio-Religious Reform Movements in British India, Cambridge University Press.
- Metcalf, Barbara and Metcalf, Thomas, 2006, A Concise History of Modern India, Cambridge
- Chandra, Bipin, Rise and Growth of Economic Nationalism in India.
- Chandra Satish, 2003, Medieval India, Orient Blackswan, New Delhi.
- Chatto Padhay, B.D., 1998, The Making of Early Medieval India, O.U.P. New Delhi
- Hassan.S. Nurul, 1971, Thoughts on Agrarian Relations in Mughal India, New Delhi.
- Habib Irfan, Agrarian System of Mughal India (1556-1707), New Delhi
- Jha, D. N., 1998, Ancient India: A Historical Outline, New- Delhi.
- Habib Irfan, Ray Chaudary Tapan (ed), 1982, Cambridge History of India Vol-I, Cambridge University Press.
- Kumar, Dharma, (ed.), Cambridge Economic History of India, Cambridge University Press.

6b. Historiography: An Introduction (Core Course-V)

Semester	Core Course	Course Title	Credit
VI	CC-VI	Historiography: An Introduction	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes

The course exposes students to the idea of history, its nature, utility and scope. The historical evolution of scholarship from rich Greco-Muslim to Post-Modernist schools is traced immaculately. The course enables the students to distinguish between past and history, subjectivity and objectivity, generalization and causation in a lucid manner. The scholarly debates regarding the finding of historical truth and value in the otherwise cobwebs of assertions are expected to be made clear.

After going to the course, the students are expected to:

- A) Develop the understanding of art of history writing.
- B) Map the trajectory of evolution of historiography as an independent discipline.
- C) To be able to appreciate the scholarly debates in history writing.
- D) An analysis of nature and scope of History.
- E) To understand the evolution of history of history writing.
- F) Fostering the knowledge of basic concepts of history writing like facts, interpretation, causation and so on.

HISTORIOGRAPHY: AN INTRODUCTION**THEORY****(CREDITS: 04)****Unit I (Introduction)**

- I. What is History?
- II. Sources in History: Types and Importance

Unit II (Early Historiography)

- I. Greek Historiography: Herodotus and Thucydides
- II. Medieval Muslim Historiography: Ibn-i-Khaldun

Unit III (Modern Historiography)

- I. Renaissance Historiography
- II. Leopold von Ranke and History Writing

Unit IV (Schools of Historiography: Basic Introduction)

- I. Marxist
- II. Annals
- III. Postmodern

IV. Subaltern

TUTORIALS**(CREDITS: 02)**

Tutorial-I: Historians at Work- Analysing any one of the following works on parameters of Historiography (Sources, interpretation, Conclusions)

- a. Kashmir Under Sultans by Mohibul Hasan
- b. Sufism in Kashmir by A.Q. Rafiqi
- c. History of Srinagar by Mohammad Ishaq Khan
- d. Islam in Kashmir by Mohammad Ashraf Wani
- e. Kashmir's Struggle for Independence by M.Y. Ganai

Tutorial-II: Visiting an Archive/Library Collection/Personal Collection and Report Writing on it.

SUGGESTED READINGS:

- Shreedaran. A Textbook of Historiography, Orient Blackswan, 2004.
- Richard Evans, In Defence of History, Granta Books, London, 1997
- Arthur Marwick, What History is and why is it Important, 1970, Buckinghamshire; Open University Press

- Harbans Mukhia, Historians and Historiography during the reign of Akbar, 1976. New Delhi, Vikas Publishing house
- E.H. Carr. What is History, Macmillan, London. 1983,
- R.G. Collingwood. The Idea of History, OUP, 1946.

Course Structure and distribution of different courses with their credits for B.A.**Islamic Studies**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Introduction to Islamic Civilization (Up to Umayyads)	Core Course	6 credits 4(T)+2(T)
2.	II	Islamic Civilization under the Abbasids and the Muslim Spain	Core Course	6 credits 4(T)+2(T)
3.	III	Islamic Religious Sciences	Core Course	6 credits 4(T)+2(T)
4.	IV	Muslim Philosophy and Tasawwuf	Core Course	6 credits 4(T)+2(T)
5.	V	Islamic Culture and Society in Kashmir	Discipline Specific Elective-I	6 credits 4(T)+2(T)
6.	V	Islam in the Modern World (South Asia and West Asia)	Discipline Specific Elective-II	6 credits 4(T)+2(T)
7.	V	Basic Islamic Sciences (Qur'an, Hadith and Fiqh)	General Elective	4 credits 2(T)+2(T)
8.	VI	Islamic Social Sciences	Discipline Specific Elective-I	6 credits 4(T)+2(T)
9.	VI	Islam and Science	Discipline Specific Elective-II	6 credits 4(T)+2(T)
10.	VI	Da'wah and its Practices	General Elective	4 credits 2(T)+2(T)

Course outcomes

The course aims to study the Islamic civilization in terms of polity, society, education and sciences under the Abbasids and in Muslim Spain. It acquaints students with the political and social developments of Khilafatul Rashidah and Umayyad period. It will also acquaint the students with the rich intellectual, scientific and architectural heritage of Islam that had an impact on the West as well. It provides students the knowledge about the origin and development of tasawwuf and its orders during the various phases of history, religious sciences of Islam- the Qur'an, Hadith and Fiqh and the contribution of the prominent Muslim sufis and Ulama who served Kashmir society. It will also boost students with knowledge about the prominent Islamic thinkers and movements.

1. Introduction to Islamic Civilization (Up to Umayyads) (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Introduction to Islamic Civilization (Up to Umayyads)	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- The objective of the course is to have preliminary knowledge of Islamic doctrine and ritual worship (ibadat) as propounded in the teachings of Islam and Prophet Muhammad (S.A.A.S) including his role in establishing a welfare society at Madinah.
- The course also introduces the political and social developments of Khilafatul Rashidah and Umayyad period.
- The course forms a study of the early development of Islamic civilization.

INTRODUCTION TO ISLAMIC CIVILIZATION (UP TO UMAYYADS)**THEORY****(CREDITS 4)****Unit 1**

Jahilliyah Arabia 1) Topography: An Overview 2) Religious Beliefs and Practices 3) Social Conditions

Unit 2

Prophet Muhammad S and His Times 1) The Early Life of Prophet Muhammad 2) Da'wah and Major Events at Makkah 3) Establishment of Islamic Society at Madinah with Special Reference to Major Events (Ghuzawah Badr, Treaty of Hudabiyah and Fath-i-Makkah)

Unit 3

Al-Khilafah al-Rashidah (the Pious Caliphate) 1) The Institution of Khilafah (Caliphate) 2) The Role of Khalifah Abu Bakr (RA) in Consolidation of the State 3) Administration under Khalifah Umar ibn al-Khattab (RA)

Unit 4

Banu Umayyah (The Umayyad Period) 1) Emergence of Banu Umayyah 2) Contribution of Prominent Khulafa: (a) Muawiyah-I (b) Umar ibn Abdul Aziz 3) Administration: Central and Judiciary

TUTORIAL**(CREDITS 2)**

1) Islamic Studies: Nature and Scope 2) Economic Conditions of Arabia during Jahilliyah Period 3) Constitution of Madinah: Its Salient Features 4) Role and Policies of Khalifah Uthman (RA) and Khalifah Ali (RA) in Stabilizing the State 5) Decline of the Umayyads

SUGGESTED READINGS

- Mubarakpuri, Safi ur Rahman, Al-Raheeq al-Makhtum (The Sealed Nectar), Darus Salam Publishers, Riyadh.
- Hassan, Masudul, History of Islam, Adam Publishers & Distributors, New Delhi.
- Hamidullah, Muhammad, Muhammad Rasullulah, V. P. Book Depot. New Delhi.
- Sawlat, Sarwat, Millat-i-Islami Ki Mukhtasar Tarikh, Markazi Maktaba Islami, Delhi.
- Rafiabadi, Hamid Naseem, Hijrah a Turning Point in Islamic Movement, Adam Publishers, Delhi.
- Bhat, Manzoor Ahmad, The Pious Caliphate: A Study of Hadrat Ali (R. A.).
- Hussain, S. Athar, The Glorious Caliphate, Academy of Islamic Research, Lucknow.
- Siddiqi, M. Muhammad Mazharuddin, Development of Islamic State and Society, Institute of Islamic Culture, Lahore
- Maududi, Abul Ala, Khilafat wa Malukiyat, Markazi Maktaba Islami, New Delhi. Nadwi, Shah Muin ud Din, Tarikh Islam, Darul Musanifeen, Azamgarh.
- Nicolson, R. A. Literary History of the Arabs, Adam Publishers and Distributors, New Delhi.
- Relevant Articles in Encyclopedia of Islam.
- Relevant Articles in Encyclopedia of Modern Muslim World.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, London)

2. Islamic Civilization under the Abbasids and the Muslim Spain (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Islamic Civilization under the Abbasids and the Muslim Spain	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- The course aims at the study of Islamic civilization in terms of polity, society, education and sciences under the Abbasids and in Muslim Spain.
- It will also acquaint the students with the rich intellectual, scientific and architectural heritage of Islam that had an impact on the West as well.

ISLAMIC CIVILIZATION UNDER THE ABBASIDS AND THE MUSLIM SPAIN**THEORY****(CREDITS 4)****Unit 1**

Rise of the Abbasids 1) Establishment of the Abbasid Dynasty 2) The Golden Age of the Abbasids: Al-Mansur and Al-Mamun 3) Abbasid Administration: Central and Judiciary

Unit 2

Intellectual Developments under the Abbasids 1) Development of Education and Literature 2) Bayt ul Hikmah and Translation Movement 3) Intellectual Contribution to the Development of: (a) Science and Medicine (b) History, Geography and Philosophy

Unit 3

Islam in Spain 1) Socio-Political Conditions of Spain on the eve of Muslim Rule: An Overview 2) Establishment of Muslim Rule in Spain 3) Contribution of Abd al-Rahman-I and Abd al-Rahman-III

Unit 4

Intellectual and Cultural Developments in Muslim Spain 1) Natural Sciences (Astronomy and Medicine) 2) Social Sciences (History and Philosophy) 3) Contribution to the Development of Arts and Architecture

TUTORIAL**(CREDITS 2)**

1) Development of Religious Sciences during the Abbasid Period 2) Trade and Commerce during the Abbasid Period 3) Main features of Hispano-Arab Society 4) Decline of the Umayyad Rule in Spain

SUGGESTED READINGS

- Hassan, Masadul, History of Islam, Adam Publishers & Distributors, New Delhi.
- Sawlat, Sarwat, Millat-i-Islami Ki Mukhtasar Trikh, Markazi Maktaba Islami, Delhi.
- Nadwi, Muin ud Din Ahmad, Tarikh-i-Islam, Darul Musanifin, Azamgarh.
- Hussain, Athar, The Arab Administration, Academy of Islamic Research, Lucknow.
- Najeeabadi, Akbar Shah, Tarikh Islam, Adam Publishers & Distributors, New Delhi.
- Hitti, P. K., History of the Arabs, Macmillan Publications, UK.
- Nadvi, Riyasal Ali, Tarikh Andalus, Darul Musanifeen, Azamgarh.
- Shah, Naseem Ahmad, Islamic Technology: An Illustrated History, UNESCO Project, Sahil Publications Srinagar
- Muhammad Ishaque, Andalus aur Sicily ki Muslim Tareekh o Saqafat, al Balagh Publication, New Delhi
- Arnold, Thomas, The Preaching of Islam, Adam Publishers & Distributors, New Delhi.
- Relevant Articles in Encyclopedia of Islam.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, London).

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3. Islamic Religious Sciences (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	Islamic Religious Sciences	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- The course aims at the introductory study of religious sciences of Islam- the Qur'an, Hadith and Fiqh
- It also acquaints the students to know the fundamental significance of Divine knowledge in human life and method of approaching them through the study of principles (usul) of these sciences.

ISLAMIC RELIGIOUS SCIENCES**THEORY****(CREDITS 4)****Unit 1**

Ulum al-Qur'an 1) The Quran: Wahi (Revelation) and its Compilation 2) An Introduction to the Quranic Ulum (a) Muhkamat and Mutashabihat b) Asbab-i-Nuzul 3) Tafsir: Meaning, its Principles and early Development

Unit 2

Hadith 1) Meaning and Definition of Hadith 2) Place and Importance of Hadith in Islam 3) Compilation and Types of Ahadith

Unit 3

Fiqh (Jurisprudence) 1) Meaning and Importance of Fiqh 2) Sources of Fiqh 3) Early Development of Fiqh

Unit 4

Important Schools of Fiqh (An Introduction) 1) Hanafi 2) Maliki 3) Shafi'I 4) Hanbali 4) Ja'fari

TUTORIAL**(CREDITS 2)**

1) An Introduction to Tafsir Ibn Kathir and Tafhimul Qur'an. 2) Brief Introduction to Sihah-i-Sittah. 3) An Introduction to International Fiqh Academy, Jeddah and Indian Fiqh Academy, New Delhi. 4) An Introduction to Fiqh al-Sunnah authored by Asim al-Hadad.

SUGGESTED READINGS

- Uthmani, Muhammad Taqi, Ulum al-Qur'an, Adam Publishers & Distributors, New Delhi.
- Salih, Subih Salih, Ulum al-Quran, Taj Company New Delhi.
- Salih, Suhih, Ulum al-Hadith, Taj Company, New Delhi.
- Siddiqi, Zubair, Hadith Literature: Its Origin, Development and Special Features, Suhail Academy, Delhi.
- Gilani, Manazir Ahsan, Tadwin-i-Hadith (Urdu), Deoband.
- Hassan, Ahmad, Early Development of Islamic Jurisprudence, Adam publishers, Delhi.
- Khan, Hamidullah, The Schools of Islamic Jurisprudence, Kitab Bhawan, Delhi.
- Rafiabadi, Hamid Naseem, The Qur'an Illustrated, Sarup and Sons, New Delhi.
- Azmi, Muhammad Mustafa, Studies in Early Hadith Literature, Cambridge University Press, London.
- Azmi, Muhammad Mustafa, The History of the Quranic Text from Revelation to Compilation, Islamic Academy, UK.
- Relevant Articles in Encyclopedia of Islam.
- Relevant Articles in Encyclopedia of Modern Muslim World.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, London).

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4. Muslim Philosophy and Tasawwuf (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Muslim Philosophy and Tasawwuf	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- The course is meant to attain the knowledge of early development of Muslim theology and philosophy.
- It also aims at introducing the origin and development of tasawwuf and its orders during the various phases of history.

MUSLIM PHILOSOPHY AND TASAWWUF**THEORY****(CREDITS 4)****Unit 1**

Ilm al-Kalam 1) Origin and Development of Ilm al-Kalam 2) Important Schools-I a) Jabariyah b) Qadariyah 3) Important Schools-II a) Mu'tazilah b) Ashariyah

Unit 2

Contribution of the following Muslim Philosophers 1) Al-Kindi 2) Al-Farabi 3) Imam Ghazzali

Unit 3

Tasawwuf 1) Meaning and Origin of Tasawwuf 2) Development of Tasawwuf 3) Early Sufis a) Hassan Basri (RA) b) Junaid al-Baghdadi (RA) c) Rabia Basri (RA)

Unit 4

Sufis of Later Period 1) Shaykh Sayyid Abdul Qadir Jilani (RA) 2) Khawaja Muin al-Din Chishti (RA) 3) Shaykh Shihab al-Din Suhrawardi (RA)

TUTORIAL**(CREDITS 2)**

1) Common Characteristics of major Sufi Silsilas 2) A detailed Introduction to Kashf al-Mahjub by Ali Ibn Uthman al-Hujwiri (Eng. Tr. By R. A. Nicolson 3) Khawaja Muhammad Bahauddin Naqashband: An Introduction.

SUGGESTED READINGS

- Sharif, M. M. (ed.), A History of Muslim Philosophy, Adam Publishers & Distributors New Delhi.
- Sharif, M. M., Muslim Thought, Adam Publishers Adam Publishers & Distributors New Delhi.
- Saeed Sheikh, Studies in Muslim Philosophy, Adam Publishers & Distributors New Delhi.
- Rizvi, Athar Abbas, A History of Sufism in India, Manohar Publishers, New Delhi.
- Bhat, Manzoor Ahmad, Sufi Thought of Shaykh Sayyid Abdul Qadir Jilani, D. K. Print World, New Delhi.
- Khanam, Farida, Sufism: An Introduction, Goodword Books, New Delhi.
- Attar, Farid al-Din, Tadhkiratul Awliya, Taj Company New Delhi
- Jilani, Abdul Qadir, Ghuniyat al-Talibeen, Areeb Publications, New Delhi.
- Ghazzali, Abu Hamid, Kimya-i- Saadat, Adbi Dunya, Delhi
- Trimmingham, J. P. S. Sufi Orders in Islam, Oxford University Press, UK.
- Numani, Shibli, Al-Kalam, Darul Musanifin, Azamgarh
- Numani, Shibli, Ilm al-Kalam, Darul Musanifin, Azamgarh
- Leaman, Oliver, A Brief Introduction to Islamic Philosophy, Polity Press Cambridge, UK
- Ali Ibn Uthman al-Hujwiri, Kashf al-Mahjub (Eng. Tr. By R. A. Nicolson)
- Relevant Articles in Encyclopedia of Modern Muslim World.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, London).

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5. Islamic Culture and Society in Kashmir (Discipline Specific Elective-I)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-I	Islamic Culture and Society in Kashmir	Theory: 04 ;Tutorial: 02 Total: 06

Course specific outcomes

- The objective of the course is to acquaint the students with the advent and spread of Islam in Kashmir and the social, educational, art and literary developments under Muslim rulers.
- It will also introduce the life and contribution of the prominent Muslim sufis and Ulama who served Kashmir society.

ISLAMIC CULTURE AND SOCIETY IN KASHMIR**THEORY****(CREDITS 4)****Unit 1**

Kashmir History: 7th - 14th Century (Overview) 1). Advent of Islam in Kashmir 2). Social Conditions during 12th -14th Centuries 3). Religious Conditions during 12th -14th Centuries

Unit 2

Kashmir under the Sultans 1). Establishment of Muslim Sultanate (1339-1470) 2). Development of Arts during the Sultanate Period (1339-1586) 3). Education and Literature during the Sultanate Period (1339-1586)

Unit 3

Sufis and Rishis 1). Sayyid Bulbul Shah (RA): Life and Contribution 2). Sayyid Ali Hamadani (RA): Life and Role 3). Shaykh Nur al-Din (RA): Life and Teachings

Unit 4

Sufis and the Influence of Central Asia and Iran 1). Shaykh Hamzah Makhdum (RA): Life and Role 2). Shaykh Yaqub Sarfi (RA): Life and Works 3). Influence of Central Asia and Iran on Kashmir Society (1339-1586)

TUTORIAL**(CREDITS 2)**

1) An Introduction to the below mentioned Socio-Religious Organization: a) Anjuman-i-Nusratul Islam, J&K a) Anjuman-i-Tablighul Islam, J&K b) Jamiat-i-Ahl-i-Hadith, J&K c) Jamat-i-Islami, J&K 2) Educational Tour to the Places of Religio-Historical Significance

SUGGESTED READINGS

- Kalhana. Rajatarangini, (English Translation by M. A. Stein, 2 Vols).

- Ray, S. C., Early History and Culture of Kashmir.
- Dar, G.M., Social and Religious Conditions of Kashmir on the Eve of Foundation of Muslim Sultanate.
- Sofi, G.M.D., Islamic Culture in Kashmir, Delhi.
- Sofi, G.M.D., Kashir, Delhi.
- Hasan, Mohibul, Kashmir Under the Sultans, Srinagar.
- Rafiqi, A. Q. Sufism in Kashmir, Srinagar.
- Khan, Muhammad Ishaq, Kashmir's Transition to Islam, Srinagar.
- Bamzai, P. N. K, History of Kashmir (3 Vols), Srinagar.
- Shah, Pir Hasan, Tarikh-i-Hasan, Srinagar.
- Wani, Muhammad Ashraf, Islam in Kashmir, Gulshan Books, Srinagar.
- Relevant Articles in Encyclopedia of Islam.
- Relevant Articles in Encyclopedia of Modern Muslim World.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, London).

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6. Islam in the Modern World (South Asia and West Asia) (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-II	Islam in the Modern World (South Asia and West Asia)	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- The objective of the course is to acquire knowledge about Islamic intellectual, educational and social developments in the modern South Asia and West Asia
- It also to focus on the study of some prominent Islamic thinkers and movements.

ISLAM IN THE MODERN WORLD (SOUTH ASIA AND WEST ASIA)

THEORY

(CREDITS 4)

Unit 1

Religio-Political Movements in West Asia 1) Muhammad ibn Abdul Wahhab and his Movement 2) Muhammad ibn Ali and his Movement (Sanusi Movement) 3) Hassan al-Banna and his Movement (Al-Ikhwan al-Muslimun)

Unit 2

Iran & Turkey 1) Constitutional Movement of Iran during the Pahlavis 2) Islamic Revolution in Iran and its Impact 3) Tanzimat and Young Turks Movement in Turkey

Unit 3

India 1) Muslim Response to Modern Challenges a) Sir Syed Ahmad Khan and His Movement b) Nadwatul Ulama, Lucknow 2) New Educational Developments a) Darul Ulum Deoband b) Jamia Millia Islamia, New Delhi

Unit 4

Modern Reformist Thinkers and Their Role 1) Jamal al-Din Afghani 2) Allama Iqbal 3) Maulana Azad

TUTORIAL

(CREDITS 2)

1) Said Nursi and his Movement 2) An Introduction to Shah Waliullah Dehalvi 3) Maulana Ilyas and his Movement 4) Maulana Maududi and his Movement

SUGGESTED READINGS

- Jameelah, Maryam Islam in Theory and Practice, Taj Company, Delhi.

- Nadwi, Abul Hasan Ali., Muslim Mamalik Main Islamiyat aur Maghribiyat ki Kashmakash, Idarah Nashr-oIshat wa Tehqiqat, Lucknow.
- Hasan, Masudul, History of Islam, Vol. 2, Adam Publishers and Distributors, New Delhi.
- Ahmad, Aziz, Islamic Modernism in India and Pakistan, OUP, London.
- Ahsanul Haq, Towards Revolution: Development of Religio-Political Thought in Contemporary Iran. 1941- 1979, Aligarh
- Algar Hamid, The Roots of Islamic Revolution, Islamic Publications International, USA.
- Siddiqi, Iqtidar Hussain, Islam and Muslims in South Asia, Adam Publishers & Distributors, New Delhi.
- Tara Chand, Influence of Islam on Indian Culture, Indian Press Ltd. Allahabad.
- J.L. Esposito, Voices of Resurgent Islam, Oxford University Press UK.
- Muazzam, Anwar, Jamal al-Din Afghani, Genuine Publications, New Delhi.
- Parray, Tawseef Ahmad, Mediating Islam and Modernity: Sir Sayyid, Iqbal and Azad, VIVA Books, New Delhi
- Relevant Articles in Encyclopedia of Islam.
- Relevant Articles in Encyclopedia of Modern Muslim World.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, London).

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7. Basic Islamic Sciences (Qur'an, Hadith and Fiqh) (General Elective-I)

Semester	General Elective	Course Title	Credit
V	GE-I	Basic Islamic Sciences (Qur'an, Hadith and Fiqh)	Theory: 04 ;Tutorial: 02 Total: 06

Course specific outcomes

- The course aims at the introductory study of religious sciences of Islam- the Qur'an, Hadith and Fiqh
- It also acquaints the students to know the fundamental significance of Divine knowledge in human life and method of approaching them through the study of principles (usul) of these sciences.

BASIC ISLAMIC SCIENCES (QUR'AN, HADITH AND FIQH)**THEORY****(CREDITS 4)****Unit 1**

Ulum al-Qur'an 1) The Quran: Wahi (Revelation) and its Compilation 2) An Introduction to the Quranic Ulum (b) Muhkamat and Mutashabihat b) Asbab-i-Nuzul 3) Tafsir: Meaning, its Principles and early Development

Unit 2

Hadith 1) Meaning and Definition of Hadith 2) Place and Importance of Hadith in Islam 3) Compilation and Types of Ahadith

Unit 3

Fiqh (Jurisprudence) 1) Meaning and Importance of Fiqh 2) Sources of Fiqh 3) Early Development of Fiqh

Unit 4

Important Schools of Fiqh (An Introduction) 1) Hanafi 2) Maliki 3) Shafi'I 4) Hanbali 4) Ja'fari

TUTORIAL**(CREDITS 2)**

1) An Introduction to Tafsir Ibn Kathir and Tafhimul Qur'an 2) Brief Introduction to Sihah-i-Sittah. 3) An Introduction to Indian Fiqh Academy, New Delhi and International Fiqh Academy, Jeddah 4) An Introduction to Fiqh al-Sunnah authored by Asim al-Hadad.

SUGGESTED READINGS

- Uthmani, Muhammad Taqi, Ulum al-Qur'an, Adam Publishers & Distributors, New Delhi.

- Salih, Subih Salih, Ulum al-Quran, Taj Company New Delhi.
- Salih, Subih, Ulum al-Hadith, Taj Company, New Delhi.
- Siddiqi, Zubair, Hadith Literature: Its Origin, Development and Special Features, Suhail Academy, Delhi.
- Gilani, Manazir Ahsan, Tadwin-i-Hadith (Urdu), Deoband.
- Hassan, Ahmad, Early Development of Islamic Jurisprudence, Adam publishers, Delhi.
- Khan, Hamidullah, The Schools of Islamic Jurisprudence, Kitab Bhawan, Delhi.
- Rafiabadi, Hamid Naseem, The Qur'an Illustrated, Sarup and Sons, New Delhi.
- Azmi, Muhammad Mustafa, Studies in Early Hadith Literature, Cambridge University Press, London.
- Azmi, Muhammad Mustafa, The History of the Quranic Text from Revelation to Compilation, Islamic Academy, UK.
- Relevant Articles in Encyclopedia of Islam.
- Relevant Articles in Encyclopedia of Modern Muslim World.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, London).

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8. Islamic Social Sciences (Discipline Specific Elective-I)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-I	Islamic Social Sciences	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- The course is meant to know the concept and developments of Social Sciences in Islam by studying basic themes of Islamic polity, economy, sociology and psychology including prominent Muslim thinkers in the field.

ISLAMIC SOCIAL SCIENCES**THEORY****(CREDITS 4)****Unit 1**

Polity in Islam 1. Main Political Teachings in the Qur'an 2. Development of early Islamic Political Thought 3. Medieval Islamic Political Thought: al-Farabi and al-Mawardi

Unit 2

Economy in Islam 1. Essential Principles of Economy in Islam 2. Interest Free Banking in Islam: Concept and Principles 3. Bait al-Mal and Waqaf

Unit 3

Sociology in Islam 1. Islamic Sociology: An Introduction 2. Development of early Islamic Sociological Thought 3. Contemporary relevance of Islamic Sociology

Unit 4

Psychology in Islam 1. Islamic Psychology: An Introduction 2. Principles of Islamic Psychology 3. Contemporary relevance of Islamic Psychology

TUTORIAL**(CREDITS 2)**

1) Concept of Khilafah and Shura: Nature and Scope 2) Baqir al- Sadr as Islamic Economic Thinker 3) Muhammad Nejatullah Siddiqi as Islamic Economic Thinker 4) An Introduction to Ibn Khaldun's Al-Muqaddimah

SUGGESTED READINGS

- Sharif, M. M., A History of Muslim Philosophy, Adam Publishers and Distributors, New Delhi.

- Sherwani, Haroon Khan, Early Muslim Political Thought and Administration, New Delhi.
- Siddiqi, Muhammad Nejatullah, Interest-Free Banking in Islam, Markazi Makataba Islami, New Delhi.
- Siddiqi, Muhammad Nejatullah, Some Aspects of Islamic Economy, Markazi Makataba Islami, New Delhi.
- Choudhary, Masudul Alam, Studies in Islamic Social Sciences, Palgrave MacMillan, UK.
- A. Wahab, An Introduction to Islamic Psychology, New Delhi.
- Hussain Akbar, Islamic Psychology, Global Vision Publishing House, New Delhi.
- Ibn Khaldun, Al-Muqaddimah, Princeton University Press, UK.
- Al-Sadr, Baqir, Iqtisaduna, WOFIS, Iran.
- Ahmad, Khurshid, Family in Islam, Markazi Maktab Islami Publishers.
- Momin, A. R. Introduction to Islamic Sociology, IOS, New Delhi.
- Khan, Mohd. Latief, Economic Thought of Muhammad Baqir al-Sadr, unpublished thesis, Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir.
- Relevant Articles in Encyclopedia of Islam.
- Relevant Articles in Encyclopedia of Modern Muslim World.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, London).

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9. Islam and Science (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-II	Islam and Science	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- The objective of the course is to know the concept of Islamic Science in the context of the Qur'an and the Sunnah and Islamic view of universe, man and environment.
- It will also acquaint the students with Muslims' contribution in various branches of science during the medieval and the modern times.

ISLAM AND SCIENCE**THEORY****(CREDITS 4)****Unit 1**

A Survey of Relevant Quranic Verses Related to 1) The Universe 2) The Origin of Life 3) The Embryology

Unit 2

Contribution of Medieval Muslim Scholars in the Field of Science 1) Jabir ibn Hayyan (d. 803 C.E.) 2) Muhammad ibn Musa al-Khwarizmi (d. 840) 3) Abul Qasim al-Zahrawi (d. 1013)

Unit 3

Contribution of Contemporary Muslim Scholars in the Field of Science 1) Dr. Abdul Qadir Khan 2) Dr. A. P. J. Abdul Kalam 3) Sayyid Waqar Ahmad Hussaini

Unit 4

Scientific Pursuit in Muslim Centres 1) The Islamic World Academy of Science (IAS) 2) Association of Muslim Scientists and Engineers (AMSE) 3) The Islamic Organization of the Medical Sciences (IOMS)

TUTORIAL**(CREDITS 2)**

1) An Introduction to the Scientific Perspective in the Quran 2) An Introduction to the Scientific Perspective in the Sunnah of Prophet Muhammad # 3) An Introduction to the works of Zia ud Din Sardar and Zaki Kirmani 4) An Introduction to Ibn Sina Academy of Medieval Medicine and Sciences, Aligarh, India

SUGGESTED READINGS

- Kirmani, M. Zaki, The Qur'an and the Future of Science, New Delhi.
- Nadwi, Razi ul Islam, Islam, Musalman aur Science, New Delhi.
- T. W. Arnold, Legacy of Islam, Adam Publishers & Distributors, New Delhi.
- Hussaini, S. Waqar Ahmad., Islamic Science, New Delhi.
- Khan, Majid Ali, Islam on Origin and Evolution of Life, New Delhi.
- Abdul Ali and Sayyid Ahsan (ed.) The Qur'an and Science, Aligarh.
- Nadvi, Ibrahim Ahmad, Musalman Sciencedan aur unkey Karnamay, New Delhi.
- Sardar, Zia ud Din, An Early Crescent, Mansal UK.
- Sardar, Zia ud Din, Arguments for Islamic Science, MAAS, Aligarh.
- Saud, Muhammad, Islam and Evolution of Science, Adam Publishers & Distributors, New Delhi.
- Bhat, Abdul Wasey, Major Perspectives on Islam and Science, Unpublished Thesis in the Library of Shah-iHamadan Institute of Islamic Studies, University of Kashmir.
- Relevant Articles in Encyclopedia of Islam.
- Relevant Articles in Encyclopedia of Modern Muslim World.
- Relevant Articles in Insight Islamicus (Vol. 1-18), Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in Index Islamicus, sLondon).

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10. Da'wah and its Practices (General Elective-II)

Semester	General Elective	Course Title	Credit
VI	GE-II	Da'wah and its Practices	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- The objective of the course is to acquaint the students with Islamic concept of da'wah, its ethics and contemporary approaches and prospects.
- The knowledge of these aspects of da'wah is prospective for promoting a proper understanding of Islam.

DA'WAH AND ITS PRACTICES**THEORY****(CREDITS 4)****Unit 1**

Conceptual Aspects of Islamic Da'wah 1) Da'wah: Meaning and Scope 2) Importance of Da'wah 3) Aims and Objectives of Da'wah

Unit 2

Dimensions of Islamic Da'wah 1) Qualities of Dai 2) Da'wah and Adab al-Ikhtilaf (Ethics of Disagreement) 3) Da'wah among non-Muslims

Unit 3

Contemporary Approaches 1) Jama'at-i-Islami 2) Tablighi Jama'at 3) Salafi Movement

Unit 4

Contemporary Prospects 1) Da'wah in Pluralistic Societies 2) Communication Skills in Da'wah 3) Errors in Da'wah Methodologies

TUTORIAL**(CREDITS 2)**

- 1) Ways and means of Daw'ah 2) Daw'ah among Muslims 1) Introduction to Ikhwan-al-Muslimun 2) Consideration of Human Psychology in Daw'ah

SUGGESTED READINGS

- Islahi, M.A. Ahsan, Dawat-i-Din Aur us ka Tarik-i-Kar, (Urdu). Delhi.
- Nadvi, S.A. Hasan, Life and Mission of Maulana Muhammad Ilyas, Lucknow

- Tayyi, Qazi M., Dini Dawat ka Qurani Usul, (Urdu) 2) Yaqin, Fathi, Dawat Tabligh ka Rahnama Usul, (Urdu). 3) Umri, S. Jalal al-Din, Islam ki Dawat, (Urdu). Markazi Maktabah Islami, Delhi.
- Alam, Manzoor, The Message of Islam and Approaches of Dai, Delhi
- Hasanah, Umar Ubaid, Tehrik-i-Islami: Dawat, Fikr, (Urdu). Saudi Arabia
- Nadwi, A. H. Ali, Tabligh-o-Dawat ka Muajizana Aslub, (Urdu)
- Khan, Wahid ud Din, Tablighi Tehrik, Maktabah Al-Risalah, Delhi.
- Siddiq, Mawlana M. Maslak-i-Ahl-i-Hadith aur Iskey Buniyadi Masa'il, (Urdu)
- T. W. Arnold, The Preaching of Islam, Cambodge University Press.
- Zargar, Nazir Ahmad, Dawah in Contemporary World, Wisdom House, Srinagar.
- Sayyid Amir Ali, Sprit of Islam, Kitab Bhawan, Delhi.
- Abdussalam, Dawah Guide (Towards Performing Dawah), Students Islamic Publication.

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Course Structure and distribution of different courses with their credits for B.A. Kashmiri

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Kashmiri Literature-I كشمیری لٹریچر ۱	Core Course	6 credits 4(T)+2(T)
2.	II	Kashmiri Literature-I كشمیری لٹریچر ۲	Core Course	6 credits 4(T)+2(T)
3.	III	Kashmiri Literature-I كشمیری لٹریچر ۳	Core Course	6 credits 4(T)+2(T)
4.	IV	Kashmiri Literature-I كشمیری لٹریچر ۴	Core Course	6 credits 4(T)+2(T)
5.	IV	Tarjama Kari ترجمہ کاری	Skill Enhancement Course	6 credits 4(T)+2(T)
6.	IV	Kashmiri Literature كشمیری لٹریچر	Discipline Specific Elective	6 credits 4(T)+2(T)
7.	V	Zabaen Hund Tarseeli Vartaw زبان نی ہند ترسیلی ورتاؤ	Skill Enhancement Course	6 credits 4(T)+2(T)
8.	V	Kaeshri Adbuk Taruf-I کاشر ادبک تعارف ۱	General Elective Course	6 credits 4(T)+2(T)
9.	VI	Ilmi Te Gair Afsanvi Adab	Discipline Specific Elective	6 credits 4(T)+2(T)
10.	VI	Zaban Te Bawath زبان تہ باوتھ	Skill Enhancement Course	6 credits 4(T)+2(T)
11.	VI	Kaeshri Adbuk Taruf-II کاشر ادبک تعارف ۲	General Elective Course	6 credits 4(T)+2(T)

Course Outcomes:

Kashmiri language has been initially included in the 8th schedule of Indian constitution. Since the establishment of Kashmiri Department, numerous students have graduated with Kashmiri as one of the core subjects from this Institution and are rendering their services in both public and private Sectors. The new BA Kashmiri Syllabus forms the innovative and expansive thrust of the previous one and is designed to prepare students to understand and use the Kashmiri language effectively, build vocabulary and introduce them to current ideas and issues and

equip the students to take the next logical steps in their career after getting their B. A. degrees. After completing BA course having major in Kashmiri, students can pursue careers in teachings, creative writings, journalism and other fields where the demand of the Kashmiri language is very high in Kashmir. The aim of this course is to provide the student an opportunity to read and respond to representations, issues in contemporary life and culture in the Kashmiri Language. The selection of texts is aimed to present themes and topics that are stimulating and informative. The syllabus comprises of Poetry, Drama, Novel, Short stories, Essays, Grammar, Reading & Writing Skills and Translations etc.

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1. Kashmiri Literature (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Kashmiri Literature-I كشمیری لٹریچر I	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcome:

- After the thorough study of this paper, it is expected from the students that they may identify the genres of poetry like nazam and genres of prose like short story and could comprehend the basic poetics.

Students may be able to :

- Familiarize with selection of texts written in the Kashmiri Language
- Critically examine the prescribed poems by major writers like Mehmood Gami ,Rasul Mir , Maqbool Shah kralavari ,Ghulam Ahmad Mehjoor, Abdul Ahad Azad and short stories by major writers of kashmiri language like Amin Kamil & Muhammad Shafi Sumbli.
- Acquaint themselves with the developments in the genre of essay in the 21th century.

KASHMIRI LITERATURE-I**THEORY****(CREDITS: 04)**

یونٹ ۱: ادبک تعارف

۲ - ادبی زبان

۱. ادب تہ ادبک مقصد

۳. شعر اصطلاح: استعار، تشبیہ، علامت، تمثیل، تہ تلمیح

یونٹ ۲: افسانہ

۳. خود غرض

۲. بردواو

۱. افسانک فن

یونٹ ۳ :

۱. نظم: اکھ تعارف ۲. پوشہ بہار، جدایی ۳. ییمبرزل، بہار

یونٹ ۴:

۱. علمی نثر: اکھ تعارف ۲. گلستان سعدی ۳. کشیر ہندی باغ

2. Kashmiri Literature (Core Course-II)

Semester	Core Course	Course Title	Credit
I	CC-II	Kashmiri Literature-II كشمیری لٹریچر II	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes:

- The specific paper provides the knowledge about the basic genres of the Kashmiri literature
- Gives brief description about the Gazal and Nazam
- Below mentioned poets are focused in this paper :
Rasheed Nazki
Rafiq Raz
Rahman Rahi
Amin Kamil,
Dina Nath Nadim
Qazi Ghulam Muhammad

KASHMIRI LITERATURE-II**THEORY****(CREDITS: 04)**

- | | |
|---|---|
| <p>۱. غزل (رفیق راز)</p> <p>۲. غزل (رشید نازکی)</p> <p>۳. غزل (رفیق راز)</p> <p>۱. عصری نظم : امتیازی خصوصیات</p> <p>۲. سونم لائیکہ پیٹھ، نیلہ ناگ</p> <p>۳. اکھ پروں شہر، زندگی بیڑ وسیع</p> <p>۴. افسانہ</p> <p>۱. شہزادی یوسہ زون اس منگان</p> <p>۲. آبنو سک رولر</p> <p>۳. کاشر دیو ما لا</p> | <p>یونٹ ۱. غزل</p> <p>۱. غزلک فن</p> <p>یونٹ ۲: نظم</p> <p>۱. عصری نظم : امتیازی خصوصیات</p> <p>۳. اکھ پروں شہر، زندگی بیڑ وسیع</p> <p>یونٹ ۴: افسانہ</p> <p>۱. شہزادی یوسہ زون اس منگان</p> <p>یونٹ ۴: علمی نثر</p> <p>۱. خوا بن بنز علامتی زبان</p> |
|---|---|

3. Kashmiri Literature (Core Course-III)

Semester	Core Course	Course Title	Credit
I	CC-III	Kashmiri Literature-II کشمیری لٹریچر III	Theory: 04; Tutorial: 02 Total: 06

Course specific Outcome:

- After the completion of this course ,students may understand the role of theatre and drama in the introduction and shaping of modernity.
- They may be able to write about innovations introduced into the theatrical practice in the late 20th century.
- The students may get an insight into the differential sensibilities that emanate from the dramas written by playwrights of different regions of Kashmir.
- The local flavour infused in the poetic forms by the writers would also be an area of concern for the students.
- The students would gain a brief understanding of the socio-political issues of the times in which the poems were written.

KASHMIRI LITERATURE-III

THEORY

(CREDITS: 04)

یونٹ ۱ : علمی نثر

۳۔ سری نگر

۲۔ فطرتس منز ما حولیاتی تواژن

۱۔ برزبوم

یونٹ ۲ : افسانہ

۳۔ طوطہ سنز گتھ

۲۔ تیلیک لطف

۱۔ بیله مے نیک تے لاج

یونٹ ۳۔ کاشر نظم

۳۔ آ سما نکی تارک ونا ن انسانس

۲۔ فر نگین ستی کو بلین بند جنگ

۱۔ بہار نامہ

یونٹ ۴ : کاشر ڈراما

۳۔ منزلی نکہ

۲۔ لکھ پاتھر : اکھ تعارف

۱۔ ڈرامہک فن تہ تر کبیبی جز

4. Kashmiri Literature (Core Course-IV)

Semester	Core Course	Course Title	Credit
I	CC-IV	Kashmiri Literature-II كشمیری لٹریچر IV	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes:

After the thorough study of this paper, Students may be able to:

- Examine the genre of the Short Story & Essays.
- The students are introduced to the deeper understanding of these genres, and the reflection of human emotions in these essays & short stories .
- have an opportunity to write essays on various subject matters which are of contemporary relevance
- relate the essays against the intellectual and socio-cultural background

KASHMIRI LITERATURE-IV

THEORY

(CREDITS: 04)

یونٹ ۱ : علمی نثر	۱- بؤنی	۲- کلچر تہ زبان	۳- کُشیرِ ہند توایخ
یونٹ ۲ : افسانہ	۱- توتن خامون	۲- حالس چھروٹل	۳- نیکلیس
یونٹ ۳ : کاشر نظم	۱- بی لانہ لیوکھنم	۲- کاوی ویوینم	
۳- بلبلس کُن			
یونٹ ۴ : ایے			
۱- ایسے یک فن	۲- چاے چھے چاے	۳- نُنہ پوش	

5. Kashmiri Literature (Skill Enhancement Course)

Semester	Skill Course	Course Title	Credit
IV	SEC	Tarjama Kari ترجمہ کاری	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes:

Some of the Course learning outcomes that students of this course are required to demonstrate run thus:

- Critically appreciate the process of translation
- Engage with various theoretical positions on Translation
- Assess, compare and review translations
- Translate literary and non –literary texts

TARJAMA KARI

THEORY

(CREDITS: 04)

یونٹ ۱ :

۳. ترجمہ کی قسم

۲. ترجمہ کی اہمیت

۱. ترجمہ کاری کی بنیاد: اکھ تعارف

یونٹ ۲ :

۳. کاسٹریس منتر ترجمہ کی روایت

۲. شاعری کی بنیاد ترجمہ

۱. نثر کی ترجمہ

دویم حصہ - نثر ریل

یونٹ ۱ :

۲. اردو / انگریزی نثری اقتباس کی بنیاد کاسٹریس ترجمہ

۱. اردو شعری اقتباس کی بنیاد کاسٹریس ترجمہ

یونٹ ۲ :

۲. انگریزی / اردو اطلاقی نثری اقتباس کی بنیاد کاسٹریس ترجمہ

۱. انگریزی / اردو محاورن / جملن کی بنیاد کاسٹریس ترجمہ

6. Kashmiri Literature (Discipline Specific Elective-Optional I)

Semester	Discipline Specific Course	Course Title	Credit
IV	DSE	Kashmiri Literature کشمیری لٹریچر	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes:

This paper has two options and we have opted for the option I.

- The expected course outcome from students of this course is to develop critical thinking among students.
- They may be able to think critically on various issues and subject matters and relate the same with real life situations.
- Develop ability to read critically the prescribed texts and understand its broader implications.
- Students understand the nature and the difference between the fiction and non-fiction.
- By reading the prescribed poems students are able to understand the thought and imagination contained in the poems.
- Students get recognised to the rhythms, metrics and other musical aspects of poems

KASHMIRI LITERATURE**THEORY****(CREDITS: 04)**

یونٹ ۱: تنقیدی نثر

۲۔ رزمیہ شاعری بنز خصوصاً صیڑ تہ کاشری رزم نامہ

۱۔ حقیقت، ادب تہ قاری

۴۔ عالمی تھیٹر: اکہ زان

۳۔ کلچر تہ زبان

۵۔ یو سنف شاہ چک: اکہ سٹیج ڈرامہ

یونٹ ۲: جدید کاشری افسانہ

۳۔ بوایی حادثہ

۲۔ ژھین

۱۔ سوال چھ کٹک

یونٹ ۳: کاشری نظم

۴۔ بہ نہ ژھاے نہ عکس

۲۔ سون گام ۳۔ کتھ

۱۔ ژ مصرأے

۵۔ گوڈنیچ پوزا (ترجمہ)

یونٹ ۴: کاشری غزل

۳۔ چانہ انہار میون شعر وٹن

۲۔ رنگ بالی ڈولم

۱۔ کار دوگن دوردان

۴۔ راتھ اس گٹ تہ

7. Zabaen Hund Tarseeli Vartaw (Skill Enhancement Course)

Semester	Skill Course	Course Title	Credit
V	SEC	Zabaen Hund Tarseeli Vartaw زیانی ہند ترسیلی ورتاؤ	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes:

- Develop a comprehensive understandings of some specific skills like essay writing and letter writings.
- Students will be able to gain conceptual and theoretical knowledge of Journalism and Mass Communication and learn to think critically about issues and topics of the subject.
- Students will be able to use research-based knowledge and research methods including research design, survey analysis and interpretation of data, and synthesis of the information collected to provide valid and cogent conclusions.
- Students will learn about the modern and emerging trends of Journalism

ZABAEN HUND TARSEELI VARTAW**THEORY****(CREDITS: 04)**

یونٹ ۱ :

۱. مضمون نگاری ہند فن

۲. خط لیکھنک فن : رسمی تہ غار رسمی

یونٹ ۲ :

۱. پیراگراف لیکھنک فن

۲. عبارت سہل زیان منز پھرنی

۳. ریڈیو تہ ٹی وی خاطر لیکھن (کالم تہ خبر)

دویم حصہ - ٹٹوریل

یونٹ ۱ :

۱. دنہ آمتین / آمتس موضوعس پیٹھ مضمون لیکھن

۲. خط لیکھن (رسمی تہ غار رسمی)

یونٹ ۲ :

۱. پیراگراف لیکھن

۲. ریڈیو تہ ٹی وی خاطر لیکھن

۳. اخبار خاطر کالم لیکھن

8. Kaeshri Adbuk Taruf -I (General Elective Course)

Semester	Elective Course	Course Title	Credit
V	GEC	Kaeshri Adbuk Taruf-I کاشری ادبک تعارف I	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes:

- The classical genres of Kashmiri Poetry aim to acquaint students with this rich heritage.
- Students will come to know about the poetry and discourse of two Legends of Kashmiri poetry viz LAL DED & SHIEKH UL ALAM
- The genres help to understand us the rich culture, whether it may be represented in language and literature or language and literature represented it.
- It helps students to understand the artistic treatment of words and classical utilization of language
- Students come to know about the main genres of poetry like Vaakh, Vatsun, Shruk, Gazal and Masnavi.

KAESHRI ADBUK TARUF-I**THEORY****(CREDITS: 04)**

یونٹ ۱:

۱. واکھ تہ شُرک : اکھ تعارف

۲. وژن : اکھ تعارف

۳. کاشر غزل : اکھ تعارف

۴. کاشر مثنوی : اکھ تعارف

9. Ilmi Te Gair Afsanvi Adab (Discipline Specific Elective)

Semester	Elective Course	Course Title	Credit
VI	DSE	Ilmi Te Gair Afsanvi Adab	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes:

This paper has two options and we have opted for the option 1.

- The expected course outcome from students of this course is to develop critical thinking among students .
- They may be able to think critically on various issues and subject matters and relate the same with real life situations.
- Develop ability to read critically the prescribed texts and understand its broader implications.
- Non – fictional prose of Kashmiri aims to give a thorough understanding of these genres.
- It will help the students to understand the nature and the difference between the fiction and non fiction

ILMI TE GAIR AFSANVI ADAB**THEORY****(CREDITS: 04)**

یونٹ : ۱ علمی تہ غار افسانوی نثر

۱. قرآنیاتک لال بہا : نسخہ فتح اللہ کشمیری

۲. فراسنک سفر

۳. بتل چہ تتان

۳. ناگن بنز زہار

یونٹ ۲ : جدید کاشر افسانہ

۱. علی داغہ

۲. تاپہ

۳. ڈاکٹر ہائیڈ گر سند تجربہ (ترجمہ) ہاتھارن

یونٹ ۳ : نعتیہ شاعری

۱. نعتک تعریف

۲. پیر عزیز اللہ حقانی

۳. عبدالاحد نادم

یونٹ : ۳ کاشر نظم

۱. تمثیل آدم

۲. کرناو تارکھ اپور

۳. بند زوس منز

۳. مذاحیہ وزن: مدن وارو لگے پاری

۵. انجام

10. Zaban Te Bawath (Skill Enhancement Course)

Semester	Skill Course	Course Title	Credit
VI	SEC	Zaban Te Bawath زبان تہ باوتہ	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes:

- This paper focuses on the basics of language, its origin and different theories.
- Students came to know about the importance of Kashmiri language and Kashmiri script.
- After learning this course students will be able to :
- solve exercises on vocabularies
- Evaluate listening exercises with task which help in developing listening skills.
- understand informative reading texts with exercises which help in developing reading skills
- solve grammatical exercises
- Develop useful techniques in writing by effective writing .
- Build communicative skills in students.

ZABAN TE BAWATH**THEORY****(CREDITS: 04)**

یونٹ ۱ :

۱. زبان : اکھ تعارف

۲. زبان تہ اتہ متعلق مختلف نظریہ

یونٹ ۲ :

۱. کاشر زبانی ہنز اہمیت

۲. کاشرس منز تحریرچ اہمیت

دویم حصہ - ٹٹو ریل

یونٹ ۱

۱. کاشرین مصوتن ہنز زان

۲. کاشرین مصمتن ہنز زان

یونٹ ۲

۱. کاشرین ساد جملن ہندی قسم تہ ورتاؤ

۲. کاشرین مرکب جملن ہندی قسم تہ ورتاؤ

11. Kaeshri Adbuk Taruf -II (General Elective Course)

Semester	Elective Course	Course Title	Credit
V	GEC	Kaeshri Adbuk Taruf-II کاشر ادبک تعارف ۲	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes:

- Students in this paper will come to know about origin and development of Kashmiri language.
- Fiction writings of Kashmiri aim to provide the basic introduction of the three genres of prose i.e Afsana, Drama and Novel.
- The paper will discuss their development and timely changes.
- Students after studying will come to know about their unique features.
- Students will be able to examine the process of characterization, thematic significance, and techniques employed by the authors.

KAESHRI ADBUK TARUF-I**THEORY****(CREDITS: 04)**

یونٹ ۱ : کاشر زبان : اکھ تعارف

یونٹ ۲ : کاشر افسانہ: اکھ تعارف

یونٹ ۳ : کاشر ڈراما: اکھ تعارف

یونٹ ۴ : کاشر ناول: اکھ تعارف

RECOMMENDED BOOKS FOR ALL SEMESTERS

امدادی کتاب:

۳. کاشر ادبک تواریخ ۱. انہار (ترجمک فن نمبر) ۲. ترجمہ کاری کا فن (قمر رابیس)

۳. علم تہ ادب (جلد اکھ، ز، تریہ) ۵. تقابلی ادب، انہار (۲۰۰۳) ۶. زبان تہ ادب (جلد اکھ، ز، تریہ)

۷. کاشر گرامر (پروفیسر شفیع شوق) ۸. کہوٹ (رحمان رابی) ۹. ادبی اصطلاح (غلام نبی فراق)

۱۰. افسانک فن، خاص شمار، ۲۰۰۲ ۱۱. انہار (محمود گامی نمبر) (پروفیسر مرغوب بانہالی)

۱۲. کاشر انسایکلو پیڈیا (جلد ۳) ۱۳. کاشر زبانی منز تخلیق تہ تنقید

۱۳. کلیات رسول میر شاہ آبادی (پروفیسر غلام محمد شاد، ۲۰۰۳ ۱۵. کاشر نثرچ کتاب، محی الدین حاجنی، ۱۹۶۱)

۱۶. کاشر افسانہ، از تہ پگاہ (رتن لال شانٹ ۲۰۰۰ ۱۷. اشار شناسی، رحمان رابی، ۲۰۰۳)

۱۸. تلاش، محمد یوسف ٹینگ (۱۹۸۸)

Course Structure and distribution of different courses with their credits for B.A. Persian

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Basic persian grammar and literature	Core Course	6 credits 4(T)+2(T)
2.	II	Classical persian literature & essay writing	Core Course	6 credits 4(T)+2(T)
3.	III	Classical Persian literature & letter writing	Core Course	6 credits 4(T)+2(T)
4.	III	Reading & Writing Persian	MIL Course	6 credits 4(T)+2(T)
5.	IV	Persian literature, Persian Grammar Prose and unseen translation	Core Course	6 credits 4(T)+2(T)
6.	IV	Reading & Writing Persian	MIL Course	6 credits 4(T)+2(T)
7.	V	Persian classical and modern Persian poetry	Core Course	6 credits 4(T)+2(T)
8.	V	Reading and writing Persian-I	General Elective	6 credits 4(T)+2(T)
9.	VI	Classical and modern Persian prose	General Elective	6 credits 4(T)+2(T)
10.	VI	Reading and writing Persian-II	General Elective	6 credits 4(T)+2(T)
11.	VI	Translation Prescribed Text	Skill Enhancement Course	6 credits 4(T)+2(T)

Course Outcomes

B.A in Persian studies furnishes candidates with a strong background in literary, linguistic and cultural aspects of Persian language. This degree course helps the candidates to go for various Persian language related employments, as it being used in business in Persian communities. Students having B.A degree in Persian can go for teaching in schools and colleges. The candidates can act as members of the international delegations for different political, economic and other strategic purposes. Such postgraduates are hired in capacities such as linguistic, cryptologic language instructor, foreign language analyst, language instructional developer, teacher content writer etc. Most pass out students of Persian department are getting recruited in the different departments.

1. Basic Persian grammar and literature (Core Course-I):

Semester	Core Course	Course Title	Credits
1st	PRC120C	Basic Persian grammar and literature	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific Outcomes

- Students to get acquainted with basic alphabet of Persian language.
- Students to get to know the various parts of speech in Persian language.
- Students to learn about the tenses in Persian language.
- Students to acquire the skills of effective conversation in Persian language.
- Students to learn some moral poems in Persian language.
- Enable students to acquire comprehensive knowledge about the basic and applied Persian Grammar

BASIC PERSIAN GRAMMAR AND LITERATURE**THEORY****(CREDITS: 06)****یونٹ اول:**

- الفبای فارسی -۱
- دستور زبان : اسم، فعل ، حرف ، ضمیر ف اقسام ضمیر ، مصدر ، مضارع، ترکیبات. -۲
- اقسام سناک (گذشته، حال ، استقبال) -۳
- اقسام فعل گذشته -۴
- (گذشته سادہ، گذشته نقلی، گذشته دور، گذشته استمراری، گذشته التزامی، گذشته شرطیہ) •

یونٹ دوئم

- اقسام فعل گذشته مجهول، حال مجهول، استقبال مجهول. -۱
- فعل امر ، فعل نہی. -۲
- فعل ناتمام یا فعل ملموس. -۳

یونٹ سوئم

- در مورد اقسام فعل گذشته، حال و استقبال معروف و مجهول جملہ های مثبت، منفی و شوالی. -۱

یونٹ چہارم

- Translation of following four lessons into English or Urdu form the Book
- -۱ فارسی دبستان اول از لیلی ایمن.

- Tutorial - 1st.
- ۱- الف) معرفی کامل خود به زبان فارسی-
- ب) امروز شما
-
-
- Tutorial - 2nd
- ۱- تمرین زبان در لبراتور زبان فارسی در گروه زبان و ادبیات فارسی دانشگاه کشمیر-
- (مدت: یک هفته)
-
-

SUGGESTED BOOKS

- ۱- دستور زبان فارسی از پرویز ناتل فانلری-
- ۲- دستور زبان از ایس- ایل گومر-
- ۳- دبستان اول از لیلی ایمن-

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2. Classical Persian literature & Essay writing (Core Course-II):

Semester	Core Course	Course Title	Credits
2 nd	PRC220C	Classical Persian literature & essay writing	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific Outcomes

- Students to learn about famous epic writings in Persian literature.
- Students to learn about some cultural stories in Persian literature.
- Students to learn some poems by Kashmiri Persian poets.
- Students to learn about essay writing in Persian literature.
- Students to learn about Persian literature during Samanid Period.
- To enable the students to understand the trends in Classical Persian Literature and enhance their writing skills.

CLASSICAL PERSIAN LITERATURE & ESSAY WRITING**THEORY****(CREDITS: 06)****یونٹ اول:**

انتخاب از کتاب درس فارسی (جلد اول) از پروفیسور شمس الدین احمد:

- ۱- کود کی سہراب (اول) (صفحہ ۳۳)
- ۲- کود کی سہراب (دوم) (صفحہ ۶۳)
- ۳- کودکی سہراب (سوم) (صفحہ ۸۳)

یونٹ دوئم

انتخاب از کتاب درس فارسی (جلد اول) از پروفیسور شمس الدین احمد:

- ۱- نوروز (۱) (صفحہ ۰۳)
- ۲- نوروز (۲) (صفحہ ۲۳)
- ۳- حکایت (صفحہ ۱۷)

یونٹ سوئم

انتخاب از کتاب درس فارسی (جلد اول) از پروفیسور شمس الدین احمد:

- ۱- غزل شماره ۴ - از شیخ یعقوب صرفی
- ۲- غزل شماره ۳ - از ملا محسن فانی کشمیری

یونٹ چہارم

انتخاب از کتاب درس فارسی (جلد اول) از پروفیسور شمس الدین احمد:

- ۱- جوان نافرمان و مادر (سعدی)
- ۲- توانا بود هر که دانا بود (فردوسی)

(Tutorials: 02 Credits)

- ۱- انشاءنویسی در فارسی (دانشکده، استاد من، شهر من، خانه من، رود خانه های کشمیر)
- ۲- مطالعه ادبیات دورئہ سامانی (نظم و نثر)

SUGGESTED READINGS

- ۱- کتاب درس فارسی اول از دکتر شمس الدین احمد۔
- ۲- تاریخ ادبیات ایران از دکتر رضا زاده شفق۔
- ۳- تاریخ ادبیات فارسی از دکتر ذبیح الله صفا۔
- ۴- فارسی ادب کی مختصر ترین تاریخ از دکتر ریاض اور دکتر صدیق شبلی۔
- ۵- ایران ادب از دکتر ظہور الدین احمد۔
- ۶- کشمیر میں فارسی ادب کی تاریخ از پروفیسر عبدالقادر سروری۔
- ۷- شیخ یعقوب صرفی شخصیت اور فن از دکتر غلام رسول جان۔

3. Classical Persian literature & Essay writing (Core Course-II):

Semester	Core Course	Course Title	Credits
3 rd	PRC320C	Classical Persian literature & letter writing	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific Outcomes

- Students to learn moral lessons by famous Persian poets like Rudaki, Rumi and Saadi.
- Students to learn about lessons on humanity and brotherhood in Persian literature.
- Students to learn moral lessons written in prose in Persian literature.
- Students to learn letter writing in Persian language.
- Students to learn about proverbs and idioms in Persian language.
- To develop the Persian writing skills in students

CLASSICAL PERSIAN LITERATURE & LETTER WRITING**THEORY****(CREDITS: 06)**

یونٹ اول:

انتخاب از کتاب درس فارسی (جلد دوم) از پروفیسور شمس الدین احمد:

۱- دانش (رودکی)

۲- موسی و شبان (مولانا رومی)

۳- ہمدردی (سعدی)

یونٹ دوئم

انتخاب از کتاب درس فارسی (جلد دوم) از پروفیسور شمس الدین احمد:

۱- شب فراق (سعدی)

۲- کاروان (سعدی)

یونٹ سوئم

انتخاب از کتاب درس فارسی (جلد دوم) از پروفیسور شمس الدین احمد:

۱- وزنہ برداران

۲- داستان خیر و شر

یونٹ چہارم

انتخاب از کتاب درس فارسی (جلد دوم) از پروفسور شمس الدین احمد:

۱- محمد بن زکریای رازی کاشف الگل

۲- بانوی فانوس بدست.

(Tutorials: 02 Credits)

۱- نامه نویسی فارسی

۲- بیست تا ضرب المثلهای عامیانه فارسی.

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4. MIL Compulsory for B.A/B.com:

Semester	MIL Course	Course Title	Credits
3 rd	PRM320	Reading & Writing Persian	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific outcomes:

- MIL Modern Indian Languages is a policy designed by the UGC to promote the regional languages.
- Aim of this course is facilitate the students, subject and place of their choice.

READING AND WRITING PERSIAN**THEORY****(CREDITS: 06)**

یونٹ اول:

Persian Alphabets: Long and Short vowels. 1.

Basic Persian Grammar. 2.

یونٹ دوئم

Infinitives and their Meaning. 1.

مصادر و معنای آ:

آمدن - آوردن - آموختن - انداختن - بانیستن - برداشتن - بُردن - بریدن - پختن - پریدن - پُرسیدن - پیوستن - ترسیدن - توانستن - جستن - چکیدن - خاستن - خواستن - خواندن - خوردن - خفتن - خریدن - دیدن - داشتن - دویدن - رفتن - رسیدن - زیستن - ساختن - سرودن - شنیدن - شدن - شناختن - فرستادن - فرمودن - کردن - کندن - گشتن - گشتن - مُردن - نمودن - نالیدن - وزیدن - ورزیدن - هستن -

Aorist 2.

مضارع

Pronouns: 3.

ضمایر

First Person, Second Person, Third Person 4.

سوم شخص، دوم شخص، اول شخص (مفرد و جمع)

یونٹ سوم

Past tense and its kinds. 1.

زمانه گذشته و اقسام آن

Present tense 2.

زمانه حال

زمانه آینده

یونٹ چہارم

1. Frequently used day to day vocabulary of the following. (150 words):
House, Kitchen, Washroom, Bazar, College, Classroom, Vegetables,
Fruits and Flowers.
2. Numbers in Persian (1 – 100)

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5. Persian literature, Persian Grammar Prose and unseen translation (Core course)

Semester	Core Course	Course Title	Credits
4 th	PRL416 C	Persian literature, Persian Grammar Prose and unseen translation	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific Outcomes

- Students to learn about Rudaki as founder of classical Persian poetry.
- Students to learn didactic prose lessons in Persian literature.
- Students to learn five Rubayaat by famous Persian poet Omar Khayyam.
- Students to learn about Persian poetry during Gaznavid Period.
- Students to learn about Persian prose written during Gaznavid Period.

PERSIAN LITERATURE, PERSIAN GRAMMAR PROSE AND UNSEEN TRANSLATION**THEORY****(CREDITS: 06)****Credit - 1st**

۱- مصدر، معنی، مضارها از صرف ص تا ی

Credit – 2nd

معنی و کاربرد ضرب المثل های نوین فارسی-

Credit - 3rd

انتخاب از کتاب درسی فارسی (جلد دوم) از پروفسور شمس الدین احمد

ترجمه داستان کوتاه زیر به زبان انگلیسی یا اردو

۱- انتخاب از آثار سید نفیسی- آشیان خراب-

Credit – 4th

Translation of unseen English or Urdu sentences into Persian:

Credit – 5th

انتخاب از کتاب درس فارسی (جلد دوم)

ترجمه داستان کوتاه زیر به زبان انگلیسی یا اردو

۱- انتخاب از آثار محمد حجازی- شیرین کلد-

Credit - 6th

Translation of unseen Persian sentences into English or Urdu

6. MIL Compulsory for B.A/B.com:

Semester	MIL Course	Course Title	Credits
4 th			Theory: 04 ; Tutorial: 02 Total: 06

Course Specific outcomes:

- The second part, i.e. 4th sem. will move further keeping in view the first level gained by the student.
- Students, in this paper will come to know about origin and development of the language.

Syllabi and Suggested Books

Yet to be uploaded by the department

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7. Persian literature, Persian Grammar Prose and unseen translation (Core course-Optional I)

Semester	Core Course	Course Title	Credits
5 th	PRL516 D	Persian classical and modern Persian poetry	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific Outcomes

- Students to learn translating passages from Persian to English or Urdu language.
- Students to get introduced to different genres in Persian literature.
- Student to get introduced to Classical and Modern Persian Poetry.
- Students to learn about Persian poets of Seljok Period.
- Students to learn about various literary forms in Persian literature.

PERSIAN CLASSICAL AND MODERN PERSIAN POETRY

THEORY

(CREDITS: 06)

Credit - 1st

- ۱- رستم از ف:دوسی (صفحه ۱۷۲ - ۲۷۲)
- ۲- بادنوروزی از عنصری (۸۸۲)

Credit – 2nd

- ۱- انتخاب از غزلیات خواجر کرمانی.... غزل - ۱، و غزل - ۳ (صفحه ۰۳۳ - ۱۳۳)
- ۲- انتخاب از غزلیات حافظ شیرازی غزل - دامگاه حادثه ... (صفحه ۷۲۳)

Credit – 3rd

- ۱- انتخاب از شعر فروغ فرخزاد.... (۱) دوبرابر خدا. (صفحه ۲۵۳)
- ۲- انتخاب از شعر نادر نادر پور.... (۱) شبیه شاموش - (صفحه ۶۴۳)

Credit – 4th

Study of literary history of Seljok period with special reference to eminent

Persian Poets like:

سنائی - عطار - انوری - نظام گنجوی - عمر خیام - ابوسید ابوالخیر -

8. Reading and writing Persian-I (General elective)

Semester	Core Course	Course Title	Credits
5 th	PR516 G	Reading and writing Persian-I	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific Outcomes

- Students to learn about writings in Persian literature.
- Students to learn about reading cultural stories in Persian literature.
- Students to learn about essay writing in Persian literature.
- To enable the students to understand the trends in reading & writing Persian Literature and enhance their writing skills.

READING AND WRITING PERSIAN-I**THEORY****(CREDITS: 06)****UNIT - 1st**

- ۱- الفبای فارسی، اسم، ضمیر، مصدر، مضارع، فعل، حرف، صفت، موصوف.
- ۲- مضارع، گذشته، حال و استقبال، ترکیب، توصیفی، ترکیب اضافی.

UNIT - 2nd

انتخاب از آموزش زبان فارسی (آزفا) ازید الله ثمره.

- ۱- درس اول
- ۲- درس دوم

UNIT - 3rd

انتخاب از آموزش زبان فارسی (آزفا) ازید الله ثمره

- ۱- درس سوم
- ۲- درس چهارم

UNIT - 4th

انتخاب از آموزش زبان فارسی (آزفا) ازید الله ثمره

- ۱- درس پنجم.

(Tutorials: 02 Credits)

- ۱- گفتگو در زبان فارسی

نامه نویسی در زبان فارسی

۲- جمله سازی در زبان فارسی

مضمون نویسی در زبان فارسی-

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9. Classical and modern Persian prose (General Elective)

Semester	Core Course	Course Title	Credits
6 th	PR616 G	Classical and modern Persian prose	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific Outcomes

- Student to learn selected works from Classical Persian prose.
- Students to learn about Persian Maktubat of Mir Syed Ali Hamadani.
- Students to learn about Persian prose writers of Seljok period.
- Students to learn about Contrast and Rhyming used in Persian poetry.
- Students to learn about various figures of speech like Metaphor, Simile, Pun, etc.

CLASSICAL AND MODERN PERSIAN PROSE**THEORY****(CREDITS: 06)****Credit - 1st**

۱- کشف امریکا..... (صفحه ۲۲-۹۲)

۲- نفت (صفحه ۵۴ - ۹۴)

Credit – 2nd

۱- از این دریا از آن در (صفحه ۹۸۱-۹۹۱)

۲- کهن ونو (صفحه ۴۹ - ۲۰۱)

Credit – 3rd

۱- انتخاب از سیر الملوک (سیاست نامه فصل سوّم و چهارم).....

(صفحه ۲۳۲-۳۳۲) (صفحه ۱۴۲-۲۴۲)

۲- انتخاب از مکتوبات حضرت امیر کبیر میر سید علی ہمدانی

(مکتوب اوّل و دوّم) (صفحه ۳۵۲-۶۵۲)

Credit – 4th

Study of literary history of Seljok period with special reference to eminent Persian

Prose writers like:

عطار - امام غزالی - نظام عروضی سمرقندی - نظام الملک طوسی - ابوالفضل بیہقی -

10. Reading and writing Persian II (General elective)

Semester	Core Course	Course Title	Credits
6 th	PR616 G	Reading and writing Persian-II	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific Outcomes

- Students to learn about writings in Persian literature.
- Students to learn about reading cultural stories in Persian literature.
- Students to learn about essay writing in Persian literature.
- To enable the students to understand the trends in reading & writing Persian Literature and enhance their writing skills.

READING AND WRITING PERSIAN-II**THEORY****(CREDITS: 06)****UNIT - 1st**

انتخاب از آموزش زبان فارسی (آزفا) از ید الله ثمره جلد اول

-۱ درس ششم

UNIT - 2nd

انتخاب از آموزش درس فارسی (آزفا) از ید الله ثمره جلد اول

-۱ درس هفتم

UNIT - 3rd

انتخاب از آموزش زبان فارسی (آزفا) از یدالله ثمره جلد اول

-۱ درس هشتم

UNIT - 4th

انتخاب از کتاب درس فارسی جلد اول از شمس الدین احمد

-۱ نام خدا

-۲ فردوسی

-۳ غزل شماره ۳ از ملا محسن فانی

(Tutorials: 02 Credits)

-۱ معرف، دربار باصناف زیر-

غزل، رباعی، مثنوی، قصیدہ، مرثیہ

۲۔ معرف، عناوین زیو۔

رومان نویسی، داستان کوتاہ نویسی، نامہ نویسی، نمایشنامہ نویسی۔

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11. Translation Prescribed Text (Skill Enhancement Course):

Semester	Core Course	Course Title	Credits
6 th	PR617 S	Translation Prescribed Text	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific outcomes:

- After the thorough study of this course, it is expected from the students that they may identify the genres of Gazal and Nazm, fable, novel, short story etc. and could comprehend the basic concepts regarding the Persian literature.

TRANSLATION PRESCRIBED TEXT**THEORY****(CREDITS: 06)****UNIT - 1st**

Translation of prescribed text into English or Urdu and exercises:

درس پنجم : از آموزش زبان فارسی، دور بمقدماتی (کتاب اول) از دکتر یدالله چمره:

۱- پسوندبای (بودن) استعمال ضمائر شخصی با پسوندبای (بودن) ضمیر های ملکی پیوسته، اضافه.

۲- درس ششم صفت برترین- مصدر- ستاک گذشتہ.

UNIT - 2nd

درس ششم: از آموزش زبان فارسی ، دوره بمقدماتی (کتاب اول) از دکتر یدالله ثمره.

۱- حال اخباری، استعمال حال برای آینده- بمخوانهای میانجی-

۲- بستن، بودن، گفوشنو دتلفنی- مفاعل صریح و مفعول غیر صریح- اسم ضمیر-

(Tutorial)**UNIT - 1st**

a) Basic information about the computer knowledge especially Persian typing, browsing of useful Persian websites regarding Persian Language and Literature.

b) To watch useful Persian movies dubbed in English or Urdu and *viz a viz*.

UNIT - 2nd

Translation of unseen English and Urdu passages into Persian.

**Course Structure and distribution of different courses with their credits for
B.A. Political Science**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Key Concepts in Political Theory	Core Course	6 credits 4(T)+2(T)
2.	II	Western Political Thought	Core Course	6 credits 4(T)+2(T)
3.	III	International Relations	Core Course	6 credits 4(T)+2(T)
4.	III	Concept of Peace Building	Skill Enhancement Course	4 credits 2(T)+2(T)
5.	IV	Comparative Government and Politics	Core Course	6 credits 4(T)+2(T)
6.	V	Indian Political System	Discipline Specific Elective-I	6 credits 4(T)+2(T)
7.	V	Democratic Awareness with Legal Literacy	Skill Enhancement Course	4 credits 2(T)+2(T)
8.	VI	Government and Politics of Jammu & Kashmir	Discipline Specific Elective-II	6 credits 4(T)+2(T)

Course outcomes

The main objective of the course is to provide a comprehensive understanding of the discipline of political science to the students who join the BA at the undergraduate level in the affiliated colleges of Kashmir University. The students who join these courses are not necessarily trained in fundamentals of the discipline, as they come from the diverse disciplinary background.

The course aims at making them understand the fundamental concepts, theories, perspectives, and ideological discourses in Political Science. This will enable them to explain and evaluate the functioning of political systems and governments of diverse kinds with their institutions, structures, and ideologies. Building a better society to live in has been a perennial question which all the disciplines of knowledge have pondered over and worked on, including Political Science. Aim of the course is to expose the students to the diverse political philosophies, from the ancient to modern times, and how have they envisioned of and engaged with the issues of rights, liberty, equality, justice, citizenship, constitution, and constitutionalism, etc.

The objective is also to train the students in understanding the public administrative system and public policy science. The course also exposes the students to the interdisciplinary modules to demonstrate the interconnectedness of the discipline with other subjects and areas

which don't form the core of Political Science, yet very much conjoining its boundaries. The objective is also to understand the national interests of India in comprehensive terms and Indian endeavours and response to emerging challenges and issues in a fluid and dynamic global scenario.

The course has been designed in such a way that every student is equipped with certain practical skills which can be used for seeking gainful employment if one exits after completing the graduation. The aim is also to train the students in research design and application of tools and techniques for empirical and normative research.

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1. Key Concepts in Political Theory (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Key Concepts in Political Theory	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To understand history of political science as discipline and the rationale behind the subject matter.
- Get acquainted with diverse research methodologies in political science.
- Grasp and understand the different perspectives and essentiality of the state.
- Have an understanding of vast political concepts and vast political vocabulary.

KEY CONCEPTS IN POLITICAL THEORY**THEORY & TUTORIAL****(CREDITS 6)****Unit 1**

- 1.1 Political Science: Nature and Scope
- 1.2 What is Politics?
- Politics as Art of Government
 - Politics as Public Affair
 - Politics as Power
- 1.3 Approaches to the study of Politics
- Philosophical Tradition
 - Empirical Tradition
 - Scientific/Behavioural Tradition

Unit 2

- 2.1 State: Evolution and Elements; Difference between State, Civil Society and Nation.
- 2.2 Perspectives of State: Liberal, Marxist and Anarchist
- 2.3 Role of State: Minimal State and Social-Democratic State

Unit 3

- 3.1 Liberty: Evolution, Significance and Classification
- 3.2 Equality: Liberal, Libertarian and Socialist perspective of Equality.
- 3.3 Justice: Procedural, Distributive, and Gender Justice

Unit 4

- 4.1 Democracy: Meaning and Forms—Procedural and Substantive.

4.2 Rights: Meaning and Theories of Rights—Natural, Human and Political rights

4.3 Power: Meaning and Conceptions:

- a. Power as Authority
- b. Power as Exploitation
- c. Power and Patriarchy

SUGGESTED READINGS

- Gauba, O.P; *An Introduction to Political Theory (3rd edition)*, Macmillan, New Delhi, 2009.
- Goodin. Robert E & Hans. Dieter Klingemann(eds); *A New Handbook of Political Science*. London; Oxford University Press, 1996
- H. Laski; *The Grammar of Politics*, London; G. Allen and Unwin Ltd, 1950.
- Heywood, Andrew; *Key Concepts in Politics*, Palgrave—Macmillan, London, 2000.
- Heywood, Andrew; *Politics*, Palgrave—Macmillan, London, 2002.
- Ponton, Geogfrey and Peter Gill; *Introduction to Politics* (2nd edition), UK: Blackwell,1988

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2. Western Political Thought (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Western Political Thought	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- Read about the chronology of political philosophers from Socrates to Jhon rawls.
- Have an understanding of different themes under the discussion of western political thinkers.
- Know the significance of historical approach in political theory.
- Know about classics in western political philosophy.

WESTERN POLITICAL THOUGHT**THEORY & TUTORIAL****(CREDITS 6)****Unit 1**

A) Introduction

- 1.1 Political Thought: Meaning and Significance
- 1.2 Difference between Political Thought and Political Theory
- 1.3 Salient Features of Western Political Thought

B) Plato

- 1.4 Ideal State: Concept and Features
- 1.5 Theory of Justice
- 1.6 Idea of Philosopher King

Unit 2

A) Aristotle

- 2.1 Concept on Revolution
- 2.2 Views on Slavery
- 2.3 Classification of Government

B) Machiavelli

- 2.4 Views on State Craft
- 2.5 Machiavelli's Secularism

Unit 3

A) Thomas Hobbes

- 3.1 State of Nature and Social Contract
- 3.2 Theory of Sovereignty

B) John Locke

- 3.3 Social Contract

- 3.4 Concept of Natural Rights
- 3.5 Concept of Constitutional Government
- C) J. J. Rousseau
 - 3.6 Views on State of Nature
 - 3.7 Concept of General Will

Unit 4

- A) Jeremy Bentham
 - 4.1 Bentham as Utilitarian
- B) John Stuart Mill
 - 4.2 Concept of Liberty
 - 4.3 Representative Government
- C) Karl Marx
 - 4.4 Concept of Class and State
 - 4.5 Concept of Historical Materialism

SUGGESTED READINGS

- Barker, Ernest; *Greek Political Theory—Plato and his Predecessors*, B.I. Publications, New Delhi, 1964.
- Boucher, David and Paul Kelly (eds); *Political Thinkers: From Socrates to the Present*, London, Oxford, 2003
- Maxey, Chester; *Political Philosophies*, Macmillan, New York, 1948
- Mukherjee, Subrata & S. Ramaswamy; *A History of Political Thought—From Plato to Marx*, PHI, New Delhi, 2004.
- Nelson, Brain; *Western Political Thought*, Pearson, London, 2008.
- Jha, Shefali; *Western Political Thought*, Pearson Publications, New Delhi.
- Popper, Karl; *Open Society and its Enemies (2 Vols)*, 1954
- Sabine, George; *A History of Political Theory*
- Wayper, C.L; *Political Thought*

3. Interational Relations (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	International Relations	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- To know about the working of international political structures.
- To have an understanding of divergent theoretical perspectives on international relations.
- Know about history of interstate relations.
- Know about foreign policy and the factors that influence its formulation.

INTERNATIONAL RELATIONS

THEORY & TUTORIAL

(CREDITS 6)

Unit 1

- 1.1 Nature and Scope of International Relations.
- 1.2 Approaches to the Study of International Relations:
 - a) Liberalism
 - b) Realism
 - c) System Approach

Unit 2

- 2.1 National Power: Concept and Elements
- 2.2 National Interest: Meaning and Nature: National Interest and Foreign Policy —
- 2.3. Theory of Imperialism

Unit 3

- 3.1 Cold War, Détente and New Cold War
- 3.2. End of Cold War and Aftermath
- 3.3. Non-Alignment Movement: Development, Role and Contemporary
- 3.4 North-South Divide and South-South Co-Operation

Unit 4

- 4.1 UNO—Structure, Functions and Reforms
- 4.2 Regional Cooperation: European Union and SAARC.
- 4.3 Globalization
- 4.4 Human Security, Human Rights, Terrorism and Environment

SUGGESTED READINGS

- John Bayles, Steve Smith, Patricia Owen; The Globalization of World Politics; An Introduction to international Relations, (Oxford University Press), Fourth Edition, 2008.

- Joseph S. Nye, Jr.; Understanding International Conflicts: An Introduction to Theory and History, (Pearson, Education), Sixth Edition-2008.
- Joshua S. Goldstein; International Relations, Prentice Hall of India, Private Limited, New Delhi, 2002.
- Paul R. Villy, Mark. V. Kauppi: International Relations and World Politics; (Security, Economy, Identity, (Pearson, Education), Third Edition-2007.
- Peuh Ghosh; international Relations, PHI, New Delhi, 2009.
- Robert Jackson & George Sorensen; Introduction to International Relations; (Theories and Approaches) (Oxford University Press) Third Edition 2008.

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4. Conflict and Peace Building (Skill Enhancement Course):

This course provides students with a detailed knowledge of Conflict and Peace Building.

Semester	Core Course	Course title	Credit
3 rd	SEC	Conflict and Peace Building	Theory:02; Tutorial:02 Total:04

Course Specific Outcome:

This course is designed to help build an understanding of a variety of conflict situations among students in a way that they can relate to them through their lived experiences. It's an interdisciplinary course that draws its insights from various branches of social sciences and seeks to provide a lively learning environment for teaching and training students how to bring about political and social transformations at the local, national and international levels.

The course encourages the use of new information technologies and innovative ways of understanding these issues by teaching students skills of managing and resolving conflicts and building peace through various.

CONFLICT AND PEACE BUILDING**THEORY****CREDITS: 02****Unit I: Concepts**

- 1.1 Understanding Conflict.
- 1.2 Conflict Management, Conflict Resolution and Conflict Transformation.
- 1.3 Peace Building

Unit II: Dimensions of Conflict

- 2.1 Ideology.
- 2.2 Economic/Resource Sharing Conflicts.
- 2.3 Socio-Cultural Conflicts (Ethnic, Religious, Sender-based).

TUTORIAL**CREDITS: 02****Unit III: Sites of Conflict**

- 3.1 Local
- 3.2 Sub- National
- 3.3 International

Unit IV: Conflict Responses: Skills and Techniques

- 4.1 Negotiations: Trust Buildings
- 4.2 Mediation: Skill Building; Active Listening
- 4.3 Track I, Track II & Multi Track Diplomacy
- 4.4 Gandhian Methods.

SUGGESTED READINGS:

- O. Ramsbotham, T. Woodhouse and H. Miall, (2011) 'Understanding Contemporary Conflict', in Contemporary Conflict Resolution, (Third Edition), Cambridge: Polity Press, pp.94-122.
- W. Zartman, (1995) 'Dynamics and Constraints in Negotiations in Internal Conflicts', in William Zartman (ED.), Elusive Peace: Negotiating an End to Civil Wars, Washington: The Brookings Institute, pp. 3-29.
- P. Wallensteen, (2012). 'Armed Conflicts in Understanding Conflict Resolution, (Third Edition), London: Sage, pp. 13-28.
- C. Mitchell, (2002) 'Beyond Resolution: What Does Conflict Transformation Actually Transform?' in Peace and Conflict Studies, 9:1 May, pp. 1-23.
- S.Ryan, (1990) Conflict Management and Conflict Resolution,' in Terrorism and Political Violence, 2:1, pp. 54-71.
- J. Lederch, (2003) the Little book of a conflict transformation, London: Good Books
- I. Doucet, (1996) Thinking about conflict, Resource Pak for conflict reformation: International Alert.
- M. Lund, (2001). "A tool Box for responding to Conflicts and Building Peace, In L. Reycklerand T. Paffenholz, eds. Peace Building A Field Guide, Bolder: Lynne Rienner, PP. 16-20
- L. Schirch, (2004) The Little Book of StrejicPece- building, London: Good Books.
- R. Rubenstein, (2003)"Source" in S. Cheldeln, D. Durckmen and L. Fast (eds.) Conflict: form Amylases to intervention, London : Continuum ,PP.55-67.
- P. Le Billon, (2009) "Sources" Economic and Resourcecauses of Conf licts, In J. Bercovitch, V. Kremenyuk and I. Zartman(eds) the sage Hand Book of Conflict Resolution, London: Sage Publications, PP. 2010-2024.
- Barsh and C.Webel, (2009) Peace and Conflict Studies , London Sage Publications PP. 91-117
- Sandole , (2003) "Typology" in S.Cheldelin, b. bruckmanand L. Fast (eds.) Conflicit: From Amylases to intervention , London: Continuum, PP, 39-54
- P. Wallentein, (2007) Understanding conflict Reselution (2nd -Ed.) London : Sage Publications.
- H. Saunders, (1999) A Public Pace Process : Sustained bialogue to Transform Racial and Ethnic Conflicts , Palgrave Macmillan : New York, Pp. 1-30.

5. Comparative Government and Politics (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Comparative Government and Politics	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To understand the diverse perspectives of politics.
- To know about the different types of regimes and governments.
- To have an understanding of electoral politics and different types of electoral systems.
- Understand the different dimensions of security.

COMPARATIVE GOVERNMENT AND POLITICS**THEORY & TUTORIAL****(CREDITS 6)****Unit 1 Introduction and Approaches**

- 1.1 Comparative Politics: Meaning, Nature and Scope
- 1.2 Political System: Meaning and Approaches—System's Theory and Structural-Functional Approach.
- 1.3 Constitutionalism.
- 1.4 Behaviouralism and its Post-Behavioural Critique

Unit 2 Key Concepts and Processes

- 2.1 Political Socialization: Meaning and Agencies
- 2.2 Political Culture: Meaning and Types
- 2.3 Political Participation: Meanings and Determinants of Political Participation, Political Development and Political Modernization

Unit 3 Political Institutions and Actors

- 3.1 Electoral Systems- —first-past-the Post system, Proportional representation.
- 3.2 Party System: Classification: and Party Systems of China. US and India.
- 3.3 Interest Groups; Meaning, Classification and Functions,
- 3.4 Social Movements: Meaning and Nature: Chipko and Narmada Bachaw Andolan

Unit 4 Government Systems

- 4.1 Federalism with special reference to its working in USA and India.
- 4.2 Presidential form of Government; Features and Working with reference to USA,
- 4.3 Parliamentary System of Government; Features and Working with reference to India.
- 4.4 Totalitarian Government: Features and Working with reference to China.

SUGGESTED READINGS

- Almond & Others: (Comparative Politics Today—A World View, Pearson New Delhi

- Almond, G. A & S. Verba; the Civic Culture: Political Attitudes and Democracy in Five Nations, Princeton NJ, Princeton University Press, 1963.
- Bara, Judith and Mauk Pennington; Comparative Politics, Sage. New Delhi-2009.
- Goodin, Robert E & Hans. Dieter Klingemann (eds); A New Handbook of Political Science, London; Oxford University Press, 1996.
- Green, Decenber & Laura Luehramnn; Comparative Politics of the Third World Linking Concepts and Cases, Viva Books, New Delhi, 2004.
- Haynes, Jeffrey: Comparative Politics in a Globalizing World, UK. Polity Press, 2005.
- Heywood. Andrew: Politics, Palgrave—Macmillan, London, 2002.
- R. Hague and M. Harrop; Comparative Government and Politics: An Introduction. Palgrave, New York, 2001.
- Ray S. N: Comparative Politics, Prentice Hall of India, New Delhi.

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6. Indian Political System (Discipline Specific Elective-I)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-I	Indian Political System	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- Learn about diverse perspectives of Indian state.
- Get acquainted with freedom Movement of India and historical background of making of the Indian constitution.
- Have an understanding of structure of government of India at all the three tiers: Centre-State-Local.
- Know about the diverse social movements that were launched in India over the period of time.
- Have an understanding of economic policies that were taken in the post-colonial India.

INDIAN POLITICAL SYSTEM**THEORY & TUTORIAL****(CREDITS 6)****Unit 1 An Introduction to Indian Government**

- 1.1 Constituent Assembly: An Overview
- 1.2 Features of India's Constitution.
- 1.3 Ideological basis of Indian Constitution: Democracy and Secularism.
- 1.4 Preamble, Fundamental Rights and Directive principles of state Policy.

Unit 2 Union Government

- 2.1 Union Legislature: Parliament: Composition and Powers.
- 2.2 Union Executive:
 - a) President—Election, Position and Powers.
 - b) Prime Minister and Council of Ministers—Position and Role within Parliamentary System.
- 2.3 Supreme Court: Composition and Jurisdiction.
- 2.4 Election Commission of India: Functions and Role.

Unit 3 Federalism

- 3.1 Indian Federalism: Nature and Emerging Issues.
- 3.2 Centre-State Relations: Legislative, Financial and Administrative,
- 3.3 Decentralization and Institutions of Local Self Government with special reference to 73 and 74" Amendment Acts.

Unit 4 Political Processes and Issues

- 4.1 Changing Nature of Party System in India: Congress System to Competitive Party System.
- 4.2 Coalition Politics: Emergence and Challenges.
- 4.3 Political Polarization: Caste and Communalism.

SUGGESTED READINGS

- Bidyut Chakrabarty & R. K. Pandey: Indian Government and Politics, Sage, New Delhi, 2010.
- D.D. Basu; An Introduction to the Constitution of India, Prentice Hall, New Delhi, 1994.
- G. Austin: The Indian Constitution: Corner Stone of a Nation, Oxford University Press, 1996.
- Manoranjan. Mohanty (ed.); Caste, Class and Gender, Sage, New Delhi, 2000.
- N.G. Jayal (ed.); Democracy in India, Oxford University Press, Delhi, 2000.
- Partha Chatterjee (ed); State and Politics in India, Oxford University Press, Delhi, 1998.
- Paul Brass, Politics of India Since Independence, Orient Longman, Hyderabad, 1990.
- Rajeev Bhargava (ed); Secularism and Its Critics, Oxford University Press, Delhi, 1999.
- Rajini Kothari: Politics in India, Orient Longman, New Delhi, 1970

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7. Democratic Awareness with Legal Literacy (Skill Course)

This course provides students with a detailed knowledge of Democratic Awareness with Legal Literacy

Semester	Core Course	Course title	Credit
5 th	SEC	Democratic Awareness with Legal Literacy	Theory:02; Tutorial:02 Total:04

Course Specific Outcomes:

- The Proposed course aims to acquaint student with the structure and manner of functioning of the legal system in India.
- It aims to familiarize student should be aware of the institutions that comprise the legal system the courts, police, jails and the system of criminal justice administration.
- Have a brief knowledge of the Constitution and laws of India, an understanding of the formal and alternate dispute redressal (ADR) mechanisms that exist in India, public interest litigation.

DEMOCRATIC AWARENESS WITH LEGAL LITERACY

THEORY

CREDITS: 02

Unit I:

- 1.1 Outline of the Legal System in India.
- 1.2 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.
- 1.3 Role of the Police and Executive in Criminal Law Administration.
- 1.4 Alternative Dispute Mechanisms such as Lok-Adalats, Non-formal Mechanisms.

Unit II:

- 2.1 Brief Understanding of the Laws applicable in India.
- 2.2 Constitution- Fundamental Rights, Fundamental Duties, other Constitution Right sand their manner of Enforcement, with emphasis on Public Interest Litigation and Expansion of Certain Rights under Article 21 of the Constitution
- 2.3 Laws Relating to Criminal Jurisdiction - Provision relating to filing an FIR, Arrest, Bail Search and Seizure.
- 2.4 Important offences under the Indian penal Code: Offences against Women, Juvenile Justice, Prevention of Atrocities on Scheduled Castes and Scheduled Tribes.

TUTORIAL

CREDITS: 02

Unit III:

- 3.1 Access to Courts and Enforcement of Rights (i) Critical Understanding of the Functioning of the Legal System. (ii) Legal Services Authorities Act and Right to Legal Aid, ADR systems

Unit IV: Practical application

4.1 What to do if you are Arrested: if you are a Consumer with a Grievance; if you are a Victim of Sexual Harassment: Domestic Violence, Child Abuses, Caste, Ethnic and Religious Discrimination; Filing a Public Interest Litigation. How can you challenge Administrative Orders that Violate Rights, Judicial and Administrative Remedies?

4.2 Using a Hypothetical Case: of (for example) Child Abuse or Sexual Harassment or any other Violation of a Rights, Preparation of an FIR or writing a Complaint addresses to the appropriate Authority.

SUGGESTED READINGS:

- Kamala Sankaran and Ujjawal Singh (Ed.), Creating Legal Awareness, (Delhi: OUP, 2007).
- Legal Literacy: A available amongst Interdisciplinary Courses on Institute of Life Long Learning(Delhi University) Virtual Learning Portal namely vle.du.ac.in
- Multiple Action Research Group, Our Laws Vols 1-10, Delhi. Available in Hindi also.
- Indian Social Institute, New Delhi, Legal Literacy Series Booklets.
- S.K. Agarwala, Public Interest Litigation in India, K.M. Memorial Lecture, Second Series, Indian Law Institute, Delhi, 1985.
- S.P. Sathe, Towards Gender Justice, Research Centre for Women's' Studies, SNDT Women's University, Bombay, 1993.
- Asha Bajpai, Child Rights in India: Law, Policy, and Practice, Oxford University Press, New Delhi, 2003. 8 Agnes, Flavia Law and Gender Equality, OUP, 1997.
- Sagade, Jaga, Law of Maintenance: An Empirical Study, ILS Law Collage, Pune 1996.
- B.L Wadhwa, Public Interest Litigation- A Handbook, University Delhi, 2003.
- P.C Rao and William Sheffiled Alternative Dispute Resolution: What it is and how it works, Universal law Books and Publisherd, Delhi, 2002.
- Nomita Aggarwal, Women and Law in India, New CENTURY, Delhi, 2002.
- Parmanand Sing, 'Access to Justice and the Indian Supreme Court, 10 & 1 Delhi Law RAW Review 156, 1981-82

8. Government and Politics of Jammu & Kashmir (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-II	Government and Politics of Jammu & Kashmir	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To learn about the history of formation of J&K.
- To have an understanding of the conditions leading to the accession of J&K with Union of India.
- To learn about the features of J&K constitution.
- To know about the significance of Article 370 in Jammu & Kashmir's special status with in Indian Union.

GOVERNMENT AND POLITICS OF JAMMU & KASHMIR**THEORY & TUTORIAL****(CREDITS 6)****Unit 1**

- 1.1 Historical Background of State
- 1.2 Political Awakening in Kashmir and 1931 uprising
- 1.3 Formation and Ideology of Muslim Conference
- 1.4 Emergence and Ideology of National Conference

Unit 2

- 2.1 Naya Kashmir Manifesto of 1944 and its Politico-ideological Dimensions.
- 2.2 Independence Act, Partition and the Stand Still Agreement.
- 2.4 Interim Government: Formation and Role
- 2.5 Land Reforms (1948-51)

Unit 3

- 3.1. Special Status for J&K under Article 370 of Indian Constitution.
- 3.2. Delhi Agreement (1952) and its significance
- 3.4 Formation of Jammu and Kashmir Constitution and its Special Features.
- 3.5. Erosion of Special Status.

Unit 4

- 4.1. Governor—Powers and Position
- 4.2. Chief Minister—Powers and Position
- 4.3 State Legislature—Composition and Powers
- 4.4. Party System in J&K: Dynamics and Changing Nature: Emergence of Coalition Governments.

SUGGESTED READINGS

- A S Anand; The Constitution of Jammu and Kashmir (5th edition) 2006.
- Balbir Singh, State Politics in India, Macmillan, New Delhi, 1984.
- Balraj Puri; Jammu Kashmir—Triumph and Tragedy of Indian Federalism.
- BalrajPuri: Simmering Valcano.
- G. M. Wani: Kashmir: Identity, Autonomy and Self Rule, Apple Books, Srinagar, 2011.
- Ravinderjit Kour; Political Awakening in Kashmir; Ashish Publication corporation New Delhi 1996.
- G. H. Khan; Freedom Movement in Kashmir, Gulshan Books, Srinagar, 2010.
- M. K, Tengh; Kashmir Article 370, Anmol, New Delhi, 1990.
- M. Y. Ganaie; Struggle for Freedom in Kashmir (1931-1939)
- M. Y. Saraf: Kashmiris Fight for Freedom (2 vols) Feroze Publications; Lahore.
- Mridu Rai: Hindu Ruler, Muslim Subject, Orient Longman, 2004
- Narender Singh; Political Awakening in Kashmir.
- P. N. Bazaz: History of Freedom Struggle in Kashmir, Gulshan Books, Srinagar, 2005.
- P.S. Verma; Jammu and Kashmir at the Political Crossroads, Vikas, New Delhi, 1994.
- Prof. Asifa Jan. Naya Kashmir; An Appraisal, Zeba Publications. Srinagar, 2004.
- Sumatra Bose; Challenge in Kashmir, Sage, New Delhi, 1997.
- Sumatra Bose; Kashmir; Roots of Conflict, Paths to Peace, Vistar Publications, New Delhi 2003.

Course Structure and distribution of different courses with their credits for B.A Philosophy

S.No.	Semester	Course Title	Course Type	Total Credits
1	I	Greek Philosophy	Core Paper	6 Credit; Theory=4 Tutorial=2
2	II	Ethics	Core Paper	6 Credit; Theory=4 Tutorial=2
3	III	Medieval and Modern Philosophy	Core Paper	6 Credit; Theory=4 Tutorial=2
4	IV	Contemporary Western Philosophy	Core Paper	6 Credit; Theory=4 Tutorial=2
5	V	Indian Philosophy	Discipline Specific Elective	6 Credit; Theory=4 Tutorial=2
6	VI	Applied Ethics	Discipline Specific Elective	6 Credit; Theory=4 Tutorial=2
7	V	Greek Philosophy	Gen. Elective	6 Credit; Theory=4 Tutorial=2
8	VI	Ethics	Gen. Elective	6 Credit; Theory=4 Tutorial=2

Course Outcomes

After successfully completing this course, the student should be able to:

- Understand and be able to discuss major philosophical problems in the western Tradition.
- Assess arguments and philosophical perspectives using critical reasoning.
- Express complex thoughts logically and coherently.
- Apply knowledge of philosophical perspectives, logic, and critical reasoning to develop his or her own opinions regarding philosophical problems and issues.

1. Greek Philosophy(Core Course-I):

This course provides students with the origin and development of Greek thought

Semester	Core Course	Course Title	Credit
I	CC-I	Greek Philosophy	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes:

- This course is designed to expose the students to the general philosophy. This will explain the basic concepts and problems of philosophy
- This will also provide the origin and development of the Philosophy on the Greek sphere. The Pre-Socratic, Platonic and Aristotelian conception of epistemology, ethics, causation, theory of ideas, theory of forms and matters and etc in Greek philosophy

GREEK PHILOSOPHY**THEORY****CREDITS: 04****Unit-I**

1. Nature and definition of Philosophy
2. The Branches of Philosophy

Unit-II

1. Milesian Philosophers: Thales, Anaximander, Anaximenes
2. Pythagoras: Number Theory

Unit-III

1. Socrates: Philosophical Method
2. Plato: Theory of Ideas

Unit-IV

1. Epicures: Ethics
2. Zeno: Theory of Knowledge

TUTORIAL:**Credit: 02****Unit-I**

1. Key concepts: Solipsism, Dogmatism
2. Parmenides: Concept of Being

Unit-II

1. Aristotle: Theory of Causation
2. Neo-Platonism: Theory of Being

SUGGESTED READINGS

- Introduction to Western Philosophy: Y. Masih
- A History of Philosophy: F. Thilly
- Introduction to Philosophy: J.N. Sinha
- A Critical History of Greek Philosophy: W.T. Stace

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2. Ethics (Core Course-II):

This course develops the knowledge of ethical perspectives, theories, and critical reasoning among students to develop his or her own opinions regarding philosophical problems and issues.

Semester	Core Course	Course Title	Credit
II	CC-II	Ethics	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcome

- Identify and understand the main approaches to ethics in ancient philosophy.
- Understand and evaluate the differences between the different approaches.
- Think carefully and systematically about the relation between human nature and the good life, as conceived of by the ancients.
- Think carefully and systematically about the role of reason, emotion, and character in a good life, as conceived of by the ancients.
- think carefully and systematically about the possibility of ethics and of a good life, as conceived of by the ancients

ETHICS**THEORY****(CREDITS: 04)****Unit 1st**

1. Nature and definition of ethics
2. Areas of Ethics
 1. Meta ethics
 2. Normative ethics
 3. Applied ethics

Unit 2nd

1. Theories of punishment
 - a. Reformatory theory of punishment
 - b. Retributive theory of punishment
 - c. Deterrent theory of punishment

2 Kant: categorical imperative

Unit 3rd

1. John Dewey: Naturalism

2. G E Moore: Intuitionism

Unit 4th

1. Ethical subjectivism

2. Ethical objectivism

Tutorial:

02 Credit

Unit-I

1. Relation of ethics with religion
2. Utilitarianism
 - a). Bentham's version of Utilitarianism
 - b). J S Mills version of Utilitarianism

Unit-II

1. Stevenson: Emotivism
2. Ethical Relativism:

SUGGESTED READINGS

- Ethics: Frankena. W
- A Manual of Ethics: J.N. Sinha
- Outlines of Ethics: R.N.Sharma
- A Manual of Ethics: Makenzie
- An Introduction of Ethics: W.Lillie

3. Medieval and Modern Philosophy(Core Course-III):

This course will familiarize students with the philosophical speculations of medieval and modern philosophers. This comprises of Christian and Jewish philosophies. Their contribution to the philosophy of religion and epistemology.

Semester	Core Course	Course Title	Credit
III	CC-III	Medieval and Modern Philosophy	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes

- Explain the leading problems of the philosophy of the Middle and Modern Age.
- Identify the original features of the philosophy of the Middle and Modern Age.
- Summarize the doctrines of Middle and Modern Age' philosophers and schools with chronological order.
- Define the fundamental concepts of the philosophy of Middle and Modern Age.
- Debate the effects of Christianity to philosophy.
- Identify and explain the leading philosophical problems of early Middle Age.
- interpret some important works of St. Augustin's and question his peculiar thoughts
- Recognize the leading philosophers of the scholastic period of Middle Age like Abelard's, Anselmus, John Scouts Erigena, Bonaventura, Thomas Aquinas and John Duns Scouts.
- Explain the philosophical views of John Scouts, Anselm and Abelard.
- identify and explain the importance of Thomas Aquinas in terms of the philosophy of the Middle Age
- Debate the modern philosophers from Spinoza to Hegel.

MEDIEVAL AND MODERN PHILOSOPHY**THEORY****(CREDITS: 04)****Unit I**

1. Main features of medieval philosophy
2. St. Augustine: Theory of Knowledge

Unit II

1. Descartes: Method of Doubt
2. Spinoza: Theory of Substance

Unit III

1. Locke: Theory of Knowledge
2. Berkley: *Essi-est-Precipi*

Unit IV

1. Kant: Theory of Knowledge
2. Hegel: The Dialectical Method

TUTORIAL**CREDIT: 02****Unit-I**

1. St Thomas Aquinas: Faith and Reason
2. Leibnitz: Doctrine of Monads

Unit-II

1. David Hume: Theory of Causation
2. Fichte: Theory of Ego

SUGGESTED READINGS

- Introduction to Western Philosophy: Y. Masih
- A History of Philosophy: F. Thilly
- Introduction to Philosophy: J.N. Sinha
- A Critical History of Greek Philosophy: W.T. Stace
- History of Modern Philosophy: Falkenberg
- Students History of Philosophy: A.K. Ragers

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4. Contemporary Western Philosophy (Core Course-IV):

This course enables students to develop knowledge about contemporary western philosophy.

Semester	Core Course	Course Title	Credit
IV	CC-IV	Contemporary Western Philosophy	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcome

- The outcome is to increase the horizon of Western Philosophical Thoughts particularly contemporary western philosophy.
- Successful students will choose, develop and defend notions on and about language in formal written papers. Students are expected to accurately explain course readings and presentations on the final exam and in papers, and orally for in-class presentations. • Students will be able to use philosophical concepts correctly, as measured on the final exam, papers and in-class presentations.
- Explaining and responding to criticisms of the thesis. In writing philosophical theories, concepts, techniques and issues pertinent to continental philosophy including Existentialism and Phenomenology.

CONTEMPORARY WESTERN PHILOSOPHY**THEORY****(CREDITS: 04)****Unit-I**

1. S. Kierkegaard: Three stages of life
2. Nietzsche: The Will to power

Unit-II

1. Husserl: Phenomenological Method
2. J P Sartre: Concept of freedom

Unit-III

1. Logical Positivism: Elimination of Metaphysics Lo
2. Wittgenstein: Picture theory of language, Language game theory

Unit-IV

1. Austin: Speech Acts
2. Postmodernism: An Introduction

TUTORIALS:**CREDIT: 02****Unit-I**

1. Marcel: Problem and Mystery
2. Heidegger: The problem of being

Unit-II

1. B Russell: Logical Atomism
2. Hermeneutics: An Introduction

SUGGESTED READINGS:

- a. Classics of Analytical Philosophy: Ammermen
- b. From Rationalism to Existentialism: R.C. Solomon
- c. Introduction to Existentialism: M. Grene
- d. Hundred Years of Philosophy: J.Passmore
- e. Existentialism: W. Mary
- f. Six Existentialist Thinkers: Blackham, H.J
- g. Philosophical Analysis: Urmson
- h. Recent Trends in Western Philosophy: G. Srinivasan

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5. Indian Philosophy(Discipline Specific Elective-V):

This course is concerned with the different views of traditional Indian philosophical school.

Semester	Core Course	Course Title	Credit
V	DSES-V	Indian Philosophy	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- The outcome of the course is to understand the distinct features of Indian epistemology.
- The outcome of the course is to understand the basic of Indian ethics which includes Hindu, Jaina and Buddhist ethics.

INDIAN PHILOSOPHY**THEORY****(CREDITS: 04)****Unit-I**

1. Basic features of Indian Philosophy (Karma Dharma Moksha)
2. Upanishads: Nature of Ultimate Reality

Unit-II

1. Charvaka: Epistemology and Ethics
2. Buddhism: Four Noble Truths, Pratyatsamutpada

Unit-III

1. Nyaya: Theory of Knowledge
2. Vaisesika: Theory of Atoms

Unit-IV

1. Adavaita Vedanta: Unqualified Non dualism
2. Visistaadvaita Vedanta: Qualified Non- Dualism

TUTORIAL:**CREDIT: 02****Unit-I**

1. Four Vedas: Rig Veda, Yajur Veda, Sama Veda, Atharva Veda
2. Jainism: Theory of Knowledge

Unit-II

1. Sankhya: Prakriti and Purusha, Theory of Causation

2. Kashmir Shivis: Main features of Kashmir Shaivism

SUGGESTED READINGS

- | | |
|--|-----------------|
| 1. Outlines of Indian Philosophy: | M.Hiriyana |
| 2. A critical Survey of Indian Philosophy: | C.D.Sharma |
| 3. A History of Indian Philosophy Vol 1-5: | S.N. Dasgupta |
| 4. Indian Philosophy, Vol 1 and 2: | S.Radhakrishnan |
| 5. Central Philosophy of Buddhism: | T.R.V. Murti |
| 6. Reason and Tradition of Indian Thought: | J.N. Mohanty |

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6. Applied Ethics/Logic and Scientific Method (Discipline Specific Elective-V):

Semester	Core Course	Course Title	Credit
VI	DSES-VI	Applied Ethics/Logic and Scientific Method	Theory: 04; Tutorial: 02 Total: 06

Course Specific Outcomes

- The objective of this course is the application of ethical rules and principles which can be applied for wellbeing of the society.
- This course designed for the theory of animal rights, abortion, euthanasia, ecology, doctor-patient relationship, business ethics and etc.

APPLIED ETHICS/LOGIC AND SCIENTIFIC METHOD**THEORY****(CREDITS: 04)****Unit-I**

1. An introduction to Applied Ethics
2. Ethics of journalism: An Introduction

Unit-II

1. An Introduction to Business Ethics
2. Corporate Business and Social Responsibility

Unit-III

1. Human Cloning: Ethical Implication
2. Surrogacy: Ethical Implications

Unit-IV

1. Nature as Means or End
2. Environmental Ethical Balance of Dal Lake

TUTORIAL:**CREDIT: 02****Unit-I**

1. Ethical Issues in Advertising
2. Markets and Consumer Protection

Unit-II

1. Doctor –Patient Relationship
2. Sustainable Agriculture

SUGGESTED READINGS:

1. Mass Communication in India: Keval J. Kumar
2. Business Ethics: Concepts and Causes: Manuel G. Velasquez

- | | |
|--|-------------------|
| 3. Current Issues in Bio-Ethics and Environment: | M. Gabriel |
| 4. Media Ethics: | Paranjay G.T |
| 5. Bio-Ethics: | Shweta Singh |
| 6. Bio-Ethics-The Basics: | Campbell Alastair |
| 7. Contemporary Debates in Applied Ethics: | Cohen |

Course Structure and distribution of different courses with their credits for B.A Psychology

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Foundations of Psychology	Core Course	6 credits 4(T)+2(P)
2.	II	Introduction to Social Psychology	Core Course	6 credits 4(T)+2(P)
3.	III	Psychological Disorders	Core Course	6 credits 4(T)+2(P)
4.	IV	Statistical Methods & Psychological Research	Core Course	6 credits 4(T)+2(P)
5.	IV	Developing Emotional Competency	Skill Enhancement Course	4 credits 2(T)+2(P)
6.	V	Organizational Psychology	Discipline Specific Elective	6 credits 4(T)+2(P)
7.	V	Life-span Development	Discipline Specific Elective	6 credits 4(T)+2(P)
8.	VI	Counseling Psychology	Discipline Specific Elective	6 credits 4(T)+2(P)
9.	VI	Health & Well-being	Discipline Specific Elective	6 credits 4(T)+2(P)

Course outcomes

This course will enable students to understand the basic principles underlying human psychology and social relationships.

Furthermore, the students will be able to recognize people with different psychological problems and address them with the help of different techniques in psychotherapy and counseling.

This course will also enable students to learn different sophisticated statistical techniques helpful in analysis of data collected with the help of different psychological scales.

The students will also learn the guiding principles underlying the physical and psychological development of human beings from being an infant to childhood to adolescence, adulthood and older adulthood.

1. Foundations of Psychology (DSC-I)

This course provides understanding of the basic psychological processes and their application in everyday life

Semester	Discipline Specific Elective	Course Title	Credit
I	DSC-I	Foundations of Psychology	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will learn about the origin and development of Psychology as a science.
- Students will get to know of the different scientific methods used in understanding human behaviour
- Students will learn the principles underlying human perception as well as the different processes guiding the smooth functioning of learning and memory.
- Students will also learn about the different aspects of human emotions and the multiple theories of human intelligence.
- Students will further get to know of the theories associated with the different aspects of human personality

FOUNDATIONS OF PSYCHOLOGY**THEORY****CREDITS: 04****Unit 1:**

Introduction: Psychology as a science, origin and development of psychology, perspectives (cognitive, behavioural, psychoanalytic, humanistic & Socio-cultural), methods (Experimental & Quasi-Experimental).

Unit 2:

Cognitive processes: Perception, nature of perception, laws of perceptual organization, learning: conditioning, observational learning; memory-processes, information processing model, techniques for improving memory.

Unit 3:

Motivation and Emotion: Motives: biogenic and Psychogenic, Emotions: aspects of emotions, key emotions (Paul Ekman's model), Intelligence: nature & Theories (Spearman, Gardner and Sternberg).

Unit 4:

Personality: nature and theories (Allport, Freud, Roger and McCrae & Costa).

PRACTICALS**CREDITS: 02**

1. Learning
2. memory
3. personality
4. intelligence

SUGGESTED READINGS

- Wani, N. A. (2019). Introduction to Psychology. Wisdom Press New Delhi.
- Chadha, N.K. & Seth, S. (2014). The Psychological Realm: An Introduction. Pinnacle Learning, New Delhi.
- Ciccarelli, S. K & Meyer, G.E (2008). Psychology (South Asian Edition). New Delhi: Pearson
- Feldman. S. R. (2009).Essentials of understanding psychology (7th Ed.) New Delhi: Tata Mc Graw Hill.
- Glassman,W. E.(2000).Approaches to Psychology(3rd Ed.) Buckingham: Open University Press.

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2. Introduction to Social Psychology

This course enlightens students about the basic principles and processes underlying human social behavior.

Semester	Discipline Specific Elective	Course Title	Credit
II	DSC-II	Introduction to Social Psychology	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will be able understand the different perspectives in understanding social behavior
- Students will be able to learn about the process of attribution and how attitudes are formed and changed respectively
- Students will also gain knowledge about the factors that enhance interpersonal attraction, altruism, pro-social behavior and the processes (biological/psychological) underlying aggression
- Students will be able to understand the dynamics of group formation.
- Students will be enlightened about the different group processes including; cooperation and conflict.

INTRODUCTION TO SOCIAL PSYCHOLOGY

THEORY

CREDITS: 04

Unit 1:

Introduction: Brief history of social psychology (special emphasis on India), Scope of social psychology, levels of social behavior, approaches towards understanding social behavior

Unit 2:

Individual level processes: Person perception: attribution-theories, biases and errors
Attitude: formation, change and resistance to change

Unit 3:

Interpersonal processes: Interpersonal attraction, Pro-social behavior, aggression

Unit 4:

Group dynamics: Key aspects of groups, cooperation and conflict, group decisionmaking.

PRACTICAL

CREDITS: 02

Two experiments to be done on any two topics from the syllabus

SUGGESTED READINGS

- Baron, R.A., Byrne, D. & Bhardwaj, G (2010). Social Psychology (12th Ed). New Delhi: Pearson.
- Chadha, N.K. (2012). Social Psychology. MacMillan: New Delhi
- Myers, D.G. (2008). Social psychology. New Delhi: Tata McGraw-Hill.

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3. Psychological Disorders (DSC-III)

This course provides students an understanding of the different psychological disorders and their respective treatment including; pharmacotherapy and psychotherapy.

Semester	Discipline Specific Elective	Course Title	Credit
III	DSC-III	Psychological Disorders	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will have an understanding of the broad clinical classification of psychological disorders
- Students will be able to understand the theoretical perspectives underlying psychological disorders
- Students will get a broader understanding of different psychological disorders; their symptoms and etiology
- Students will also develop an understanding of the different treatment procedures including; drugs and therapy

PSYCHOLOGICAL DISORDERS**THEORY****CREDITS: 04****Unit 1:**

Basic Concepts: Definition and criteria of abnormality, classification, DiathesisStress Model.

Unit 2:

Theoretical perspectives: Biological, familial, cultural, behavioral, cognitive and psychodynamic.

Unit 3:

Clinical states: Anxiety disorders-Obsessive compulsive disorder, mood disorders-Unipolar, Bipolar; schizophrenia: Disorganized, Paranoid and Catatonic, learning disabilities.

Unit 4: Treatment of disorders: a) Biological treatment: Pharmacotherapy and Electroconvulsive therapy b) Psychological treatment: Psychoanalytic therapy, Behaviour therapy and Cognitive- Behaviour therapy.

PRACTICAL**CREDITS: 02**

Practicum: Two experiments to be done on any two topics from the syllabus

SUGGESTED READINGS:

1. Carson, R.C., Butcher, J.N., Mineka, S. & Hooley, J.M. (2008). Abnormal Psychology. New Delhi: Pearson.
2. Barlow D.H. and Durand V.M. (2005). Abnormal Psychology: An Integrated Approach (4th Ed.). Wadsworth: New York.
3. Frude, N. (1998). Understanding abnormal psychology. Oxford: Blackwell Publishers.

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4. Statistical Methods & Psychological Research (DSC-IV)

This course provides students with an understanding of different statistical methods used in analysis of data and also makes them aware of the important steps in a psychological research.

Semester	Discipline Specific Elective	Course Title	Credit
IV	DSC-IV	Statistical Methods & Psychological Research	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will have an understanding of the different scales used for measurement of data in Psychology
- Students will be informed about the different techniques used in analysis of data
- Students will get a broader understanding of important characteristics of a psychological test as well the various types of psychological tests.
- Students will also get to know about the different qualitative methods of research and which method to be used and when.

STATISTICAL METHODS & PSYCHOLOGICAL RESEARCH**THEORY****CREDITS: 04****Unit 1:**

Introduction: Scales of measurement, graphical representation of data

Unit 2:

Data analysis: Measures of central tendency: Mean, median, mode (properties and computation). Standard deviation: properties and computation. Correlation: Pearson method, properties of Normal Probability Curve (NPC).

Unit 3:

Psychological Testing: Introduction to psychological testing, characteristics of test, Reliability, Validity, Norms, standardization, types of tests,

Unit 4:

Qualitative methods: Interview, observation, case study

PRACTICALS**CREDITS:02**

Two practicum to be done: 1 psychological test + 1 practical based on unit 4.

SUGGESTED READINGS:

1. Chadha, N.K. (1991) Statistics for Behavioral and Social Sciences. Reliance Pub.House: New Delhi.
2. Garrett, H.E. & Woodworth, R.S. (1987). Statistics in Psychology and Education.Mumbai: Vakils, Feffer & Simons Pvt. Ltd.
3. Gregory, R.J. (2006). Psychological Testing: History, Principles, and Applications(4th Ed.). New Delhi: Pearson Education.
4. King, B.M. & Minium, E.W, (2007). Statistical Reasoning in the behavioral SciencesUSA: John Wiley & Sons.

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5. Developing Emotional Competence (Skill Course)

This course helps students in understanding and developing an important life skill known as; Emotional Competence that will help them in enhancing their relationships with people.

Semester	Skill Enhancement Course	Course Title	Credit
IV	SEC	Developing Emotional Competence	Theory: 02; Tutorial: 02 Total: 04

Course Specific Outcomes

1. Students will learn about the meaning and importance of Emotional Intelligence.
2. Students will also get to know about the different scales used to measure Emotional Intelligence.
3. Students will learn about the different steps in developing Emotional Intelligence

DEVELOPING EMOTIONAL COMPETENCE

THEORY

CREDITS: 02

Unit I

Meaning, Nature and Importance of Emotional Intelligence. Measurement of Emotional Intelligence

Unit 2

Developing. Emotional Intelligence, EQ Competencies: Self-Awareness, Self-Regulation, Motivation, Empathy, and Interpersonal Skills.

TUTORIALS

1. Emotional Intelligence and Human Relationships
2. Emotional intelligence in Organizations al Context.

SUGGESTED READINGS:

- Goleman, D. (1995). Emotional Intelligence. New York: Bantam Book.
- Goleman, D. (1998). Working with Emotional Intelligence. New York: Bantam Books.
- Singh, D. (2003). Emotional intelligence at work (2nded.) New Delhi: Response

Books.

- Goleman, D. (2007). Emotional Intelligence, A New Vision for Educators. Amazon Books.
- Salovey, P., Marc, A., Brackett, and Mayer, J. D., (Eds.). (2007). Emotional Intelligence: Key Readings on the Mayer & Salovey Model. National Professional Resources Inc.

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6. Organizational Psychology (DSC-I)

This course provides students an understanding of application of different psychological principles and theories in organizational setting.

Semester	Discipline Specific Elective	Course Title	Credit
V	DSC-I	Organizational Psychology	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will learn about the applicability of psychology in the success of different organizations and the opportunities and challenges therein.
- Students will be informed about the different work related attitudes including; commitment in a job setting.
- Students will get an in-depth understanding of the theories of work motivation and their applicability in organizational settings.
- Students will also get to know about the leadership theories and the various styles of leadership.

ORGANIZATIONAL PSYCHOLOGY**THEORY****CREDITS: 04**

Unit 1: Introduction: Organizational Psychology and Current status, Challenges and opportunities.

Unit 2: Work Related Attitudes: Job satisfaction; Organizational Commitment; Organizational Citizenship Behavior.

Unit 3: Work Motivation: Theories and application; Herzberg's two factor theory and Mc Clelland's need achievement theory.

Unit 4: Leadership: Contemporary perspectives on leadership (Trait Theories and Behavioral Theories); Leadership Styles (Transformational, Charismatic, Transactional, Democratic, Laissez faire).

PRACTICAL**CREDITS: 02**

Practicum: Two practicum based on the syllabus

SUGGESTED READINGS:

1. Aamodt, M. G. (2001) Industrial Organizational Psychology. India: Cengage

Learning.

2. Chadha, N.K. (2007) Organizational Behavior. Galgotia Publishers: New Delhi.
3. Greenberg, J. & Baron, R.A. (2007). Behaviour in Organizations (9th Ed.). India: Dorling Kindersley.
4. Robbins, S. P, Judge, T. A and Vohra, N (2013). Organizational Behaviour; (15 Ed.) Dorling Kindersley India.
5. Aswathappa, k. (2013). Organizational Behaviour: Text, Cases and games. (11Th Revised Ed.) Himalaya Publishing House New Delhi.
6. Luthans, F. (2009). Organizational behavior. New Delhi: McGraw Hill.
7. Muchinsky, P.(2006). Psychology applied to work: An introduction to industrial and organizational psychology. NC: Hypergraphic Press.
8. Pareek, U. (2010). Understanding organizational behaviour. Oxford: Oxford University Press.

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7. Life-Span Development (DSC-II)

This course provides students with an understanding of different stages of human development and the respective cognitive, social and emotional changes therein.

Semester	Discipline Specific Elective	Course Title	Credit
V	DSC-II	Life-span Development	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will have an understanding of the different stages of growth and development of human beings.
- Students will be informed about the theories and methods underlying the growth and development of human beings.
- Students will be taught about the physical, emotional and cognitive aspects of human development and their respective theoretical foundations.

LIFE-SPAN DEVELOPMENT**THEORY****CREDITS: 04**

Unit 1. Introduction to life-span Development: Nature, issues and theoretical perspectives (Erickson's Theory); methods and designs

Unit 2. Physical development: Patterns of growth from conception till late adulthood.

Unit 3. Cognitive development: Introduction, Piagetian, Vygotskian, and Cognitive changes in adulthood.

Unit 4. Socio-emotional development: Emotional development; Moral development (Kohlberg's Theory of Moral development); The Self; Gender and sexuality.

PRACTICAL**CREDIT: 02**

Practicum: Students have to carry out 2 practicum based on the syllabus.

SUGGESTED READINGS:

1. Berk, L. E. (2010). Child Development (9th Ed.). New Delhi: Prentice Hall.
2. Feldman, R.S. & Babu, N. (2011). Discovering the life-span. New-Delhi: Pearson.
3. Santrock, J.W. (2012). A topical approach to life-span development. New-Delhi: Tata McGraw-Hill.

8. Counseling Psychology (DSC-I)

This course provides students with an understanding of different principles of counseling applicable in different settings of life.

Semester	Discipline Specific Elective	Course Title	Credit
V	DSC-I	Counseling Psychology	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will get to know of a new profession called; counseling which they can apply in different settings
- Students will be informed about the different approaches of counseling.
- Students will be taught the different techniques of counseling
- Students will also get to know about the fields they can apply the knowledge of counseling in including; career, marriage and family settings.

COUNSELING PSYCHOLOGY**THEORY****CREDITS: 04**

Unit 1. Introduction: Meaning and goals; Counseling process and relationship. Ethical Issues in Counseling.

Unit 2. Approaches: Overview of approaches to counseling: Psychodynamic, Behavioral, Person-centered and Cognitive-behavioral

Unit 3. Techniques: Play, art, drama, music, Yoga and meditation

Unit 4. Applications: Family Counseling; Marital Counseling and Career Counseling.

PRACTICAL**CREDITS: 02**

Practicum: *Students are required to carry out 2 practicum based on the syllabus.*

SUGGESTED READINGS:

1. Gladding, S. T. (2012) Counseling: A Comprehensive Profession. (7th ed). Pearson
2. Rao, S.N. & Sahajpal, P. (2013) Counselling and Guidance. New Delhi: Tata McGraw Hill.
3. Seligman, L. & Reichenberg, L.W. (2010). Theories of Counseling and Psychotherapy: Systems, Strategies, and Skills. 3rd Ed. Indian reprint: Pearson.
4. Capuzzi, D. and Gross, D. R (2016). Counseling and Psychotherapy. Pearson Prentice Hall India.

9. Health & Well-being (DSC-II)

This course provides students with the knowledge about different models of health and well-being including; well-being enhancing lifestyle changes.

Semester	Discipline Specific Elective	Course Title	Credit
V	DSC-II	Health & Well-being	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will have an understanding of health psychology as an important branch of Psychology as well as the different models therein.
- Students will be informed about pain and stress management.
- Students will get an understanding of the meaning of life satisfaction in a broader perspective.
- Students will also get to know about the different health-enhancing behaviours.

HEALTH AND WELL-BEING**THEORY****CREDITS: 04**

Unit 1: Introduction to Health Psychology: Scope and trends: Models of Health Psychology (Biomedical and Biopsychosocial).

Unit 2: Stress and pain: causes, consequences and coping with stress, Pain Management (Acupuncture, Distraction and Guided Imagery).

Unit 3: Well-Being: Components of well-being; life satisfaction; affect.

Unit 4: Health enhancing behaviors: Implications for well-being: psychological factors: resilience, hope, optimism; exercise, safety, nutrition.

PRACTICAL**CREDIT: 02**

Practicum: Students are required to carry out 2 practical based on the syllabus.

SUGGESTED READINGS:

1. DiMatteo, M.R. and Martin, L.R.(2002). Health psychology. New Delhi: Pearson.
2. Sarafino, E.P. (2002). Health psychology: Bio psychosocial interactions (4th Ed.).NY: Wiley.

3. Snyder, C.R., & Lopez, S.J. (2007). Positive psychology : The scientific and practical explorations of human strengths. Thousand Oaks, CA: Sage.
4. Taylor, S.E. (2006). Health Psychology (6th Ed.). New York: Tata McGraw Hill.

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Course Structure and distribution of different courses with their credits for B.A**Sociology**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Introduction to Sociology	Core Course	6 credits 4(T)+2(T)
2.	II	Sociological Thought	Core Course	6 credits 4(T)+2(T)
3.	III	Indian Society: Structure and Change	Core Course	6 credits 4(T)+2(T)
4.	III	Techniques in Social Research	Skill Enhancement Course	4 credits 4(T)
5.	IV	Methodology of Social Research	Core Course	6 credits 4(T)+2(T)
6.	IV	Gender Sensitization	Skill Enhancement Course	4 credits 4(T)
7.	V	Marriage Family Descent and Kinship	Discipline Specific Elective-I	6 credits 4(T)+2(T)
8.	V	Sociology: Social Movements	Discipline Specific Elective-II	6 credits 4(T)+2(T)
9.	V	Sociology of Development	Skill Enhancement Course	4 credits 2(T)+2(T)
10.	VI	Social Stratification	Discipline Specific Elective-I	6 credits 4(T)+2(T)
11.	VI	Sociology: Religion and Society	Discipline Specific Elective-I	6 credits 4(T)+2(T)
12.	VI	Sociology of Crime	Skill Enhancement Course	4 credits 2(T)+2(T)

Course outcomes

The course is meant to introduce the learners to the discipline of sociology. Besides acquainting the students with the evolution of the discipline, it also intends to familiarize the learners with the fundamental concepts and concerns of sociology.

The course is designed to introduce the readers to the classical sociological thinkers whose contributions have laid the foundation of Sociology.

The course focuses on the evolution and composition of the Indian society, basic institutions, interpretation of caste and class in the Indian context, change in continuity besides the contemporary issues and challenges.

The course seeks to introduce the students to methodology of social research. Besides acquainting the students with fundamentals of Research, the course also intends to unravel the various complexities and philosophical underpinnings of research.

The course is intended to familiarize the students with the basic institutions of Marriage, Family and kinship in society. The course is fundamentally designed to help the students understand the importance and dynamics of the aforementioned basic institutions.

The course is designed to acquaint the learners with the concept and nature of social movements. The course seeks to familiarize the learners with major and historic social movements in India.

The course is designed to help the students to conceptualize the idea of social stratification and social mobility. The course also intends to familiarize the students with the major sociological perspectives of social movements.

The course seeks to develop among the students a fundamental understanding of the concept and evolution religion besides its impact on social behaviour. In terms of its content, the course focuses upon the primitive theories of religion and theoretical approaches in order to substantiate the student learning.

The course is designed to acquaint the learners with the concept, theories and changing scenario of crime in society in the wake of changing social order.

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1. Introduction to Sociology (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Introduction to Sociology	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- Acquaint the students with the evolution of the subject.
- Develop among the learners fundamental clarity about the subject.
- Unravel the fundamental concerns of the discipline.
- The learners are expected to be well versed with the emergence and domain of the sociology.
- The learners are also expected to carry a very good understanding of the fundamental concepts and schools of thought in sociology.

INTRODUCTION TO SOCIOLOGY**THEORY****(CREDITS 4)****Unit 1**

Nature of Sociology; a. Nature and Subject matter; b. Emergence and Development of Sociology: Enlightenment, French Revolution and Industrial Revolution c. Relationship of Sociology with other Social Sciences: Philosophy and Anthropology

Unit 2

Schools of Thought; a. Formalistic School; b. Synthetic School; c. Comparison of two schools

Unit 3

Basic Concepts; a. Society, Community, Association and Institution; b. Social Groups: Primary, Secondary and Reference Group; c. Role and Status; Norms and Values, Folkways and Mores

Unit 4

Social Processes; a. Social Change; b. Socialization; c. Social Control

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

1. a) Enlightenment; b) Industrial Revolution; c) Social Change in Kashmir Society

2. a) Society; b) French Revolution; c) Pattern of Socialization of children in Kashmir Society

SUGGESTED READINGS

- Giddens, A., 2006 (5th ed.), Sociology, London: Oxford University Press.
- Bierstedt, R., 1974, The Social Order, New York: McGraw Hill.
- Horton, P.B. and C.L. Hunt, 1985, Sociology, New York: McGraw Hill.
- Bottomore, T. B. 1972. Sociology: A guide to problems and literature. Bombay: George Allen and Unwin (India).
- Harlambos, M. 1998. Sociology: Themes and perspectives. New Delhi: Oxford University Press.
- Inkeles, Alex. 1987. What is Sociology? New Delhi: Prentice-Hall of India.
- Johnson, Harry M. 1995. Sociology: A systematic introduction. New Delhi: Allied Publishers.

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2. Sociological Thought (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Sociological Thought	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To acquaint the learners with the classical social thinkers/founding fathers of sociology.
- To lay bare the contributions of the classical sociologists.
- To develop among the learners a solid theoretical foundation.
- The learners shall possess a sound theoretical base.
- The learners are also expected to identify the contributions of the major classical thinkers of sociology and their relevance in understanding the social behaviour.

SOCIOLOGICAL THOUGHT**THEORY****(CREDITS 4)****Unit 1**

August Comte: a. Law of Three Stages; b. Positivism; c. Social Statics and Dynamics

Unit 2

Emile Durkheim: a. Social Fact; b. Suicide; c. Division of Labour

Unit 3

Karl Marx: a. Historical Materialism; b. Alienation; c. Class Struggle

Unit 4

Max Weber: a. Social Action; b. Bureaucracy; c. Protestant Ethic and the Spirit of Capitalism

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

1. a) Pattern of Suicides in Kashmir; b) Historical Materialism; c) Positivism
2. a) Religion and Economy in Kashmir b) Alienation c) Protestant Ethic and the Spirit of Capitalism

SUGGESTED READINGS

- Marx, K. and Friedrich Engels. 2002. The Communist Manifesto. Harmondsworth: Penguin.
- Calhoun, J. Craig, 2007. Classical Sociological Theory. 2nd Edition Blackwell.
- Jayapalan, N. 2001. Sociological Theories. Atlantic Publisher.
- Durkheim, E. 1958. The Rules of Sociological Method. Glencoe: Free Press.
- Jones R.A. 1986, Emile Durkheim: An Introduction to Four Major Works, London: Sage.
- Calhoun, J. Craig, 2007. Classical Sociological Theory 2nd Edition. Blackwell.
- Jayapalan, N. 2001. Sociological Theories. Atlantic Publisher.
- Abraham, Francis. 2011. Sociological Thought. New Delhi: Macmillan Publishers
- Aron, Raymond. 1967 (1982 reprint). Main currents in sociological thought (2 volumes). Harmondsworth, Middlesex: Penguin Books.
- Coser, Lewis A. 1979. Masters of sociological thought. New York: Harcourt Brace Jovanovich.

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3. Indian Society: Structure and Change (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	Indian Society: Structure and Change	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To facilitate a deeper understanding of the Indian social structure among the learners.
- To familiarize the learners with the tradition of change in continuity in India.
- To provide the necessary knowledge to the learners about the various contemporary issues and challenges faced by the Indian Society.
- The learners shall be able to carry a fundamental understanding of the structure of Indian society.
- The students are particularly expected to understand the dynamics of the basic social institutions in India and the impact of various Internal and external factors in governing the change in Indian traditional structure.

INDIAN SOCIETY: STRUCTURE AND CHANGE**THEORY****(CREDITS 4)****Unit 1**

Conceptualizing Indian Society: a. Evolution of Indian Society; b. Composition of Indian Society: Linguistic and Religious; c. Unity in Diversity

Unit 2

Indian Social Institutions: a. Family; b. Marriage and Kinship; c. Caste and Class

Unit 3

Social change in India: a. Westernization; b. Modernization; c. Sanskritization

Unit 4

Contemporary issues and challenges in Indian Society: a. Communalism; b. Corruption; c. Poverty

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

1. a. Pattern of Modernization in Indian Society; b. Convergence of Caste and Class in Indian Society; c. Diversity in Indian Society
2. a. Corruption as an issue in Indian Society; b. Pattern of Westernization in Indian Society; c. Poverty as a challenge in Indian Society

SUGGESTED READINGS

- Singer, M. and Cohen, B.S. (eds.) (1968). Structure and Change in Indian Society, Chicago: Aldine Pub. Co.
- Sharma, K.L. (2011). Indian Social Structure and Change, New Delhi: Rawat Publications.
- Pathak, Bindeshwar (eds.) (1998). Continuity and Change in Indian Society, New Delhi: Concept Publishing Company.
- Das, Veena. (2004). Handbook of Indian Sociology, New Delhi: OUP.
- Singh, Yogendra. (2012). Culture Change in India, New Delhi: Rawat Publications
- Singh, Yogendra. (2009). Social Change in India: Crisis and Resilience, New Delhi: Har-Anand Publications.
- Srinivas, M.N. (2009). Social Change in Modern India, New Delhi: Orient Black Swan.
- Vanaik, A. and Bhargava, R. (2010). Understanding Contemporary India: Critical Perspectives, New Delhi: Orient BlackSwan.
- Baviskar, B.S. and Patel, T. (2010). Understanding Indian Society: Past and Present, New Delhi: Orient BlackSwan.
- Hasnain, N. (2004). Indian Society and Culture: Continuity and Change, New Delhi: Jawahar Publishers and Distributors.
- Singh, K.S. (1992). The People of India: An Introduction, Calcutta: Seagull Books.
- Majumdar and Madan. (1966). An Introduction to Social Anthropology, Bombay: Sia Publishing House.
- Mandelbaum, D.G. (1972). Society in India, Bombay: Popular Prakashan.

4. Techniques in Social Research (Skill Enhancement Course -I)

Semester	Core Course	Course Title	Credit
III	SEC-I	Techniques in Social Research	Theory: 04 Total: 04

Course specific outcomes

- This course aims to enhance the skills of students to understand and use techniques employed by Social scientists to investigate social phenomena.
- With emphasis on formulating research design, methods of data collection, and data analysis, it will provide students with some elementary knowledge on how to conduct both, quantitative and qualitative research.
- The focus is on understanding through suggested exercises.

TECHNIQUES IN SOCIAL RESEARCH**THEORY****(CREDITS 4)****Unit 1 Questionnaire as a research technique**

- Concept and Types
- Formulation of Questionnaire
- Administration of Questionnaire
- Advantage and Disadvantages of Questionnaire

Unit 2 Interview as a research Technique

- Concept and Types
- Interview schedule
- Interview Guide
- Advantages and Disadvantages of Interview Tool

Unit 3 Observation

- Concept and Features
- Types of Observation
- Advantages and Disadvantages of Observation

Unit 4 Case Study

- Concept and Features
- Types of Case Study
- Advantages and Disadvantages

SUGGESTED READINGS

- Ahuja, Ram. 2001. Research Methods. New Delhi: Rawat Publications
- Bose, Pradip Kumar. 1995. Research Methodology. New Delhi: Indian Council of Social Science Research
- Bryman, Alan. 1988. Quality and Quantity in Social Research. London: Unwin Hyman
- Kothari, C.R. 1989. Research Methodology: Methods and Techniques, Bangalore, Wile

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5. Methodology of Social Research (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Methodology of Social Research	Theory: 04 ; Tutorial: 02 Total: 06

Course specific outcomes

- To enable the students to develop fundamental familiarity with the research.
- To familiarize them with the various tools and techniques of research.
- To enable the students to understand the essence of the research.
- Upon completing the course, the students are expected to have a good command upon the fundamentals of research.
- The students are also expected to be able to make use of basic statistical tools in analysis of the research data.

METHODOLOGY OF SOCIAL RESEARCH**THEORY****(CREDITS 4)****Unit 1**

Introduction: a. Meaning of Social Research; b. Nature and Scope of Social Research; c. Types of Social Research

Unit 2

Research Design: a. Meaning; b. Types of Research Design: Descriptive, Explanatory and Exploratory; c. Significance of Research Design

Unit 3

Sampling: a. Meaning and Significance; b. Types of Sampling: Probability and Non-Probability Sampling; c. Advantages and Disadvantages of Sampling

Unit 4

Tools and Techniques of Social Research: a. Questionnaire; b. Interview; c. Observation

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

1. a. Nature and Significance of Social Science Research in Contemporary times; b. Significance of Research Design; c. Sampling as a technique in Social Research

2. a. Formulation and administration of Interview Schedule; b. Participant observation as a method in Social Research; c. Qualitative vs Quantitative Research

SUGGESTED READINGS

- Ahuja, Ram. 2001. Research Methods. New Delhi: Rawat Publications
- Bose, Pradip Kumar. 1995. Research Methodology. New Delhi: Indian Council of Social Science Research
- Bryman, Alan. 1988. Quality and Quantity in Social Research. London: Unwin Hyman
- Kothari, C.R. 1989. Research Methodology: Methods and Techniques, Bangalore, Wiley Eastern.
- Young, P.V. 1988. Scientific Social Surveys and Research. New Delhi: Prentice Hall.

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6. Gender Sensitization (Skill Enhancement Course -II)

Semester	Core Course	Course Title	Credit
IV	SEC-II	Gender Sensitization	Theory: 04 Total: 04

Course specific outcomes

- This course will sensitize students to issues related to gender and related concepts.
- It will provide them with the tools and skills to develop and integrate a gendered perspective in work and life.

GENDER SENSITIZATION**THEORY****(CREDITS 4)****Unit 1 Introducing Sex and Gender**

- Concept of Sex and gender
- Social construction of gender

Unit 2 Basic concepts

- Gender Socialization
- Gender role
- Gender Inequality

Unit 3 Gender in Social Institution

- Family
- Caste
- Class

Unit 4 Violence against women

- Sexual Harassment
- Domestic Violence
- Right to property in Indian Constitution

SUGGESTED READINGS

- Abbott, et.al. 2005. Introduction to Sociology: A Feminist Perspective, Routledge: London
- Holmes, M. 2007. What is Gender? Sociological Approaches, Sage Publication: New Delhi
- Wharton, A.S. 2005 The Sociology of Gender: An Introduction to Theory and Research, Blackwell Publications: Oxford

- Philcher, J and Whelehan, I. 2004. Fifty Key Concepts in Gender Studies, Sage Publications: New Delhi
- Jones, E.A. and Olson, G.A. 1991. The Gender Reader, Allyn and Bacon: USA
- Ardener, E. 1975. “Belief and the Problem of Women” and “The Problem Revisited”, in S. Ardener (ed.), Perceiving Women, London: Malaby Press.
- Barrett, M. 1980. Women’s Oppression Today, London: Verso. (Chapters 1 to 4, and 6).
- Boserup, E. 1974. Women’s Role in Economic Development, New York: St. Martin’s Press.
- Douglas. M. 1970. Purity and Danger, Harmondsworth: Penguin.
- Engels, F.1972. The Origin of the Family, Private Property and, the State, London:
- Lawrence and Wishart. Hershman, P. 1977. “Virgin and Mother” in I.M. Lewis (ed.). Symbols and Sentiments: Cross-Culture Studies in Symbolism, London: Academic Press.
- Hirschon, R. 1984 “Introduction: Property, Power and Gender Relations” in R. Hirschon (ed.). Women and Property. Women as Property, Beckenham: Croom Helm.
- Jaggar, A. 1983. Feminist Politics and Human Nature, Brighton: The Harvester Press.

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7. Marriage Family Descent and Kinship (Discipline Specific Elective-I)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-I	Marriage Family Descent and Kinship	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To conceptualize the basic institutions of Marriage, Family and Kinship.
- To understand the relevance of these institutions in society.
- To understand the underlying dynamics (structural/functional changes) of these institutions in society.
- The students are expected to possess a fundamental knowledge about the structure and functioning of the basic institutions of the Marriage, Family and Kinship.
- The students are also expected to be well acquainted with the all-round changes that have taken place in the structure and functioning of these institutions over a period of time.

MARRIAGE FAMILY DESCENT AND KINSHIP**THEORY****(CREDITS 4)****Unit 1**

Basic Concepts

Descent and Lineage

Phratry, Moiety and Kindred

Clan and Tribe

Unit 2

Family

Meaning and Significance

Types of Family

Changes in the institution of Family

Unit 3

Marriage

Meaning and Significance

Types of Marriage

Changes in the institution of Marriage

Unit 4

Kinship
Types of Kin's
Kinship Usages
Kinship Terminology: Classificatory and Descriptive

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

1. a. Changing patterns of Family in Kashmir Society; b. Classificatory System of Kinship; c. Empty Nest Syndrome
2. a. Rising rate of Divorce; b. Kinship Usages in Kashmir Society; c. Late Marriage in Kashmir

SUGGESTED READINGS

- Ahuja, Ram 2011, Society in India: Concepts, Theories, and Recent Trends. Jaipur: Ruwat Publications
- BushanVidhya and Sachdev, D. R. 2012. Fundamental of sociology. New Delhi: Pearson
- Fox, Robin, 1967. Kinship and Marriage: An Anthropological Perspective. Harmondsworth: Penguin.
- Harlambos, M. 1998, Sociology: Themes and perspectives. New Delhi: Oxford University Press.
- Shah A. M. 1998 The Family in India: Critical Essay New Delhi: Orient Longman.

8. Sociology: Social Movements (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-II	Sociology: Social Movements	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- Understand the sociology of social movements.
- Develop an Understanding of the major theoretical perspectives of the social movements.
- Understand the nature and impact of social movements in India.
- Acquaint themselves with the new and emerging social in the wake of all-round social changes in India.
- The learners shall be able to understand the meaning and nature of social movements.

SOCIOLOGY: SOCIAL MOVEMENTS**THEORY****(CREDITS 4)****Unit 1 Introduction**

Social Movement: Definition and Characteristics
Types of Social Movements
Stages of Social Movement

Unit 2 Theories of Social Movements

Relative Deprivation Theory
Conflict Theory
Structural-Strain Theory

Unit 3 Social Movements in India

Tribal Movements: Santhals and Gonds
Peasant Movements: Telangana Movement and Naxalbari Movement
Social Reform Movement: Aligarh Movement and Arya Samaj

Unit 4 New Social Movements

Dalit Movements
Chipko Movement
Feminist Movement

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

1. a. Dynamics of Social Movements; b. Structural Strain Theory; c. Feminist Movement
2. a. Relative Deprivation Theory; b. Santhal Insurrection; c. Dalit Movement

SUGGESTED READINGS

- Robin Cohen & Shirin M. Rat, (2000). Global Social Movements, London. NY: Athlone Press.
- MS A. Rao (1979), Social Movements in India. New Delhi: Manohar Publications
- Paul Wilkinson (1971). Social Movements, London: Pall Mall
- Rudolf Heberle and Jaseph, Gusfield (1968). Social Movements. International Encyclopedia of Social Science. Vol. 14 New York
- Oommen, T. K. (1972). Charisma, Stability and Change: An Analysis of Bhoodan Gramdan Movement in India. New Delhi Thompson Press.
- Oommen, T. K (1977). Sociological issues in the analysis of Social Movements in Independent India: Sociological Bulletin 26(1): 14-37.
- P. N. Mukherjee. Social Movements and Social Change: Towards a Conceptual Clarification and Theoretical Frame Work. Sociological Bulletin. 26(1): 38-59.
- Ghansvam Shah (2004), Social Movement in India: A review of literature. New Delhi: Sage Publishers
- A.K. Mukhopadhaya (1977). Political Sociology. Calcutta: K. P. Bagchi and Company

9. Sociology of Development (Skill Enhancement Course -III)

Semester	Core Course	Course Title	Credit
V	SEC-III	Sociology of Development	Theory: 02; Tutorial: 02 Total: 04

Course specific outcomes

- The course intends to acquaint the learners with the fundamental concepts and impact of development in India.
- The course focuses on major perspectives of development besides unravelling the major models of development in vogue at the national and global levels.
- To conceptualize the notion of development.
- To understand the changing contours of development.
- To acquaint themselves the major perspectives of development.
- To familiarize themselves with the national and international experience of development and developmental models in vogue.

SOCIOLOGY OF DEVELOPMENT**THEORY****(CREDITS 2)****Unit 1 Introduction**

- Concept of Development
- Changing conception of Development: Social Development, Human Development and Sustainable Development

Unit 2 Models of Development

- Capitalist
- Socialist
- Gandhian

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

- Participatory Research
- Report Writing

SUGGESTED READINGS

- Appadurai, Arjun 1997, Modernity at Large: Cultural Dimensions of Globalization, New Delhi: GUP.
- Amin, Samir 1979. Unequal Development. New Delhi: OUP
- Drèze, Jean and Amartya Sen 1996. India: Economic Development and Social Opportunity. New Delhi: OUP.
- Harrison, D. 1989. The Sociology of Modernization and Development. New Delhi: Sage.
- Haq, Mahbub ul.199T Reflections on Human Development. New Delhi: OUP.
- UNDP. 1997. Human Development Report. New York: OUP

Govt. Model Degree College Shopian

10. Social Stratification (Discipline Specific Elective-I)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-I	Social Stratification	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To understand the fundamental aspects of social stratification and social mobility.
- To understand the determinants of social stratification and social mobility in India.
- To understand the impact of the social stratification and social mobility on the overall functioning of the society.
- Upon completing the course, the students are expected to be well familiar with the concept, types and impact of social stratification and social mobility.
- The students shall be particularly expected to have a deep understanding of the factors leading to and also impeding the social mobility in India.

SOCIAL STRATIFICATION**THEORY****(CREDITS 4)****Unit 1 Social Stratification**

Concept and Nature

Forms of Stratification

Ajlafization and Ashrafization

Unit 2 Perspectives on Social Stratification

Functionalist Perspective

Conflict Perspective

Weberian Perspective

Unit 3 Social Stratification and Issues

Social Stratification and Social Change

Caste and Class Stratification

Caste and Politics

Unit 4 Social Mobility in Indian Society

Modernization

Sanskritization

Islamization

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

1. a. Social Stratification in Kashmir Society; b. Social Stratification and Social Change; c. Social Mobility
2. a. Islamization in India; b. Caste System in Kashmir; c. Davis-Moore Thesis of Social Stratification

SUGGESTED READINGS

- Bataille, A. Inequality among Men. Delhi, Oxford University Press, 1977.
- Bataille, A. Sociology Inequality Penguin Books, 1969.
- Bataille, A. Caste Old and New Essay in Social Structure.
- Bataille, A. the Antimonies of Society Delhi: Oxford University Press, 2002.
- Bataille, A. Structure and Social Stratification. Oxford University Press, 1983.
- Bataille, A., Studies in Agrarian Social Structure. Oxford University Press, 1983.
- Haralanihos, M., Sociology Themes and Perspective. Oxford University Press, 1992.
- Bendix, R. and Lipset S. M. Class Status and Power. 2nd (ed) London. Routledge, 1974.
- Tumin, M. Readings on Stratification Prentice Hall, 1978.
- Owen Carol; Social Stratification. Routledge and Kagan Paul Ltd. London.
- Singh Vogendra; Social Stratification and Change in India. New Delhi. Manohar Publication, 1977.
- Bottomore, T. B. Elite and Society, Penguin Books. Britain, 1968.
- Srinivas, M.N. Caste in Modern Indian & Other Essays, New Delhi. Asia Publishing House, 1964.
- Snnivas, M.N. Caste: Its Twentieth Century Avatar. New Delhi, Viking, 1996.
- Gupta Dipankas; Social Stratification New Delhi. Oxford University Press, 1991.
- Sharma, K. L.: Social Stratification in India. New Delhi. Manohar. 1986
- Lisenstadt, S. N. Social Differentiation and Stratification, London. Scott. Foresman and Co. 1971.

11. Sociology: Religion and Society (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-II	Sociology: Religion and Society	Theory: 04; Tutorial: 02 Total: 06

Course specific outcomes

- To enable the students to understand the social connotations of religion.
- To familiarize the students with the various origin theories of religion besides the major sociological approaches to the study of religion.
- To enable the students to analyze the impact of religion on the social behaviour.
- The students are expected to possess a very good conceptual clarity about the religion, its evolution and impact on social behaviour.
- The students are also expected to be well acquainted with the fundamental sociological approaches to the study of religion.

SOCIOLOGY: RELIGION AND SOCIETY**THEORY****(CREDITS 4)****Unit 1 Introduction**

Nature, Significance and Evolution
 Magic and Science
 Sacred and Profane

Unit 2 Forms of Religion

Animism
 Naturism
 Totemism

Unit 3 Approaches to the Study of Religion

Emile Durkheim
 Karl Marx
 Bryan Wilson

Unit 4 Religion and Emerging Issues

Religious Diversity
 Religion and Communalism
 Secularism

TUTORIAL**(CREDITS 2)**

Project work/Presentation/Debates/Term paper

1. a. Religious Diversity in India; b. Secularism; c. Religion is the opiate of the masses?
2. a. Religious Diversity and the tradition of tolerance in Kashmir; b. Changes in the institution of Religion; c. Secularization

SUGGESTED READINGS

- D'Souza. L. 2005. The Sociology of Religion: A Historical Review. New Delhi: Rawat Publications.
- Harlambos. M. Sociology: Themes and Perspectives. New Delhi: Oxford University Press
- Roberts, Keith. A. 1984. Religion in Sociological Perspective. New York: Dorsey Press
- Turner. Bryan S. 1991. (2nd edition). Religion and Social Theory. London: Sage.
- Turner, Bryan S. 2010. (ed). The New Blackwell Companion to "The Sociology of Religion." UK: Wiley-Blackwell.
- Hamilton. Malcolm. 2001. (2nd edition). The Sociology of Religion: Theoretical and Comparative Perspectives. London and New York: Routledge.
- Diiion. M. 2003. (2nd edition), Handbook of the Sociology of Religion. Cambridge. UK: Cambridge University Press.
- Furseth, I. And Resptad. P. 2006. An introduction to the Sociology of Religion: Classical and Contemporary Perspectives. England: Ashgate Publishing Company.
- Davie, G. 2007. The Sociology of Religion. New Delhi: Sage Publications,
- Baird, Robert. D. (Ed.). 1995 (3rd edition). Religion in Modern India. Delhi: Manohar
- Madam T.N. (Ed.). 1992, Religion in India. New Delhi: Oxford University Press.
- Olson, Carl. 2011. Religious Studies: The Key Concepts. London: Routledge.
- Robinson, Rawena. 2004. Sociology of Religion in Indio. Delhi; Oxford University Press

12. Sociology of Development (Skill Enhancement Course -IV)

Semester	Core Course	Course Title	Credit
VI	SEC-IV	Sociology of Crime	Theory: 02; Tutorial: 02 Total: 04

Course specific outcomes

- To acquaint them with the concept of crime and its changing profile.
- To acquaint them with the major theoretical perspectives in the sociology of crime.
- To familiarize the learners with the criminal justice system dealing with the punishment and rehabilitation of the criminals.
- To prepare the learners for pursuing high studies and career in law.
- The learners are expected to be well versed with the concept, sociology of crime.
- The learners are also expected to possess a deep understanding of the various theoretical perspectives on crime.

SOCIOLOGY OF CRIME**THEORY****(CREDITS 2)****Unit 1 Introduction**

- Types of Crime
- Deviance and Society
- Nature and Concept of Crime

Unit 2 Theoretical Perspectives

- Biological
- Psychological
- Sociological

TUTORIAL**(CREDITS 2)**

- Fieldwork: Emerging Issues
- Report Writing

SUGGESTED READINGS

- Teeters, Negley and Hary Elnar Barnes, (1959). New Horizons in Criminology. New Delhi, Prentice Hall of India.
- Sutherland, Edwin. H. and Donald R. Cressey (1968). Principles of Criminology'. Bombay:
Times of India Press.
- Parsonage, William (1979). Perspectives on Criminology. London: Sage Publications.
- O. Brien M and Yar, M (2008). Criminology: the key concept. New York: Routledge.
- Ahuja, R. (2005). Criminology. Jaipur: Rawat Publications.
- Williams, K.S. (2001). Textbook on Criminology. New York: Oxford University Press.
- Walsh. A. and Ellis, L. (2007). Criminology: An Interdisciplinary Approach. New Delhi: Sage.
- Seigel L.J. (2010). Criminology: Theories, Patterns and Typologies (10th Ed.) USA: Cengage
- Merton, R.K. 1972. Social Theory and Social Structure. New Delhi: Emerind Publishing Co.

Govt. Model Degree College Shripiari

Course Structure and distribution of different courses with their credits for B.A. Urdu

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Urdu Nazm aur Ghazal اردو نظم اور غزل	Core Course	6 credits 4(T)+2(T)
2.	II	The Classical genres of Urdu poetry کلاسیکی اصنافِ شعر	Core Course	6 credits 4(T)+2(T)
3.	III	Urdu ki Afsanvi Nasr اردو کی افسانوی نثر	Core Course	6 credits 4(T)+2(T)
4.	III	Basics of Urdu Language اردو زبان کے بنیادی قواعد	MIL	6 credits 4(T)+2(T)
5.	IV	Urdu ki Gair Afsanvi Nasr: اردو کی غیر افسانوی نثر	Core Course	6 credits 4(T)+2(T)
6.	IV	Basics of Urdu Literature اردو ادب کی بنیادی اصناف	MIL	6 credits 4(T)+2(T)
7.	IV	Learning Skills of Afsana in Urdu اردو میں افسانہ نگاری کا فن	Skill Enhancement Course	6 credits 4(T)+2(T)
8.	V	Urdu literature: literary history and criticism ادبی تاریخ و تنقید	Discipline Specific Elective	6 credits 4(T)+2(T)
9.	V	Urdu language and literature in Jammu and Kashmir جموں و کشمیر میں اردو زبان و ادب	Core Course	6 credits 4(T)+2(T)
10	V	Study of Urdu classical Ghazal اردو کی کلاسیکی غزل	General Elective	6 credits 4(T)+2(T)
11.	V	Learning Skills of Drama in Urdu اردو میں ڈراما کا فن	Skill Enhancement Course	6 credits 4(T)+2(T)
12.	VI	Mirza Ghalib ka Khasoosi Mutalah مرزا غالب کا خصوصی مطالعہ	Core Course	6 credits 4(T)+2(T)
13.	VI	Allama Iqbal ka Khasoosi Mutalah علامہ اقبال کا خصوصی مطالعہ	Core Course	6 credits 4(T)+2(T)
14.	VI	Study of prose and poetic form in Urdu literature اردو کی نثری اور شعری ہیئتوں کا مطالعہ	Generic Elective	6 credits 4(T)+2(T)
15.	VI	Learning Skills of Media Writings in Urdu	Skill Enhancement Course	6 credits 4(T)+2(T)

		اردو زبان میں صحافتی تحریر لکھنے کا طریقہ کار		
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Course Outcomes:

Urdu language stands constitutionally an official language under Schedule 8 of constitution of Jammu & Kashmir since 1899. It is the medium of instruction and lingua franca of the state. Due to this official status, it has been taught from primary to university level throughout the state; it is the medium of electronic and print media in the state. Since department of Urdu emerges as the key department in the faculty of arts, a huge number of students prefer to opt Urdu subject as the core subject with the motivation that Urdu subject has better prospectus in terms of job & employment . Being the official language of the state most of the record in the offices like revenue, police, judiciary etc. is recorded in this language. Urdu has the vast scope of contents. Due to new UGC MIL Scheme Urdu subject has become most favored subject among students at UG Level.

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1. Urdu Nazm aur Ghazal (Core Course-I):

Semester	Core Course	Course Title	Credits
1st	URL120c	Urdu Nazm aur Ghazal اردو نظم اور غزل	Theory: 04 ; Tutorial: 02 Total: 06

Course Specific outcomes:

- After the thorough study of this paper, it is expected from the students that they may identify the genres of Ghazal and Nazm and could comprehend the basic poetics.
- This specific paper provides the knowledge about the basic and cardinal genres of the Urdu literature.
- Gives the brief description about the Ghazal and Nazm.
- The paper designed for the basic introduction of the main poets.
- Below mentioned poets are focused in this paper.
- Walid of Deccan
- Mir Taqi Mir,
- Mirza Asad Allah Galib,
- Fiaz Ahmad Faiz
- Nasir Kazmi
- Sheharyar
- Hamdi Kashmiri
- Parveen Shakir
- Nazir Akbar Aabadi
- Altaf Hussain Hali
- Josh Malih Aabadi
- Hakim Manzoor

URDU NAZM AUR GHAZAL**THEORY****(CREDITS: 06)****یونٹ اول:**

- غزل کی صنفی شناخت
- اردو غزل کا ارتقاء
- ولی دکنی کی غزل گوئی
- تدریس متن :

- 1- دل کوں لگتی ہے دل ربا کی ادا
- 2- روح بخشی ہے کام تجھ لب کا
- میر تقی میر کی غزل گوئی
- تدریس متن:
- 1- ہمارے آگے ترا جب کسو نے نام لیا
- 2- پتا پتا بوٹا بوٹا حال ہمارا جانے ہے
- غالب کی غزل گوئی
- تدریس متن:
- 1 ذکر اس پری وش کا اور پھر بیان اپنا
- 2- نہ گلِ نغمہ ہوں نہ پردہ ساز
- حیدر علی آتش کی غزل گوئی
- تدریس متن:
- 1- حسن پری اک جلوہ مستانہ ہے اس کا
- 2- یہ آرزو تھی تجھے گل کے روبرو کرتے
- یونٹ دوئم :
- جدید اردو غزل کی خصوصیات
- فیض احمد فیض کی غزل گوئی
- تدریس متن:
- 1- جمے کی کیسے بساطِ یاراں کہ شیشہ و جام بچھ گئے ہیں
- 2- تم آئے ہو نہ شبِ انتظار گزری ہے
- ناصر کاظمی کی غزل گوئی
- تدریس متن:
- 1- کچھ یادگار شہر ستم گر ہی لے چلیں
- 2- سفرِ منزلِ شبِ یاد نہیں
- شہریار کی غزل گوئی
- تدریس متن:
- 1- ہجومِ درد ملا زندگی عذاب ہوئی
- 2- بڑھا دے مری وحشتیں مرا گریباں چاک کر دے
- حامدی کاشمیری کی غزل گوئی
- تدریس متن:
- 1- طوالتِ شب کی شاید کم بہت ہے

- 2- رت بہار جمال کی آئی
- پروین شاکر کی غزل گوئی
- تدریس متن:
- 1- کیسا ثبات ہے کہ روانی بھی ساتھ ہے
- 2- بادباں کھانے سے پہلے کا اشارہ دیکھنا
- یونٹ سوئم
- نظم کی صنفی شناخت
- نظم کی مختلف جہتیں
- اردو نظم کا ارتقا
- نظیر اکبر آبادی کی نظم نگاری
- تدریس متن:
- شہر آشوب
- حالی کی نظم نگاری
- تدریس متن:
- نشاطِ امید
- یونٹ چہارم
- اقبال کی نظم نگاری
- تدریس متن:
- جبریل و ابلیس
- جوش ملیح آبادی کی نظم نگاری
- تدریس متن:
- بدلی کا چاند
- حکیم منظور کی نظم نگاری
- تدریس متن:
- بزدلی ایک عذاب ہے
- امدادی کتابیں:
- اقبال: کلیاتِ اقبال
- پروین شاکر: کلیاتِ پروین شاکر
- حالی: کلیاتِ حالی
- حامدی کاشمیری: نایافت
- حیدر علی آتش: کلیاتِ آتش
- شہریار: کلیاتِ شہریار

- ظ انصاری: اردو غزل کی تدریس
- فیض احمد فیض: نسخہ ہائے وفا
- مرزا اسد اللہ خان غالب: دیوان غالب
- مسعود سراج: تدریس اصنافِ ادب
- میر تقی میر: دیوان میر
- ناصر کاظمی: کلیاتِ ناصر
- نظر اکبر آبادی: کلیاتِ نظیر
- ولی دکنی: دیوان ولی

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2. The Classical genres of Urdu poetry (Core Course-II):

Semester	Core Course	Course Title	Credits
2 nd	DSE (Urdu literature)	The Classical genres of Urdu poetry کلاسیکی اصنافِ شعر	Theory: 04 Tutorial: 02 Total: 06

Course Specific outcomes:

- The classical genres of Urdu poetry aim to acquaint students with this rich heritage.
- The genres help to understand us the rich culture, whether it may be represented in language and literature or language and literature represented it.
- It helps students to understand the artistic treatment of words and classical utilization of language.
- It gives us the know how about the main genres of Mathnavi, Qasida, Marthiya and Rubayi.
- The basic of poetics like, simile, metaphor, paradoxes are used in a fantastic way.
- It is expected from the paper students will discuss the different classical genres.

THE CLASSICAL GENRES OF URDU POETRY

THEORY

(CREDITS: 06)

- یونٹ اول:
- مثنوی کی صنفی شناخت
- اردو مثنوی کا آغاز و ارتقا
- تدریس متن:
- میر حسن کی مثنوی 'سحرالبیان' (کا انتخاب)
- یونٹ دوئم:
- مرثیہ کی صنفی شناخت
- اردو مرثیہ کا آغاز و ارتقا
- تدریس متن:
- میر انیس کا مرثیہ 'فرزندِ پیمبر کا مدینے سے سفر ہے۔'
- یونٹ سوئم:
- قصیدہ کی صنفی شناخت
- اردو قصیدے کا آغاز و ارتقا

- تدریس متن:
- سودا کا قصیدہ ' اٹھ گیا بہمن وے دے کا چمنستان سے عمل'
- **یونٹ چہارم:**
- رباعی کی صنفی شناخت
- اردو میں رباعی گوئی کی روایت
- انیس کی رباعی گوئی
- تدریس متن: نصابی کتاب میں شامل سات رباعیاں
- حالی کی رباعی گوئی
- تدریس متن: نصابی کتاب میں شامل سات رباعیاں
- امجد کی رباعی گوئی
- تدریس متن: نصابی کتاب میں شامل سات رباعیاں
- **امدادی کتب :**
- ام ہانی اشرف : اردو میں قصیدہ نگاری
- امجد حیدر آبادی : کلیاتِ امجد
- حالی: کلیاتِ حالی
- علی جواد زیدی: رباعیات انیس
- مسیح الزمان : اردو مرثیے کا آغاز و ارتقا
- منصور احمد منصور، مشتاق حیدر : گلشنِ ادب (حصہ اول)

3. Urdu ki Afsanvi Nasr (Core Course-III):

Semester	Core Course	Course Title	Credits
3 rd	URL320C	Urdu ki Afsanvi Nasr اردو کی افسانوی نثر	Theory, 4 Tutorial: 2

Course Specific outcomes:

- Fiction writings of Urdu aim to provide the basic introduction of the four genres of Dastan, Novel, Afsana and Drama.
- The paper will discuss their development and timely changes.
- Student, after studying it will come to know about their unique features.
- In every part students would go through the text reading and applied part, with the specific contents.
- The thorough study would be specified to:
- Range Sayar by Aazad
- EkChadarMeli Si, by Rajindar Singh Bedi
- Kafan by PremChend
- KhanaJangi by M. Mujeeb

URDU KI AFSANVI NASR

THEORY

(CREDITS: 06)

- یونٹ اول:
- داستان کی صنفی شناخت
- اردو میں داستان کی اہمیت
- تدریس متن:
- 'رنگے سیار' انتخاب از 'افسانہ آزاد'
- یونٹ دوئم:
- ناول کی صنفی شناخت
- اردو میں ناول نگاری کا آغاز و ارتقا
- تدریس متن:
- ناول 'ایک چادری میلی سی' از راجندر سنگھ بیدی
- یونٹ سوئم :
- افسانے کی صنفی شناخت

- اردو افسانے کا آغاز و ارتقا
- تدریس متن:
- افسانہ 'کفن' از پریم چند، 'کالو بہنگی' از کرشن چندر
- **یونٹ چہارم:**
- ڈراما کی صنفی شناخت
- ڈراما کی قسمیں
- اردو ڈرامے کا آغاز و ارتقا
- تدریس متن:
- ڈراما 'خانہ جنگی' از محمد مجیب
- **امدادی کتب:**
- اطہر پرویز: کرشن چندر اور ان کے افسانے
- پریم چند: کلیات پریم چند
- راجندر سنگھ بیدی: ایک چادر میلی سی
- رجب علی بیگ سرور: افسانہ آزاد
- عبداللہ امتیاز احمد: دلیل
- گیان چند جین: اردو کی نثری داستانیں
- یوسف سرمست: بیسویں صدی میں اردو ناول

4. Basics of Urdu Language (MIL/ Compulsory for B. A B. com)

Semester	MIL/ Compulsory for B. A B. com	Course Title	Credits
3 rd	URM216	Basics of Urdu Language اردو زبان کے بنیادی قواعد	Theory,6 ;Tutorial 0 Total: 6

Course Specific outcomes:

- MIL Modern Indian Languages is a policy designed by the UGC to promote the regional languages.
- Aim of this course is facilitate the students, subject and place of their choice.
- The language was almost considered a first obstacle to visiting a place. To curb this obstacle this scheme was introduce.
- Urdu being a modern language and official language of Jammu and Kashmir is considered the favorite subject in MIL combination.
- The paper hence is focused on the basics of language.
- 1st part i.e. 3rd sem. will solely focused on grammar.
- Urdu script, alphabet, rules for sentence making, punctuation marks, singular, plural, masculine, feminine will be deliberated in detail.
- Some samples will be produced in the form of essay writing.

BASICS OF URDU LANGUAGE

THEORY

(CREDITS: 06)

- اردو رسم الخط
- جملہ
- رموز اوقاف
- اقسام جنس (تذکیر و تانیث)
- تعداد (واحد اور جمع بنانے کے قاعدے)
- خطوط نویسی
- مضمون نگاری
- ان دیکھے اقتباسات

➤ کتابیں :

➤ مولوی عبد الحق اردو صرف و نحو:

- رشید حسن خان اردو املا :
- عارفہ بشری ، مشتاق حیدر ، شاہ فیصل ایم آئی ایل اردو ، برائے بی اے ، بی کام
- محمد امتیاز احمد ، زاہد ظفر مطالعہ اردو: مؤلفین

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5. Urdu ki Gair Afsanvi Nasr (Core Course):

Semester	Core Course	Course Title	Credits
4 th	URL120c:	Urdu ki Gair Afsanvi Nasr: اردو کی غیر افسانوی نثر	Theory,6 Tutorial, 2 Total: 6

Course Specific outcomes:

- Non-fictional prose of Urdu aim to give a thorough understanding of these genres.
- It will help the students to understand the nature and the difference between the fiction and nonfiction.
- The paper will deliberate upon the basic genres of non-fiction in a manner, they can identify them separately.
- The main contents will deal to Essay, Light Essay, Sketches, Satire and humor.
- Applied part will cover:
- Gulshan-e-UmeedkiBahar by M. H. Azad
- Qaht-ar-Rijal by Mukhtar Masood
- Jhanager by K H Nizami
- Umeed Ki Khushi, S S A Khan
- Sketch of Chriag Hasan Hasrat by A. Hashar
- Sketch of SajadZaheer by Mujtaba Hussain
- Galib JadeedShourakiMajlis main by Kanayalal Kapoor
- Mureed pork a Peer by P. Bukhari

URDU KI GAIR AFSANVI NASR**THEORY****(CREDITS: 06)**

- یونٹ اول:
- مضمون نگاری کا فن
- اردو میں مضمون نگاری کی روایت
- تدریس متن:
- 'گلشن امید کی بہار' محمد حسین آزاد
- 'قحط الرجال' مختار مسعود
- یونٹ دوئم:
- انشائیہ کا فن
- اردو میں انشائیہ نگاری

- تدریس متن:
- 'جھینگر' خواجہ حسن نظامی
- 'امید کی خوشی' سرسید
- **یونٹ سوئم :**
- خاکہ نگاری کا فن
- اردو میں خاکہ نگاری کی روایت
- تدریس متن:
- 'چراغ حسن حسرت' از آغا حشر
- 'سجادظہیر' از مجتبیٰ حسین
- **یونٹ چہارم:**
- طنز و مزاح نگاری
- اردو میں طنز و مزاح نگاری کی روایت
- **تدریس متن:**
- 'غالب جدید شعرا کی مجلس میں' کنہیا لال کپور
- 'مرید پور کا پیر' پطرس بخاری
- **امدادی کتب :**
- پطرس بخاری: مضامین پطرس
- خواجہ حسن نظامی: مجموعہ مضامین
- رشید احمد صدیقی: مضامین رشید
- سرسید احمد خان: مضامین سرسید
- مالک رام: رشید احمد صدیقی
- محمد حسنین: انشائیہ اور انشائیے
- محمد حسین آزاد: نیرنگ خیال
- وزیر آغا: انشائیہ کیا ہے؟
- وزیر آغا: انشائیے کے خدو خال

6. Basics of Urdu Literature (MIL/ Compulsory for B. A B. com):

Semester	MIL/ Compulsory for B. A B. com	Course Title	Credits
4 th	URM218	Basics of Urdu Literature اردو ادب کی بنیادی اصناف	Theory, 6 Tutorial: 0 Total: 6

Course Specific outcomes:

- The second part, i.e. 4th sem. will move further keeping in view the first level gained by the student.
- Students, in this paper will come to know about origin and development of the language.
- They will be acquainted with the basic genres of Urdu.
- Different schools of language and literature will be on focus as well.

BASICS OF URDU LITERATURE**THEORY****(CREDITS: 06)**

- یونٹ اول:
- اردو زبان کا آغاز و ارتقاء - چند اہم نظریات
- جموں و کشمیر میں اردو کا آغاز و ارتقاء
- یونٹ دوئم:
- اردو کی چند اہم نثری اصناف کا تعارف
- داستان
- ناول
- افسانہ
- ڈراما
- انشائیہ
- یونٹ سوئم :
- اردو کی چند اہم شعری اصناف کا تعارف
- غزل
- نظم
- مرثیہ
- مثنوی
- قصیدہ
- یونٹ چہارم:

- اردو ادب کے دو اہم دبستان
- دبستان دہلی - ایک تعارف
- دبستان لکھنؤ - ایک تعارف
- **امدادی کتب :**
- شمیم احمد: اصنافِ ادب اور شعری بیٹیں
- عبداللہ امتیاز احمد / زاہد ظفر: مطالعہ اردو
- عبدا لقادر سروری: کشمیر میں اردو
- فرمان فتح پوری: اردو شاعری کا فنی ارتقا
- فرمان فتح پوری: اردو نثر کا فنی ارتقا
- مسعود سراج / اومکار کول: تدریس اصنافِ ادب

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7. Learning Skills of Translation in Urdu (Skill Enhancement Course)

Semester	Core Course	Course Title	Credits
4 th	URL120c	Learning Skills of Afsana in Urdu اردو میں افسانہ نگاری کا فن	Theory:04; Tutorial:02 2 Total:06

Course Specific outcomes:

- Non-fictional prose of Urdu aim to give a thorough understanding of these genres.
- It will help the students to understand the nature and the difference between the fiction and nonfiction.
- The paper will deliberate upon the basic genres of non-fiction in a manner, they can identify them separately.
- The main contents will deal to Essay, Light Essay, Sketches, Satire and humor.
- Applied part will cover:
- Gulshan-e-Umeed ki Bahar by M H Azad
- Qaht-ar-Rijal by Mukhtar Masood
- Jhanager by K H Nizami
- Umeed Ki Khushi, S S A Khan
- Sketch of Chriag Hasan Hasrat by A. Hashar
- Sketch of Sajad Zaheer by Mujtaba Hussain
- Galib Jadeed Shouraki Majlis main by Kanayalal Kapoor
- Mureed pork a Peer by P. Bukhari

LEARNING SKILLS OF AFSANA IN URDU

THEORY

(CREDITS: 06)

- یونٹ اول:
- افسانے کا فن اجزائے ترکیبی
- یونٹ دوئم:
- اردو میں افسانہ نگاری کی رویت
- عملی کام (Practical Work)
- یونٹ سوئم :
- پریم چند اور بیدی کے حالاتِ زندگی پر سوانحی افسانہ لکھیے
- یونٹ چہارم:
- دیے گئے اشاروں کی مدد سے ایک افسانہ ترتیب دیجیے

- امدادی کتب :
- بیدی : کلیات
- پریم چند: کلیات
- فرمان فتح پوری: اردو نثر کا فنی ارتقا
- گوپی چند نارنگ: اردو افسانہ روایت اور مسائل
- وقار عظیم: فن افسانہ نگاری
- وقار عظیم: نیا افسانہ

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8. Urdu language and literature in Jammu and Kashmir (Optional II):

Semester	Core Course	Course Title	Credits
5 th	UR520DA	Urdu language and literature in Jammu and Kashmir جموں و کشمیر میں اردو زبان و ادب	Theory:04 ; Tutorial: 02 Total: 06

Course Specific outcomes:

- This paper has two options and we have opted for the II option.
- Urdu language and literature in J&K
- This paper aims to provide the development of Urdu as a language in J&K
- It will discuss the timely development of literature as well.
- It will deliberate upon the different genres of Urdu.
- Urdu journalism and Mass Media has a vibrant chapter of this language. Hence, it will discuss its unique features.
- It will focus on the issue of Urdu as an official language.
- It will show the regional features and characteristics of the language, which is called *Kashmiri Urdu*.
- Assigned Work:
- Students are asked to write a paper on the current position and status of Urdu.
- The text reading of any of short stories.
- A debate on any of the Novels.
- To write a character sketch and poetic characters of any of poets from J&K.

URDU LANGUAGE AND LITERATURE IN JAMMU AND KASHMIR**THEORY****(CREDITS: 06)****یونٹ اول:**

- ریاست جموں و کشمیر میں اردو زبان کا آغاز و ارتقا
- ریاست جموں و کشمیر میں اردو کی سرکاری حیثیت
- تدریس متن:

یونٹ دوم:

- ریاست جموں و کشمیر میں اردو ناول اور افسانہ
- ریاست جموں و کشمیر میں اردو غیر افسانوی نثر
- تدریس متن:

- یونٹ سوئم :
- ریاست جموں و کشمیر میں اردو صحافت
- فوق، شمیم احمد شمیم اور خواجہ ثنا اللہ بحیثیت صحافی
- یونٹ چہارم:
- ریاست جموں و کشمیر میں اردو شاعری
- میر غلام رسول نازکی، رسا جاودانی، حامدی کاشمیری، حکیم منظور اور فرید پربتئی
- مفوضہ کام
- اردو کی موجودہ صورتِ حال سے متعلق اپنے خیالات پر مبنی مضمون لکھیے۔
- کسی اہم ناول یا افسانے کو پڑھ کر اس پر رائے دیں اور اس کی قرات کریں۔
- جموں و کشمیر سے متعلق کسی ایک شاعر کے سوانحی کوائف اور شعری امتیازات پر مضمون لکھیے۔
- امدادی کتب :
- برج پریمی : کشمیر میں اردو
- حامدی کاشمیری : جموں و کشمیر
- حکیم منظور: کلیات
- رسا جاودانی: کلیات
- عبد القادر سروری: کشمیر میں اردو
- فرید پربتئی: ہجوم آئینہ (کلیات)
- منشی محمد فوق: تاریخ اقوام کشمیر
- نازکی : کلیات

9. Study of Urdu classical Ghazal (Generic Elective):

Semester	Core Course	Course Title	Credits
5 th	URL516	Study of Urdu classical Ghazal اردو کی کلاسیکی غزل	Theory: 04; Tutorial: 2 Total: 6

Course Specific outcomes:

- Generic Elective is an open choice for the all students who are interested to study their subject of choice other than the core subjects.
- It is therefore, the paper opted for this course is of every ones interest i.e. Gazal.
- It will mainly focus on the classical Poets, and the sample of two Gazals.
- Wali
- Mir
- Galib
- Momin
- Dag
- Students would be asked for text reading.

STUDY OF URDU CLASSICAL GHAZAL**THEORY****(CREDITS: 06)**

- یونٹ اول:
- غزل کا فن
- اردو میں غزل کا ارتقاء
- یونٹ دوئم:
- ولی دکنی کی شاعری کی خصوصیات
- تدریس متن :
- 1-شغل بہتر ہے عشق بازی کا
- 2-جسے عشق کا تیر کاری لگے
- میر تقی میر کی غزل کے بنیادی عناصر
- تدریس متن:
- 1- ہمارے آگے ترا جب کسو نے نام لیا
- 2- پتا پتا بوٹا بوٹا حال ہمارا جانے ہے
- یونٹ سوئم:
- خواجہ میر درد کی غزل گوئی کی خصوصیات:

- 1- تہمت چند اپنے ذمے دھر چلے
- 2- ہم تجھ سے کس ہوس کی فلک جستجو کریں
- **غالب کی غزل گوئی کے امتیازات**
- تدریس متن:
- 1- مدت ہوئی ہے یار کو مہماں کئے ہوئے
- 2- کسی کو دے کے دل کوئی نوا سنج فغاں
- **یونٹ چہارم:**
- **مومن کی غزل گوئی کی خصوصیات**
- تدریس متن:
- 1- ٹھانی تھی دل میں اب نہ ملیں گے
- 2- ناوک انداز جدھر دیدہ جاناں
- **یونٹ دوئم :**
- **داغ دہلوی کی غزل گوئی کی خصوصیات**
- **تدریس متن:**
- 1- غضب کیا ترے وعدے پہ اعتبار کیا
- 2- سبق ایسا پڑھا دیا تونے
- **معاون کتابیں :**
- اختر انصاری: غزل کی سرگزشت
- جمیل جالبی: تاریخ ادبِ اردو
- عبادت بریلوی: غزل اور مطالعہ غزل
- یوسف حسین خان: اردو غزل

10. Learning Skills of Drama in Urdu (Skill Enhancement Course)

Semester	Core Course	Course Title	Credits
5 th	UR517S	Learning Skills of Drama in Urdu اردو میں ڈرامے کا فن	Theory:02; Tutorial: 2 Total: 04

Course Specific outcomes:

- ‘Learning skills of Drama in Urdu’ is a skill paper about the techniques and presentation of filming a drama in different platforms.
- They may be Radio, TV, Stage or other relevant.
- The paper aims to acquaint students about these platforms and the use of techniques.
- First, they would come to know about the various parts of drama, which were used since the earlier times of and Aristotle described them in his *poetics*.
- They will be familiar with the development of drama also.
- In its application they will be asked to prepare a screen play from any of the dramas below:
- AmanatLakhnawi
- Imtiyaz Ali Taj
- AagaHashar Kashmiri
- M. Mujeeb.
- And further they have to stage a drama in any of the social issues.

LEARNING SKILLS OF DRAMA IN URDU**THEORY****(CREDITS: 06)**

- یونٹ اول:
- ڈرامے کے اجزائے ترکیبی
- یونٹ دوئم:
- عملی کام (Practical Work)
- یونٹ سوئم :
- درج ذیل ڈرامہ نگاروں کے کسی ایک ڈرامے کے ایک ایکٹ کا اسکرین پلے بنائے
- (امانت لکھنوی، امتیاز علی تاج، آغا حشر کاشمیری، پروفیسر مجیب)
- یونٹ چہارم:
- کسی خاص سماجی موضوع پر ایک مختصر ڈراما لکھیے

- **امدادی کتب :**
- اسلم قریشی: ڈراما نگاری کا فن
- بادشاہ حسین : اردو میں ڈراما نگاری
- عشرت رحمانی: اردو ڈراما کی تاریخ و تنقید
- عطیہ نشاط: اردو ڈراما – روایت اور تجربہ
- محمد شاہد حسین: ڈراما کا فن
- محی الدین زور کشمیری : اردو میں ڈراما نگاری

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11. Allama Iqbal ka Khasoosi Mutalah (Core Course)

Semester	Core Course	Course Title	Credits
6 th	URL620DB	Allama Iqbal ka Khasoosi Mutalah علامہ اقبال کا خصوصی مطالعہ	Theory, 4 Tutorial: 2 Total: 6

Course Specific outcomes:

- ‘Special study of Iqbal’ is a DSE course and specially designed for the students to understand the great thinker and poet of the East Iqbal.
- Notably Iqbal is an iconic figure and his influence is of much degree than any other thinker on the Muslim thought.
- He has dealt with the subjects of all sort. And clarified them in a miraculous way.
- He was no doubt a genius and genuinely addressed the issues.
- He was master in poetry and applied most of the techniques used in different languages in his own poetry.
- This paper will give a sufficient details of Iqbal, whether may be about his life, his education, impact upon him and his upon others and most importantly about his poetry.
- For poetry, particularly they will go through Gazl, Nazm.
- For Nazm they will have to study the full text of “Gabriel aur Iblees, Saqi Nama, FarishtayJanat se Aadamkorukhsatkarte hue. Ruh-e-arzi Aadam ka istiqbal karti hai, Bazm-e-anjum.
- Furthermore, they will study the concept of Khudi/self, and Momin/Believer in minutia.
- **Assigned Work:** collect the material regarding the life of Iqbal, taking help from internet, and present that before the teacher.
- **Coordinate a symposium on the Iqbalian influence.**
- **Text reading of ‘Gabriel aur Iblees’ in a conversation way.**

ALLAMA IQBAL KA KHASOOSI MUTALAH

THEORY

(CREDITS: 06)

- یونٹ اول:
- اقبال کی حیات اور شخصیت
- اقبال کی ابتدائی شاعری
- یونٹ دوئم:
- اقبال کی غزل گوئی

- اقبال کی نظم نگاری
- **یونٹ سوئم :**
- اقبال کا تصور خودی
- اقبال کا تصور مردِ مومن
- **یونٹ چہارم:**
- اقبال کی درج ذیل نظموں کا سیر حاصل مطالعہ
- جبریل و ابلیس
- ساقی نامہ
- فرشتے جنت سے آدم کو رخصت کرتے ہوئے
- روح ارضی آدم کا استقبال کرتی ہے
- بزمِ انجم
- **مفوضہ کام**
- اقبال کے سوانحی کوائف اور شعری امتیازات سے متعلق انٹرنیٹ کی مدد سے معلومات جمع کر کے استاد کے سامنے پیش کریں
- کمرہ جماعت میں اقبال کے فکر و فلسفہ سے متعلق بحث و مباحثے کا اہتمام کیا جائے۔
- نظم ' جبریل و ابلیس' کے مکالماتی انداز کو منثور شکل میں دو طالب علموں کی وساطت سے کمرہ جماعت میں دکھانا۔
- **امدادی کتب :**
- اسلوب احمد انصاری : اقبال کی تیرہ نظمیں
- اقبال : کلیاتِ اقبال اردو
- اقبال : کلیاتِ اقبال فارسی
- جاوید اقبال: زندہ رود
- خلیفہ عبدالحکیم : فکرِ اقبال
- عبد المجید سالک : ذکرِ اقبال
- عرفان عالم : اقبال معروضی تجزیے اور سائنسی مباحث
- نذیر نیازی : دانائے راز

12. Study of Prose and Poetic form in Urdu literature (Generic Elective):

Semester	Core Course	Course Title	Credits
6 th	URL616G	Study of prose and poetic form in Urdu literature اردو کی نثری اور شعری ہیئتوں کا مطالعہ	Theory: 04; Tutorial: 02 Total: 06

Course Specific outcomes:

- Study of prose and poetic form in Urdu' is a generic Elective Course designed for those students of other disciplines, who are interested to the main genres of Urdu.
- The paper is divided into four parts, comprising different topics, related to genres.
- First unit deals with Novel, Afsana/ short story and their significance.
- Second unit gives the introduction about Drama, and letter writing, with the details of development.
- Third unit is related to Gazal and Nazm, reasons of their popularity, definition and development.
- Forth unit will brief about Mathnavi and Marthiya, and their history.

STUDY OF PROSE AND POETIC FORM IN URDU LITERATURE**THEORY****(CREDITS: 06)**

- یونٹ اول:
- ناول کے اجزائے ترکیبی اور مختصر تاریخ
- افسانہ: تعریف، اجزائے ترکیبی اور مختصر تاریخ
- یونٹ دوئم:
- ڈراما اجزائے ترکیبی اور ارتقا
- مکتوب نگاری اور اس کی مختصر تاریخ
- یونٹ سوئم:
- غزل، تعریف، ارتقا اور مقبولیت کے اسباب
- نظم، تعریف اور ارتقا
- یونٹ چہارم:
- مثنوی، تعریف، اجزائے ترکیبی اور مختصر تاریخ
- مرثیہ، تعریف، اجزائے اور مختصر تاریخ
- امدادی کتب:
- آل احمد سرور: اردو فکشن
- خلیق انجم، قمر رئیس: اصناف ادب
- عبداللہ امتیاز احمد: دلیل

- عشرت رحمانی : اردو ڈراما
- نگار : اصنافِ داب نمبر
- وقار عظیم: فنِ افسانہ نگاری

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13. Learning Skills of Media Writings in Urdu (Skill Enhancement Course)

Semester	Core Course	Course Title	Credits
6 th	URL0617S0X	Learning Skills of Media Writings in Urdu اردو زبان میں صحافتی تحریر لکھنے کا طریقہ کار	Theory, 2 Tutorial: 2 Total: 4

Course Specific outcomes:

- ‘Learning skills of Media writing in Urdu’ is a popular skill course among students and opted by most of the students among skill courses.
- The paper gives the introduction about Media.
- It provides knowledge of different techniques used for media.
- Weather that may be related to writing a script, for any of the course.
- It focuses on how to write a creative piece.
- Feature, Talk, Radio Drama, Advertisement are of main concern to practice in the course.
- Assigned Work:
- They students are to write a script for any of the topic/
- Present a documentary
Give an ad... for their own choice.

LEARNING SKILLS OF MEDIA WRITINGS IN URDU**THEORY****(CREDITS: 06)**

- **یونٹ اول:**
- میڈیا تحریر
- اردو میں میڈیا تحریر کی روایت
- **یونٹ دوئم:**
- ریڈیو کے لئے تخلیقی نثر
- (فیچر ، ٹاک، ریڈیائی ڈراما، اشتہار)
- **عملی کام (Practical Work)**
- **یونٹ سوئم :**
- دیے گئے موضوع پر ٹی وی کے لئے (اسکرپٹ، ڈاکیومنٹری ، اشتہار) کا نمونہ پیش کیجیے۔
- **یونٹ چہارم:**
- دیے گئے موضوع پر ریڈیو کے لئے ایک ریڈیو فیچر یا اشتہار ترتیب دیجیے۔

- **امدادی کتب :**
- امتیاز علی تاج : ریڈیو ، ٹیلی ویژن
- انجم عثمانی : ٹیلی ویژن نشریات
- شاہد حسین: عوامی روایت اور اردو ڈراما
- فضل الحق: اردو ماس میڈیا
- کمال احمد صدیقی : ریڈیو، ٹی وی میں ترسیل و ابلاغ کی زبان

Govt. Model Degree College Shopian

BSc Program Outcomes

The college offers B.Sc. program for thirteen different subjects, viz., Anthropology, Biochemistry, Biotechnology, Botany, Chemistry, Food Science & Technology, Geography, Geology, Mathematics, Physics, Statistics and Zoology.

- B.Sc. students will know technological literacy, critical thinking and problem-solving through science education and acquire lifelong skills that allow them to generate ideas, weigh decisions intelligently and even understand the evidence behind public policymaking.
- B.Sc. students will learn the scientific method enabling them how to think, learn, solve problems and make informed decisions.
- B.Sc. students will appreciate the contributions of science in generating solutions for everyday life and answers it offers to the great mysteries of the universe.
- B.Sc. students will understand role of science, technology and innovation in equitable, sustainable and nation development.
- B.Sc. students will be equipped with valuable industrial skills to start and run small businesses.

Course Structure and distribution of different courses with their credits for BSc Anthropology

S.No.	Semester	CourseTitle	CourseType	Total Credits
1.	I	Introduction to Anthropology	CoreCourse	6 credits 4(T)+2(P)
2.	II	Archaeological anthropology	CoreCourse	6 credits 4(T)+2(P)
3.	III	Human Genetics	CoreCourse	6credits 4(T)+2(P)
4.	IV	Social Structure And Culture Change	CoreCourse	6credits 4(T)+2(P)
5.	V	Palaeoanthropology	Discipline Specific Elective	6credits 4(T)+2(P)
6.	V	Human Growth	Discipline Specific Elective	6credits 4(T)+2(P)
7.	V	Medical Anthropology	Discipline Specific Elective	6credits 4(T)+2(P)
8.	VI	Contemporary And Indian Anthropology	Discipline Specific Elective	6credits 4(T)+2(P)
9.	VI	Forensic Anthropology	Discipline Specific Elective	6credits 4(T)+2(P)
10.	VI	Human Ecology	Discipline Specific Elective	6credits 4(T)+2(P)

Course outcomes

Students must develop an appreciation for cultural and biological diversity and emic approaches for its appraisal. The UG students should develop a critical understanding of the themes and perspectives of anthropology. They should be able to distinguish various branches of anthropology and be conscious of the vital connection between them.

Students should be able to appreciate the uniqueness and distinctiveness of anthropological approach among biological and social sciences, particularly with regard to the bio-cultural approach used by anthropologist across the world.

They must acquire the know-how of theories and skills of cultural, biological and archaeological anthropology and be able to apply them in analysing, understanding and solving various social and cultural problems.

1. Introduction to Anthropology (Core Course -I):

This course provides students with a detailed knowledge of Anthropology basics.

Semester	CoreCourse	Course title	Credit
Ist	CC-I	Introduction to Anthropology	Theory:04; Practical:02 Total:06

Course specific outcomes

- Should be able to develop an understanding of various branches of anthropology.
- Students should understand relationship of anthropology with other disciplines and importance of bio-cultural approach.
- Students should understand notion of evolution and primate diversity.

INTRODUCTION TO ANTHROPOLOGY**THEORY****(CREDITS: 04)****Unit 1: Introduction to Anthropology**

Meaning and scope of Anthropology

Branches of Anthropology

History, Development and Emergence of Anthropology

Relationship of Anthropology with other disciplines: life science, Earth science, Environment science and Humanities

Unit 2: Primate Study

Primates: Classification and Characteristic features

Primate Behaviour and Activity Pattern

Study of Primates: Rhesus Monkey (Common Monkey), Papio (Baboons), Presbytis (Human Langur), Lesser Apes (Siamangs and Gibbons), Great Apes (Orangutans)

Chimpanzee and Gorilla

Unit 3: Human evolution

Principles of Evolution: Speciation, Irreversibility, Adaptive Radiation and Extinction

Theories of Evolution: Lamarckism, Neo-Lamarckism, Darwinism and Neo-Darwinism

Mechanism of Evolution

Evolution of Man

Unit 4: Social Anthropology

Nature and scope

Concept of Society and Culture

Elements, Characteristics or attributes of culture

Culture and Personality, Cultural lag

PRACTICAL

(CREDITS: 02)

Osteology: To study the Human Skeleton

Museum Study of Primates

Serology: Estimation of Haemoglobin and Blood Grouping

Field Work; Visit to Tribal areas, designing of questionnaires and Collection of Data

SUGGESTED READINGS

- P. Nath (2010). Physical Anthropology. Palaka
- Havilland (2018). An Introduction to Anthropology. Cengage
- Shukla and Rastogi. (2009). *Physical Anthropology and Human Genetics*. Palaka.
- Nadeem Hasnain. (2000). *General anthropology*. Palaka

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2. Archaeological Anthropology (Core Course -II):

This course provides students with a detailed knowledge of archaeology.

Semester	CoreCourse	CourseTitle	Credits
2 nd	CC-2	Archaeological anthropology	Theory: 04; Practical:02 Total:06

Course Specific Outcomes

- Help students Understand meaning and scope of archaeological anthropology and its relationship with other disciplines.
- Students should be able to identify the typo-technical classification of prehistoric lithic and non-lithic tools
- Understand human growth and development and its role in human evolution.

ARCHAEOLOGICAL ANTHROPOLOGY

THEORY

CREDITS: 04

Unit: 1: Archaeological Anthropology

Definition and scope of archaeological anthropology

Prehistory and Protohistory.

Archaeological fields: Environmental Archaeology, Settlement Archaeology, Ethno archaeology

Archaeology and its relation with Biological sciences, Earth sciences, Physical and Chemical sciences

Unit 2 Prehistoric India

Pleistocene of India (Critical Assessment)

Lower Palaeolithic Culture: Habitat, Environment, Economy, People and Distribution

Middle Palaeolithic culture: Habitat, Environment, Economy, People and Distribution

Mesolithic culture, art, ritual and belief

Unit 3 Human growth and Development

Aim and scope of Growth and Development

Introduction to Human growth and development

Basic Principles of Human growth; maturation, development, catch-up growth

Stages of Growth

UNIT 4 Social Organization

Social Group-Primary and secondary group (characteristics and importance)

Community

Association

Organisations: Formal and Informal

Practical

Credits: 02

- Study of various Anthropometric Devices
- Somatoscopy; Record of Somatoscopic observations; Eye colour, Hair colour, hair form, Skin colour
- Physiological Variables; Blood pressure, Pulse Rate, Heart Rate
- Visit to an Archaeological site to study structure and Form.

Suggested readings

- S.C Dube N.K Bose, M.N Srinivas. (1980). *Indian Society and Culture*.
- Bhattacharya, D.K & N. Hasnain. (1989). *Indian Anthropology*.

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3. Human Genetics (CC-III):

This course provides students with a detailed knowledge of Human Genetics.

Semester	CoreCourse	CourseTitle	Credit
3 rd	CC-3	Human Genetics	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- Understand principles and modes of inheritance.
- To understand Importance of genetics in human society.
- To Understand Genetic disorders in human beings

HUMAN GENETICS**THEORY****CREDIT: 02****Unit 1 Human Genetics**

- Introduction to the study of Genetics and its applications in Man.
- Mendelian Principles of inheritance and their relevance to human populations.
- Pedigree analysis Eugenics and Human Welfare.
- Modes of inheritance of autosomal and sex related characters.

Unit 2 Human Genetics and Society

- Genetic counselling and Genetic engineering
- Blood Groups polymorphism and haemoglobin apathies
- Genetic polymorphism and its applications
- Human genetics in relation to other sciences and medicine

Unit 3 Prehistoric Archaeology

- Introduction to stone tools, Types and Techniques
- Probable archaeological sites – River terraces, lacustrine, Aeolian.
- Caves and Rock shelters, Slopes, Coastal and Mounds.
- Principles of Archaeology-Stratigraphy and State of Preservation.

Unit 4 Comparative Ethnography

- Nature and Scope of Ethnography
- History and development of Ethnography
- Approaches to Ethnography: positivism and functional
- Essentials of Ethnography; Ethnology.

PRACTICAL**(Credit: 02)**

- To study the working and principles of some basic laboratory equipment like PCR
- Analysis of Colour blindness on 25 subjects
- Photography and drawing of stone tools. Field visit: Students will be taken for Prehistoric Archaeological field training where possible.

SUGGESTED READINGS:

- P.K Gupta. Human Genetics.
- V B Raastogi. Genetics.
- Stern, Curt. (Stern, C). Principles of Human Genetics.
- Bhattacharya, D.K. (1997). Prehistoric Archaeology.
- Mishra and Hasnain (1988) Unifying anthropology.

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4. Social Structure and Culture Change (CC-IV):

This course provides students with a detailed knowledge of social structure and change.

Semester	CoreCourse	CourseTitle	Credit
4 th	CC- 4	Social Structure and Culture Change	Theory:04; Practical:02 Total:06

Course Outcomes

- Students should be able understand the nuances of socio-cultural anthropology.
- The knowledge of racial/ethnic/gender diversities will help students in critically evaluating existing policies in domains of rural, tribal and urban life suggesting relevant policy measures.
- The students can be trained in understanding problems and prospects of and deprived and marginalized communities.

SOCIAL STRUCTURE AND CULTURE CHANGE**THEORY****(CREDIT: 04)****UNIT 1: Marriage**

- Marriage: The problem of universal definition of marriage, form and functions of marriage and rules of residence.
- Rules of Marriages: Exogamous and Endogamous marriages.
- Monogamy, Polygamy: Polygyny and Polyandry; Mate selection: Cross cousin and Parallel cousin marriage.
- Customary Practices among Indian Tribal Communities

UNIT 2: Family and Kinship

- Typology and Functions of family: Nuclear, Joint, and Extended.
- Residence: Patrilocal, matrilocal, Neolocal, Virilocal, Unoxrilocal
- Kinship types and functions, Descent groups: Kindred, lineage, clan, phratry, moiety.
- Descent and alliance theories of Kinship.

UNIT 3: Religion

- Concept and Definitions of religion.
- "Primitive" Forms of Religion: Animism, Animatism, and Naturism. Totemism, Taboo, Myth.
- Polytheism and Monotheism Magic, Science and Religion.

- Religious Practitioners: Sorcery, Witch, Shamans, Priests, Medicine man.

Unit: 4: Tribe

- The problem of defining tribes in India; Tribe-a colonial category, re-defining tribes in India
- Weaker sections in Indian Populations: Scheduled Tribes (ST) and “Primitive” Tribal Groups (PTGs)
- Major tribal groups and tribal States in India
- Brief introduction of Tribes of Jammu and Kashmir

PROJECT WORK

(CREDIT: 02)

A Project work to be submitted in the college and carry out one of the following researches:

- Study of the effects of consanguineous marriages with special references to marriages in Kashmir Division.
- Visit to some religious sites and study the detailed religious customs followed there.
- Visit to some Tribal Communities and study their customary practices.

SUGGESTED READINGS

- Mazumdar, D.N. and T.N. Madan (1960): *An Introduction to Social Anthropology*.
- Haviland, William. A (1993): *Talking about People: Reading in Contemporary Cultural Anthropology*.
- Malinowski, Bronislaw (1948): *Magic, Science and Religion, and other essays*.
- Schultz, Emily A. and Lavenda Robert H. (2005): *Cultural Anthropology*.
- Bailey, F.G. (1960): *Tribe, Caste and Nation: A study of Political Activity and Political change in highland*.
- Orissa Haimendorf, Christoph Von Fuhrer (1982): *Tribes of India: The Struggle for Survival*.

5. Palaeo-anthropology (DSE-1):

This course provides students with a detailed knowledge of palaeoanthropology.

Semester	CoreCourse	CourseTitle	Credit
5 TH	DSE-I	Palaeoanthropology	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- To understand the basic tenets of archaeological anthropology and learn the geochronology of prehistoric societies and appreciate the utility of Palaeolithic evidence in understanding them.
- Understand process of fossilisation and its importance in human evolution.
- Students understand path breaking fossil finds about human evolution across world.

UNIT-I

- Aims, objectives and problems.
- Affinities of palaeoanthropology with other disciplines (Geology, Earth Science and Archaeology)
- Historical development of Palaeoanthropology.
- Fossils and their preservation and processes of fossilization.

UNIT-II

- Principles of stratigraphy and correlation.
- Dating methods- Relative and Chronometric dating.
- Brief account of Pro-Pliopithecus and Pliopithecus
- Detailed description of Australopithecines and Neanderthal man

UNIT-III

- Taxonomy and rules of nomenclature.
- Succession of life through ages with stress on human evolution.
- Cenozoic Era with reference to Pleistocene and Holocene
- Extinct primates and other related animals in Pleistocene glaciation

UNIT-IV

- Siwalik Group – Nomenclature, stratigraphy, fauna and flora.
- Paleoanthropological significance of Siwaliks.
- Evolution of dentition with special emphasis on primate dentition.

- Various trends in primate evolution – Continental drift, food habits and alternative interpretation.

PRACTICAL**(CREDITS: 02)**

- How and where to look for fossils. Equipment and techniques for collection, washing & screening, field cataloguing, transportation, etc. of fossils.
- Identification of major rock types. Structure and use of clinometer compass (dip and strike, topo sheet reading and mapping).
- Moulding and casting. Methods of identification of fossils with particular reference to primates (casts). Dental morphology and taxonomy of selected fossil groups and their illustration, interpretation and reporting style.

SUGGESTED READINGS

- Brace, C. L. and Montagu. (1969). *Man's Evolution: An Introduction to M.F.A Physical Anthropology*, Macmillan.
- Kennedy G.E. (1980): *Paleoanthropology*. New York: McGraw-Hill.
- Buttner-Janusch, J. (1966): *Origins of Man*. New York: John Wiley.
- Simpson, G.G. (1953): *The Major Features of Evolution*. New York: Columbia University Press.
- Poirier, F.E. (1990): *In Search of Ourselves: An Introduction to Physical Anthropology*. New Jersey: Prentice Hall.
- Kummel, (1961): *History of the Earth: An Introduction to Historical Geology*. San Francisco: Freeman.
- Lewin, R. (1999): *Human Evolution: An Illustrated Introduction*. Massachusetts: Blackwell Science.
- Vasishat, R.N. (1985): *Antecedents of Early Man in Northwest India*. Delhi: Inter-India Publications.

6. Human Growth (DSE-2):

Semester	CoreCourse	CourseTitle	Credit
5 TH	DSE-2	Human Growth	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- Student shall be able to have a clear understanding of types of biological variation and their role in studying human populations
- Students shall be able to critically assess various scientific attempts of clustering of human populations
- Student should appreciate the role of demographic and genetic factors in understanding human adaptations

HUMAN GROWTH**THEORY****(CREDIT: 02)****UNIT-I**

- Introduction: Concept and basic principles of growth; Human physical growth as a primate characteristic; growth processes
- Measurements and Standards of Growth: Longitudinal, Cross-sectional & Mixed-longitudinal growth curves
- Phases of growth-Pre-natal and Post-natal.
- Stages of growth: Infancy, Childhood, Adolescence, Puberty and Senescence.

UNIT-II

- Developmental processes and measures of skeletal maturity
- Dental and sexual maturity and their relationships.
- Aging Processes: Theories of aging, morbidity - mortality relationship.
- Hereditary and Environmental Influences on growth, Secular Trends

UNIT-III

- Body composition and human physique
- Introduction of various somatotyping methods
- Sheldon's Method of Somatotyping: Endomorphy, Mesomorphy and Ectomorphy.
- Technique of Somatotyping and Somatocharts.

UNIT-IV

- Health & Carter Modified Somatotype Method

- Concept and background of Somatotype, components, measurements
- Somatocharts and somatotype plotting; somatotype dispersion index
- Brief introduction of Body Mass Index, Adiposity Index.

PRACTICAL**(CREDIT: 02)**

- Somatoscopy and Somatometry on the human body
- Physiological variable test: Recording of Blood pressure, Pulse rate, vital capacity, grip strength and Haemoglobin assessment
- Use of body fat analyser and assessment of body composition.

SUGGESTED READINGS

- Bogin, B. (1999). *Patterns of Human Growth*. Cambridge University Press, Cambridge.
- Harrison, G. A., J.S. Weiner, J.M. Tanner NA.
- Barnicot (1988). *Human Biology – An Evolution, Variation, Growth and Ecology: Introduction to Human*. Oxford University Press, London.
- Heath, B.H., J.E.L. Carter (1990). *Somatotyping – Development and Applications*. Cambridge University Press, Cambridge.
- Tanner, J.M. (1989). *Foetus into Man – Physical Growth from Conception to Maturity*. Harvard University Press, Cambridge.
- Cameron, N. (2002). *Human Growth and Development*. Academic Press, New York.
- Falkner, F., J.M. Tanner. *Human Growth – A Comprehensive Treatise*. Plenum Press, New York.
- Kaul, S., I. Nyamongo. (1990). *Ecology, Growth and Nutritional Status*. Ashish Publishing House, New Delhi.

7. Medical Anthropology (DCE-3):

Semester	CoreCourse	CourseTitle	Credit
5 th	DCE-3	Medical Anthropology	Theory:04; Practical:02 Total:06

Course Specific Outcomes

Students should be able to understand cultural factors in illness, health and disease.

Student should be able to learn basic demographic and medical anthropological method to evaluate demographic and health assessment.

Student should be able to understand, analyse and interpret health, illness, disease related issues and develop critical understanding.

Student should be able to critically examine the health policy and programmes of India.

MEDICAL ANTHROPOLOGY**THEORY****(CREDIT: 02)****UNIT-1**

- Medical anthropology: History, scope, perspectives and methodology.
- Theories, applications and methods.
- Rise of medical anthropology: Contributions of Ackerknecht, Rivers.
- Role of Evans-Pritchard, Benjamin D. Paul, Foster, Reeds, Kleinman in medical Anthropology.

UNIT-II

- Medical Systems: Medical systems as socio-cultural adaptive strategies
- Disease theory and health care systems; some universals in medical systems.
- Anthropological approaches to the study of human adaptation in health and disease.
- Medical Anthropology and Ecology: Eco-systems and socio-cultural systems; Ecological interest of Medical Anthropology.

UNIT-III

- Ecology and epidemiology of disease.
- Adaptation of disease and its distribution in human populations.
- Paleopathology; Disease and evolution; Diet and evolution.
- Epidemiology; Ecology and Development; Disease of development.

UNIT-IV

- Medical Pluralism: Biomedicine, Homoeopathy, Ayurveda, Siddha, Unani, Naturopathy Faith healing; Traditional Chinese and Tibetan systems of medicine.
- Traditional and modern systems of medicine; Strength and weaknesses of traditional systems.
- Traditional system of different regions of Jammu and Kashmir

PRACTICAL**(CREDIT: 02)**

- Project report on traditional medicine system of the vicinity
- Field visit to the remote village where primary health system is not available.

SUGGESTED READINGS

- Banerjee, B.G. and Jalota, R. (1988): *Folk Illness and Ethno-medicine*. New Delhi: Northern Book Centre.
- Channa, S.M. (2002): *Health and the Supernatural Disease and Cure in Tribal Societies*. New Delhi: Cosmo Publications.
- Choudhuri, B. (Ed.). (1986): *Tribal Health: Socio-cultural Dimension*. New Delhi: Inter-India Press.
- Ember, Carol R., and Melvin Ember (Eds.) (2004): *Encyclopedia of Medical Anthropology: Health and Illness in the world's Cultures*. New York: Kluwer.
- Foster, G.M. and Anderson, G.A 1978: *Medical Anthropology*. New York: John Wiley and Sons.
- Joraleman, Donald. (2006): *Exploring Medical Anthropology*. Boston: Pearson.
- Kakar, D.N. (1977): *Folk and Modern Medicine*. New Delhi: New Asian Publishers

8. Palaeo-anthropology (DCE-1):

Semester	CoreCourse	CourseTitle	Credit
6 th	DCE-1	Palaeoanthropology	Theory:04; Practical:02 Total:06

Course Specific Outcome:

- The students will be able to identify elements of tradition & values that guide the social being in nation building.
- The knowledge of racial/ethnic/gender diversities will help students in critically evaluating existing policies in domains of rural, tribal and urban life suggesting relevant policy measures.
- The students can be trained in understanding problems and prospects of and deprived and marginalized communities with special reference to the PVTGs.

PALAEOANTHROPOLOGY**THEORY****(CREDIT: 02)****UNIT-I**

- Psychological approaches in Anthropology.
- Culture and Personality school as a legacy of Franz Boas.
- Basic ideas of culture and personality in anthropology.
- Development of issues in the works of Ralph Linton, Kardiner and Cora du Bois.

UNIT-II

- Contemporary Social Theories including basic ideas of gender theories, feminism and women's studies.
- Deep ethnography and the work and ideas of Clifford Geertz.
- Basic ideas of ethno-methodology.
- Detailed account field work conducted by the various Indian Anthropologists.

UNIT-III

- The uniqueness and Basic idea of Indian anthropology.
- Contributions of Indian Anthropologists: S.C. Roy (the beginning and origin of anthropology in universities), and his students.
- N.K. Bose (further development of the subject and relationship with Indian nationalism).
- D.N. Majumdar (uplifting and creating standards of Indian anthropology).

UNIT-IV

- Anthropology in India as a practical discipline: basic ideas.

- Contribution of S.C. Dube in development of tribes and communities and in study of Indian villages.
- M.N. Srinivas and concept of westernization and sanskritisation.
- The contributions of Verrier Elwin in the mapping of tribal India ethnographically and in terms of maintaining and protecting their culture.

PRACTICAL**CREDIT: 02**

- Project report on field work
- Draw genealogy charts of various families of different cast groups

SUGGESTED READINGS

- Barth, F. (ed.) (1969): *Ethnic Group Boundaries*. New York: Little, Brown and Co.
- Behura, N.K. (1988): *Anthropological Thought and Theories*. Calcutta: Institute of Social Research and Applied Anthropology.
- Evans Pritchard, E.E. (1962): *Social Anthropology and Other Essays*. New York: Free Press.
- Firth, R. (1951, 1963): *Elements of Social Organization*. Boston: Beacon.
- Harris, Marvin (1968): *Rise of Anthropological Theory*. New York: Harper and Row, Publishers.
- Hasnain, Nadeem: *Indian Anthropology*. PalakaPrakashan.
- Kroeber, A.L. (ed.) (1953): *Anthropology Today: An Encyclopaedic Inventory*. Chicago: University of Chicago Press.
- Leach, E.R. (1961): *Rethinking Anthropology*. London: Robert Cunningham and Sons, Ltd.
- Lévi-Strauss, C. (1963): *Structural Anthropology (Volumes I & II)*. Transl. by Claire Jacobson and Brooke Grundfest Schoepf. New York, London: Basic Books
- Manners, R.O. and Kaplan, D: *Theory in Anthropology: A Sourcebook*. Chicago, (Eds.) (1968) Illinois: Aldine Publishing Co.
- Vidyarthi, L.P. (1978): *Rise of Anthropology in India: A Social Science Orienta.*

9. Forensic Anthropology (DCE-1):

Semester	CoreCourse	CourseTitle	Credit
6 th	DCE- 2	Forensic Anthropology	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- Student should be able to identify and collect the biological materials found at crime scenes
- Student should be able to use the methods and techniques in forensic anthropology
- Student should have the understanding of current knowledge of latest developments in forensic anthropology

THEORY**(CREDIT: 02)****UNIT-I**

- Forensic Science: Introduction, Definition, Principles, Laws of Forensic Science.
- Fundamentals of Forensic Science, Crime and crime scene: Introduction of crime and crime scene, Significance and Role of Investigator, Examination and evaluation of crime scene.
- Introduction to Forensic Anthropology: Definition, aim, scope and relevance of anthropology in forensic science.
- History of Forensic Science in India, Role of Forensic Science in present scenario

Unit II

- Importance of Forensic Anthropology in personal identification
- Forensic Osteology: Elementary study of human skeleton.
- Major anthropological evidences used for personal identification, Importance of Forensic Anthropology in mass disasters.
- Importance of Anthropometry and Somatoscopy in personal identification of the living and cadavers.

UNIT -III

- Personal Identification through dermatoglyphics
- Dermatoglyphics: Basics of personal identification from fingers
- Introduction to palm and sole prints, Identification of a person through finger, sole and palm prints
- Introduction to latent prints and different methods of development of latent prints

UNIT –IV

- Role of Blood, Teeth and Hair for personal identification.
- Blood: Basics of blood including its composition and types. Role of blood in personal identification.

- Forensic Odontology: Definition and basics of personal identification from teeth and bite marks.
- Hair: Introduction to morphology of hair and its application in determination of age, sex and race of an individual.

PRACTICAL**CREDIT: 02**

- Introduction & demonstration to the Study of Human Osteology and its applications in Forensic Sciences.
- Gross Morphology of Human skull, girdle Bones, long bones, vertebral column and rib cage. Determination of Age, sex and stature from Human skeleton and its parts.
- Somatoscopy and somatometry (Cranio-facial and other body measurements) Overview of dermatoglyphic studies in Forensic practice, Finger dermatoglyphics of human subjects.

SUGGESTED READINGS

- Bayers, S.N. (2004). *Introduction to Forensic Anthropology: A Textbook 2nd (Ed)*. Boston: Allyn & Bacon.
- Burns K.R. (2007). *Forensic Anthropology Training Manual 2nd Ed*. New Jersey: Prentice Hall Inc.
- El-Najjar M.Y. and McWilliams K.R. (1978). *Forensic Anthropology - The Structure, Morphology and Variation of Human Bone and Dentition*. Springfield, Illinois: Charles C. Thomas.
- Franklin C.A. (ed). (1988). *Modi's Book of Medical Jurisprudence and Toxicology*. Bombay: N.M. Tripathi Pvt. Ltd.
- Krogman, W.M. (1962). *Human Skeleton in Forensic Medicine*. Springfield, Illinois: Charles C. Thomas.
- Krogman, W.M. and Iscan M.Y. (1986). *Human Skeleton in Forensic Medicine*. Springfield, Illinois: Charles C. Thomas.
- Reichs, C.J. (Ed.) (1998). *Forensic Osteology: Advances in the Identification of Human Remains*. Springfield, Illinois: Charles C. Thomas

10. Human Ecology (DSE-3):

Semester	CoreCourse	CourseTitle	Credit
6 th	DSE-3	Human Ecology	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- The students will be trained to identify bio-cultural adaptation strategies that can bring to light the resilience measures communities turn to in times of environmental stress and disaster.
- The students can be better equipped to understand the impact of urbanisation and industrialisation that impact everyday life of people and can critically reflect on adoption of a healthy and environment friendly lifestyle.
- The students once familiarised with problems of environmental degradation, agricultural land biodiversity loss, climate change etc. can step forward and offer innovative solutions to promote environmental ethics.

HUMAN ECOLOGY**THEORY****(CREDIT: 02)****UNIT-I**

- Basic concepts of ecology, ecosystems and organization of ecosystems.
- Ecology of human populations, Environmental Anthropology, Environmental Determinism, Environmental possibilism.
- Cultural Ecology, Ecological models.
- Biological and Evolutionary approaches to human ecology.

UNIT-II

- Resources and Community Ecology.
- Resources, Major types of human subsistence patterns, Community ecology.
- Human populations and resource distribution
- Concept of ecological assessments.

UNIT-III

- Stressors: Stress and environmental Physiology.
- Human Adaptation to temperature variations (hot and cold).
- Adaptation to High Altitude, Ultra-Violet Radiation, High Activity and other Physical Stressors.
- Ecological Niche of Anthropocene

UNIT-IV

- Modernization and Chronic Disease; Major chronic diseases in modernized human populations.
- Pollution, General Stress and Chronic Disease; Adiposity and Chronic Disease.
- Ecosystem services, Millennium ecosystem assessment
- Ecological economics, Bioregionalism and urban ecology.

PRACTICAL**(CREDIT: 02)**

- Project report on various infectious diseases (Hospital based study).
- Field visit to some places to study effects of ecological factors on human beings.

SUGGESTED READINGS

- Kormondy, E.J. and Brown D.E. (1998): *Fundamentals of Human Ecology*. New Jersey, Prentice Hall.
- Odum EP. (1991): *Fundamentals of Ecology*. 5th Edition. Saunders, Philadelphia
- Schutkowski H. (2006): *Human Ecology: Biocultural Adaptations in Human Communities*. Springer.
- Ulijaszek SJ (1995): *Human Energetics in Biological Anthropology*, Cambridge Univ. Pre.

**Course Structure and distribution of different courses with their credits for
B.Sc. Biochemistry**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Biomolecules	Core Course	6credits 4(T)+2(P)
2.	II	Cell Biology, Microbiology & Immunology	Core Course	6 credits 4(T)+2(P)
3.	III	Enzymology	Core Course	6credits 4(T)+2(P)
4.	IV	Intermediary Metabolism	Core Course	6credits 4(T)+2(P)
5.	V	Biophysical and Biochemical Techniques	Discipline Specific Elective	6credits 4(T)+2(P)
6.	V	Molecular Biology	Discipline Specific Elective	4credits 2(T)+2(P)

Course outcomes:

- Understanding of Biochemistry as a discipline and milestone discoveries in life sciences that led to establishment of Biochemistry as separate discipline.
- Fundamental properties of elements, their role in formation of biomolecules and in chemical reactions within living organisms.
- Understanding of the concepts of mole, mole fraction, molarity etc. and to apply them in preparations of solutions of desired strengths.
- Unique property of water as a universal solvent and its importance in biological system.
- Understanding of fundamentals of physical phenomena associated with Adsorption, Viscosity, Distribution law, Osmotic pressure, etc. and their importance in living organisms.
- Understanding of concepts of acids, bases, indicators, pKa values, etc. Acquiring skill to determine pKa value of amino acids.
- Fundamental laws relating to photochemistry and applications of UV-visible, Fluorescence and IR spectrophotometry in analytical determination and characterization of biomolecules.
- Appreciation of the roles of metals, non-metals, transition metals and coordination compounds in biological systems.
- Apply the principles of radiochemistry to analytical determination of biomolecules and life processes.

1. Biomolecules (Core course-I):

Semester	Core Course	Course Title	Credits
1 st	CC-I	Biomolecules	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- Exposure with the nature of various biomolecules present in living cells.
- Get exposed to key contributions of scientists such as Hans Krebs, G. N. Ramachandran, Melvin Calvin, Louis Pasteur, Hargobind Khorana, Watson and Crick and Venky Ramakrishnan, etc. in order to create scientific interest amongst students in life processes.
- To understand the properties of carbohydrates, proteins, lipids, cholesterol, DNA, RNA, glycoproteins and glycolipids and their importance in biological systems.
- To develop skills to determine amino acid and nucleotide sequences of proteins and DNA respectively.

BIOMOLECULES**THEORY****CREDITS: 04****UNIT I:**

Water, pH, buffer, Henderson–Hasselbatch equation, Thermodynamic principles. Structure and Classification of Amino Acids, Stereoisomerism and RS System, Optical isomerism. Proteins: Classification, composition and functions, Peptide Bond, Polypeptide chain (Amino acids sequence) determination, Levels of protein architecture and forces stabilizing Tertiary/Quaternary structure.

UNIT II:

Introduction and classification of carbohydrates, Monosaccharides: open and ring structure, anomeric forms, mutarotation, Reactions of monosaccharides (reference to glucose).

Structure and functions of disaccharides, Polysaccharides, Proteoglycans, Lipopolysaccharides, Mucopolysaccharides.

UNIT III:

Fatty acids: Nomenclature, classification, structure and functions, Saturated and unsaturated fatty acids, Essential fatty acids. Hydrolysis, Saponification value, Reichert-Meissel number, Iodine number, Rancidity. Triacylglycerols and Cholesterol, Phospholipids, Sphingolipids,

Prostaglandins and Leucotrienes.

UNIT IV:

Composition of DNA and RNA, features of DNA double helix, types of RNA, central dogma of molecular biology, DNA as Genetic Material. Vitamins: Fat-soluble and water-soluble vitamins, deficiencies of vitamin B1, vitamin B6, vitamin C, vitamin D.

PRACTICAL**CREDITS: 02**

1. Standardization of buffers and determination of pH of solutions.
2. Qualitative tests for amino acids and proteins.
3. Qualitative tests for carbohydrates.
4. Qualitative tests for lipids.
5. Estimation of ascorbic acid.

SUGGESTED READINGS

- Principles of Biochemistry by Lehninger et al.
- Biochemistry by Stryer et al.
- An Introduction to Practical Biochemistry by Plummer.
- Bioanalytical Chemistry by S E H Rizvi.

2. Cell biology and Microbiology (Core course-II):

Semester	Core Course	Course Title	Credits
2 nd	CC-II	Cell biology and Microbiology	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- Understanding of the structure of cell and various cellular events.
- Understanding of the function of various sub-cellular organelles.
- Students will acquire knowledge of cell cycle, cell division and cell death mechanisms.
- To become aware with the contributions of Louis Pasteur, Edward Jenner and Robert Koch in microbiology and immunology.
- Understand the structure and classification of Bacteria.
- To know the contribution of gut microbiome in human health.
- To understand and learn different culture techniques in Microbiology.

CELL BIOLOGY AND MICROBIOLOGY**THEORY****CREDITS: 04****UNIT I:**

Structure of prokaryotic and eukaryotic cell, Cell wall, Biomembranes: Composition, Structure (Bilayer-Fluid Mosaic Model etc.) and functions. Membrane Transport {Active and passive), porters, Extra-cellular matrix.

UNIT II:

Structure and functions of Nucleus (chromatin, chromosomes, nucleolus etc), Endoplasmic Reticulum, Mitochondria. Golgi apparatus and packaging.

UNIT III:

Ribosomes, Structure and functions of Lysosomes, Peroxisomes, Cytoskeleton (Microtubules). Overview of Cell Cycle & Cell division (Mitosis & Meiosis).

UNIT IV:

Classification of microorganisms, Structure & Classification of Bacteria {Gram +ve&-ve), Bacterial Cell Wall. Microbial growth, growth curve. Measurement and factors affecting microbial growth. Growth media and Pure culture techniques.

Beneficial and harmful aspects of microbes, Normal human microflora. Virulence and pathogenesis.

Laboratory Course (Practicals)**Credits: 02**

1. Sterilization Techniques.
2. Preparation of Culture Media.
3. Growth of different Cultures.
4. Staining of Gram +ve & Gram -ve bacteria.
5. Collection of various medicinal plants and assessment of their anti-bacterial activity.

SUGGESTED READINGS

- Cell & Molecular Biology by Lodish et al.
- Cell Biology by Karp et al.
- Cell Biology by Sadava et al
- Textbook of Microbiology by Davis et al.
- Microbiology by Pelczar
- Microbiology by Prescott.

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3. Enzymology and Immunology (Core course-III):

Semester	Core Course	Course Title	Credits
3 rd	CC-III	Enzymology and Immunology	Theory: 04; Practical: 02 Total : 06

Course Specific Outcomes:

- Understanding of the overview of immune system including cells, organs and receptors.
- To learn structure and functions of different classes of immunoglobulins, the genetic basis of antibody diversity and the importance of humoral, cell-mediated and innate immune responses in combating pathogens.
- To understand mechanisms involved in different types of hypersensitivity, and the importance of conventional vs.recombinant vaccines.
- To get acquainted with the importance of antigen-antibody interaction in diseasediagnosis.
- To understand the principles of tolerance, autoimmunity and the role of immunity inprotection against pathogens.
- To acquire fundamental knowledge on enzymes and their importance in biological reactions.
- To understand ability to difference between a chemical catalyst and biocatalyst.
- Exposure to the concept of activation energy and its importance in biological reactions. Exposure to the nature of non-protein enzymes such as ribozymes.
- Understanding the role of enzymesin clinical diagnosis and industries.

ENZYMOLGY AND IMMUNOLOGY**THEORY****CREDITS: 04****Unit-I: Enzyme– Structure & Classification**

Enzyme: Classification, Nomenclature. Parts of enzyme-Holoenzyme, Apoenzyme, Co-enzymes, Co-Factors.Active site, Enzyme Specificity, Mechanism of Enzyme Action. Isozymes, Multi Enzyme Complexes.

Unit-II: Enzyme Catalysis & Kinetics

Enzyme Catalysis-Acid-Base Catalysis, Covalent Catalysis and Substrate strain. Measurement &expression of Enzyme activity, Enzyme assays, Factors affecting enzyme activity. Derivation of Michaelis- Menten equation, Km value & its significance, Lineweaver Burk plot.

Unit-III: Enzyme Inhibition & Regulation

Reversible inhibitions: Competitive, Non-competitive, Un-competitive inhibition. Irreversible

inhibition. Effect on K_m and V_{max} in presence of inhibitor. Enzyme regulation-Allosteric modulations, feedback mechanism.

Unit-IV: Immunology

An introduction to immune system, Innate and adaptive immunity, Cells and organs of the immune system, Primary and secondary immune responses, Antigens, Structure and function of immunoglobulins, Antigen-antibody interactions. Brief introduction to Complement System, Major Histocompatibility Complex.

Laboratory Course (Practicals)

Credits: 02

1. Principles of Colorimetry: Verification of Beer's law.
2. Estimation of SGPT & SGOT in serum.
3. Assay of Alkaline Phosphatase activity.
4. To study the effect of pH, temperature on the activity of enzyme/s.
5. Blood Grouping.

SUGGESTED READINGS:

- Palmer T & Bonner P. Enzymes: Biochemistry, Biotechnology, Clinical Chemistry. 2nd Edn, Woodhead Publishing.
- Copeland R.A. Enzymes: A Practical Introduction to Structure, Mechanism, and Data Analysis, 2nd Edn. Wiley-VCH New York
- Price N & Stevens L. Fundamentals of Enzymology. Oxford University Press.(3rd Edn)
- Devasena T. Enzymology, Oxford University Press.
- Nelson, D.L. and Cox, M.M Lehninger: Principles of Biochemistry (2013) 6th ed, W.H. Freeman and Company.
- Immunology by Kuby et.al.
- Immunology by Tizard et al.

4. Intermediary Metabolism (Core course-IV):

Semester	Core Course	Course Title	Credits
4 th	CC-IV	Intermediary Metabolism	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- To understand the importance of lipids as storage molecules and as structural component of biomembranes.
- Understanding the importance of high energy compounds, electron transport chain, synthesis of ATP under aerobic and anaerobic conditions.
- To acquire knowledge related to the role of TCA cycle in central carbon metabolism, importance of anaplerotic reactions and redox balance.
- Students will be exposed with the fact that perturbations in the carbon metabolism can lead to various disorders such as diabetes and cancer.
- Appreciation of the fact that differences in the properties of metabolic enzymes of the host and pathogens can be exploited for the development of new drugs. To gain insights into metabolic engineering for the production of useful biomolecules.
- To learn basic concepts of Bioenergetics, mechanisms of oxidative phosphorylation and photophosphorylation.

INTERMEDIARY METABOLISM**THEORY****CREDITS: 04****Unit I: Carbohydrate Metabolism**

Bioenergetics, Reactions and energetics of glycolysis. Gluconeogenesis, Glycogenesis and Glycogenolysis. Reactions and physiological significance of Pentose Phosphate Pathway. Regulation of Glycolysis.

Unit II: Lipid Metabolism

Introduction, Hydrolysis of Triacylglycerols, Transport of fatty acids into mitochondria, β -oxidation of saturated and unsaturated fatty acids, ATP yield from fatty acid oxidation. Biosynthesis of saturated and unsaturated fatty acids. Cholesterol and Prostaglandins metabolism in brief.

Unit III: TCA Cycle and Oxidative Phosphorylation

Entry of Pyruvate into Mitochondria, TCA cycle, Sequence of Electron carriers, Sites of ATP Production, Inhibitors of Electron transport chain, Mitochondrial Oxidative Phosphorylation.

Unit IV: Amino Acid & Nucleic Acid Metabolism

Transamination, Oxidative Deamination and Decarboxylation of amino acids, Urea cycle.
Biosynthesis and degradation of Purines and Pyrimidines.

Laboratory Course (Practicals)**Credits: 02**

1. Estimation of protein by Lowry method.
2. Estimation of glucose by Nelson-Somogyi method.
3. Estimation of bilirubin (conjugated and unconjugated) in serum.
4. Estimation of cholesterol.
5. Separation and identification of amino acids/sugars by paper chromatography.

SUGGESTED READINGS:

- Berg, J.M., Tymoczko, J.L. and Stryer L., Biochemistry (2012) 7th ed., W.H. Freeman and Company.
- Denise R Ferrier, Lippincotts Illustrated Reviews Biochemistry 6th (2013), CBS Publishers.
- Nelson, D.L. and Cox, M.M Lehninger: Principles of Biochemistry (2013) 6th ed, W.H. Freeman and Company.
- Plummer D. T., Introduction to Practical Biochemistry, Tata McGraw Hill. (Third Edn.)
- Deb A. C., Viva & Practical Biochemistry, Central Book Agency
- Boyer R., Modern Experimental Biochemistry, Pearson.

5. Biophysical and Biochemical Techniques (Core Course-V):

Semester	Core Course	Course Title	Credits
5 th	CC-V	Biophysical and Biochemical Techniques	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- Develop competence in handling various chromatographic techniques and apply them in isolating and characterizing different biological molecules.
- Understanding the applications of centrifugation and chromatography in biological investigations.
- Purify proteins by affinity chromatography using epitope tags such as histidine tag, GST tag, Flag tag etc.
- Understanding the principles of Electrophoresis, Spectrophotometry and ELISA and their applications in biological investigations/experiments.
- The students will obtain hands-on training in basic separation techniques in biochemistry like electrophoresis, chromatography, etc.
- Gain expertise in the isolation of various biomolecules and organelles.

BIOPHYSICAL AND BIOCHEMICAL TECHNIQUES**THEORY****CREDITS: 04****Unit 1: Spectroscopic techniques**

Beer Lambert law, light absorbance and its transmittance, determination and application of extinction coefficient, applications of UV and visible spectroscopic techniques, spectrofluorometry.

Unit 2: Hydrodynamic methods

Centrifugation: Basic principles, Expression for sedimentation velocity, Types of centrifugation - preparative and analytical ultracentrifugation. Determination of molecular weight by hydrodynamic methods(derivation excluded numerical included).

Unit 3: Chromatography

Chromatography: Basic principle of Chromatography, Basic principles and applications of paper chromatography, thin layer chromatography, molecular sieve chromatography, ion-exchange chromatography, affinity chromatography and HPLC.

Unit 4: Electrophoretic and Immunologic techniques

Definition and basic principle of electrophoresis, Principles and applications of agarose gel electrophoresis, Polyacrylamide Gel electrophoresis (PAGE) and SDS PAGE.

Basic principle and applications of isoelectric focussing, immunodiffusion, rocket immunoelectrophoresis, radioimmunoassay and ELISA.

Laboratory Course (Practicals)**Credits: 02**

1. Subcellular fractionation by centrifugation.
2. Separation of proteins by SDS PAGE.
3. Isolation of DNA from blood.
4. Spectrophotometric analysis of isolated DNA.
5. Demonstration of ELISA.

SUGGESTED READINGS

- Plummer D. T., Introduction to Practical Biochemistry, Tata McGraw Hill. (Third Edn.)
- Deb A. C., Viva & Practical Biochemistry, Central Book Agency
- Boyer R., Modern Experimental Biochemistry, Pearson.
- Biophysical techniques by Upadhyay, Upadhyay and Nath
- Principles and Techniques of Biochemistry & Molecular Biology by Wilson and Walker.
- Bioanalytical Chemistry by S E H Rizvi.

6. Molecular Biology (Core course-VI):

Semester	Core Course	Course Title	Credits
6 th	CC-VI	Molecular Biology	Theory: 04; Practical: 02 Total : 06

Course Specific Outcomes:

- Study the discovery of DNA as genetic material, DNA replication, transcription, DNA repair and translation.
- Analyse coding and non-coding regions of eukaryotic genome and their importance.
- Exposure with the importance of E. coli lac operon, PCR, expression vectors and their importance in Biotechnology.
- Study of applications of Recombinant DNA technology.

MOLECULAR BIOLOGY**THEORY****CREDITS: 02****Unit 1: DNA Replication**

DNA replication in prokaryotes- experimental evidence for semi-conservative replication. DNA polymerases, other enzymes and protein factors involved in replication, inhibitors of DNA replication. Mechanism of replication.

Unit 2: Transcription

RNA polymerase, promoter, initiation, elongation and termination of RNA synthesis, inhibitors of transcription. Reverse transcriptase, post transcriptional processing of RNA in eukaryotes. Genetic code: Basic features of Genetic code, biological significance of degeneracy, Wobble hypothesis.

Unit 3: Mechanism of Translation

Ribosome structure, A and P sites, Mechanism of Translation in prokaryotes, Charging of tRNA, f-met tRNA, initiator codon, Shine-Delgarno consensus sequence (AGGA), formation of 70S initiation complex, role of EF-TU, EF-Ts, EF-G and GTP, non-sense codons and release factors, RF1 and RF2.

Unit 4: Regulation of gene expression in prokaryotes and recombinant DNA technology

Enzyme induction and repression, Operon concept, Lac and Trp operon.

Restriction endonucleases, vectors - plasmids, cosmids, bacteriophages. Brief steps in DNA cloning, Applications of recombinant DNA technology.

Laboratory Course (Practicals) of UGBCH18C601: Credits: 2

1. Estimation of DNA by Diphenylamine method.
2. Extraction of RNA and its estimation by Orcinol method.
3. Denaturation of DNA, hypo- and hyperchromacity.
4. Agarose gel electrophoresis of DNA.
5. Demonstration of PCR.

SUGGESTED READINGS:

- Molecular & Cell Biology by Lodish et al.
- Molecular Biology by Robert Weaver.
- Berg, J.M., Tymoczko, J.L. and Stryer L., Biochemistry (2012) 7th ed., W.H. Freeman and Company.

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**Course Structure and distribution of different courses with their credits for B.Sc.
Biotechnology**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Fundamentals of Biochemistry	Core Course	6 credits 4(T)+2(P)
2.	II	Enzymology and metabolism	Core Course	6 credits 4(T)+2(P)
3.	III	Bio-techniques and Biostatistics	Core Course	6 credits 4(T)+2(P)
4.	IV	Microbiology, Immunology & Animal Sciences	Core Course	6 credits 4(T)+2(P)
5.	V	Molecular Biology and Genetic Engineering	Discipline Specific Elective	6 credits 4(T)+2(P)
6.	V	Plant biotechnology & bioprocess engineering	Discipline Specific Elective	4 credits 2(T)+2(P)

Course outcomes:

1. Grasp of basic and advanced knowledge on various domains of biotechnology.
2. To impart an ability to apply biotechnology skills (including molecular & micro biology, immunology & genetic engineering, bioprocess & fermentation, enzyme & food technology) and its applications in core and allied fields.
3. Ability to integrate technologies through an inter-disciplinary learning habit.
4. Develop an independent thinking ability.
5. Equip the students with the laboratory skills in biotechnology.
6. Demonstrate knowledge for in-depth analytical and critical thinking to identify, formulate and solve the issues related to Biotechnology Industry, Pharma industry, Medical or hospital related organizations, Regulatory Agencies, & Academia.
- 7: Develop skills, attitude and values required for self-directed, lifelong learning and professional development.
8. To provide students with the concepts and research approaches for their higher career in the field of biotechnology and develop their scientific interest.
9. To impart in-depth practical oriented knowledge to students in various thrust areas of biotechnology, so as to meet the demands of industry and academia.

10. Ability to inculcate an attitude of enquiry towards developing innovative ability and enhancing entrepreneurship skills. Biotechnology and skill development goes hand in hand which means by the time students' pass-out, they have enough skill behind them which in turn enhances their employability.

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1. Fundamentals of Biochemistry (Core course-I):

Semester	Core Course	Course Title	Credits
1 st	BT116C	Fundamentals of Biochemistry	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- To understand the properties of carbohydrates, proteins, lipids, cholesterol, DNA, RNA, glycoproteins and glycolipids and their importance in biological systems.
- Exposure to basic reactions of biomolecules.
- Determine presence of biomolecules like carbohydrates, proteins, lipids, etc. in known and unknown samples.
- Determine the extent of adulteration in samples containing biomolecules.
- To acquire fundamental knowledge on enzymes and their importance in biological reactions.
- Understanding the role of enzymes in clinical diagnosis and industries.

FUNDAMENTALS OF BIOCHEMISTRY**THEORY****CREDITS: 04****Unit - 1**

Physicochemical properties of water; Concept of pH, pK, pI & buffers; Structure, classification, physical and chemical properties of amino acids; Levels of protein structure- primary, secondary, tertiary and quaternary; Structure and function of fibrous and globular proteins; Forces stabilizing protein structure.

Unit - 2

Nomenclature and classification of enzymes; Basic principles of enzyme catalysis; Concept of active site; Enzyme activity and its measurement, factors affecting enzyme activity; Michaelis-Menten kinetics; Lineweaver-Burk plot; Enzyme inhibition with special focus on the types and mechanism of reversible inhibitors.

Unit - 3

General structure, classification and function of carbohydrates; Stereoisomerism in monosaccharides with special reference to the concepts of configuration and conformation;

Carbohydrate metabolism - glycolysis, TCA cycle, electron transport chain, oxidative phosphorylation.

Unit - 4

Nomenclature and properties of fatty acids; Structure and functions of major types of lipids - triglycerides, phospholipids, sphingolipids, sterols; Transport of fatty acids across the mitochondrial membrane, β oxidation of saturated and unsaturated fatty acids; Biosynthesis of fatty acids and triglycerides. Structure and classification of nitrogenous bases, composition and bonding in nucleotides and polynucleotides..

PRACTICAL

CREDITS: 02

1. Preparation of molar, molal, normal solution and buffers.
2. Qualitative and quantitative estimation of carbohydrates in a given solution.
3. Qualitative and quantitative estimation of proteins in a given solution.
4. Enzyme activity assay: Acid/Alkaline Phosphatase.
5. Effect of temperature and pH on enzyme activity

SUGGESTED READINGS

- Lehninger Principles of Biochemistry: Nelson, D. L. and Cox, M. M. - Worth Publishers, New York.
- Biochemistry (Latest Edition): Stryer, L. - W. H. Freeman and Company, New York.
- Biochemistry (Latest Edition): Voet, D. and Voet, J. G. - John Wiley and Sons Inc. New York.
- Understanding Enzymes: Palmer, T. - Ellis Horwood Limited, UK.
- Enzymology: Devasena, T. - Oxford University Press.

2. Enzymology and metabolism (Core course-II):

Semester	Core Course	Course Title	Credits
2 nd	BT216C	Enzymology and metabolism	Theory: 04; Practical: 02 Total : 06

Course Specific Outcomes:

1. Acquiring training to estimate activity of enzymes.
2. To determine pH optimum, K_m and V_{max} of enzymes and to analyse enzyme kinetics.
3. To determine optimum temperature for the activity of an enzyme.
4. Students will conceptualize how various biomolecules are metabolized inside the body in order to produce energy for various functions and how various metabolic pathways regulate growth and development of living beings.
5. Students will know about role of high energy compounds, how carbohydrates serve as energy source to power various functions, interplay of regulatory networks in the body, hormonal regulation of metabolism, etc.

ENZYMOLGY AND METABOLISM**THEORY****CREDITS: 04****Unit- 1**

Nature of enzymes, Holoenzyme, Apoenzyme, Prosthetic group, Cofactor, Coenzyme, Enzyme Activity, Units of Measurement, Nomenclature and Classification of Enzymes, Nature of Active Site, Activation Energy, Enzyme Substrate Complex, Enzyme Kinetics, Michaelis –Menten Equation, K_m , V_{max} , K_{cat} ; Factors Affecting Rate of Reaction, Enzyme Inhibition (Competitive, Non- Competitive and Un - Competitive).

Unit- 2

Carbohydrate Metabolism, Glycolysis, Glyconeogenesis, TCA cycle, Electron Transport Chain, Oxidative Phosphorylation, Pentose Phosphate Pathway, Glyoxylate cycle and their Regulation.

Unit- 3

Lipid Metabolism, Transport of Fatty Acids across the Mitochondrial Membrane, Beta Oxidation of Saturated and Unsaturated Fatty Acids, Biosynthesis of Fatty Acids and Triglycerides. Prostaglandins and their Synthesis.

Unit- 4

Digestion and Absorption of Protein in Gastrointestinal Tract. Transamination and Deamination Reactions involved in Amino Acid Metabolism. Urea Cycle and its Regulation. Metabolic Disorders of Amino Acid Metabolism.

Denovo and Salvage Pathway of Purine and Pyrimidine Synthesis. Degradation of Purine and Pyrimidines; Conversion of Ribonucleotides to Deoxyribonucleotides and its Regulation.

Practical:

1. Determination of pKa value of p – Nitro phenol and amino acids.
2. Enzyme activity assay: acid / alkaline acid phosphatase.
3. Effect of temperature on enzyme activity.
4. Effect of pH on enzyme activity.
5. Estimation of DNA by DPA method.
6. Estimation of DNA by spectrophotometer.

Suggested reading

- Biochemistry by Lubert and Stryer
- Enzymology by T. Devsana
- Biochemistry by Nelson and Cox
- Enzymology by Trevor Palmer

3. Bio-techniques and Biostatistics (Core course-III):

Semester	Core Course	Course Title	Credits
3 rd	BT316C	Bio-techniques and Biostatistics	Theory: 04; Practical: 02 Total : 06

Course Specific Outcomes:

- Students will acquire practical training to handle the instruments like colorimeter, spectrophotometer and to use them for biochemical determinations. Using the techniques of paper/thin layer chromatography, students will be able to separate amino acids, sugars.
- They will acquire practical skill to separate proteins by gel filtration and PAGE
- The students will acquire practical training related to quantitative determination of nucleic acids and more importantly they will be trained with the modern techniques of DNA manipulation such as isolation of native DNA, restriction digestion of isolated DNA, its characterization by agarose gel electrophoresis, amplification of DNA fragment by PCR, etc
- Biostatistics will help in understanding the principles of collection of data in biological experiments, proper statistical analysis of the data and its presentation. Students will understand the importance of sample size and various variables that affect data. Students will know the importance of mean, standard error, standard deviation, significance in presenting the data. Knowing statistical methods will help students in improving their analytical and interpretation skill.

BIO-TECHNIQUES AND BIOSTATISTICS**THEORY****CREDITS: 04****Unit-1**

Centrifugation: Principle, theory and Application of differential and analytical centrifugation, Derivation of Sedimentation Coefficient. Density gradient centrifugation. Types of rotors, Electrophoresis: Principle, Theory, Application of Agarose, polyacrylamide gel electrophoresis (under native and denaturing conditions).

Unit- 2

Principles and methodology of: Isoelectric focusing and 2-D Gel electrophoresis. Western, Northern & Southern Blotting, Polymerase chain reaction(PCR), PCR and Hybridisation based

markers (RFLP, RAPD and AFLP). Immunodiffusion, Immuno-electrophoresis, ELISA and RIA.

Unit- 3

Chromatography: Course title: Principle, Theory and Application of Thin layer, Ion Exchange, Gel exclusion, Affinity, HPLC Chromatography; Spectrophotometers; Beer and Lambert's Law and its Applications.

Unit-4

Sample, Population, sampling techniques, Mean, Median, Mode and their Comparison; Frequency Distribution; Standard Deviation, standard Error and Mean (SEM), p – Value ; Standard t-Test (Paired and Unpaired); Chi square Test; Graphical representation of data (Histogram, Bar Chart, Pie chart, Frequency curve, etc).

PRACTICAL

CREDITS: 02

1. Paper and Thin layer chromatography
2. SDS-PAGE.
3. Demonstration of Western blotting.
4. Use of excel for calculating: Mean, Mode, Median.
5. Use of excel for drawing, histogram, bar-chart and pie- chart.

SUGGESTED READINGS:

- Principles and Techniques of practical Biochemistry: Keith Wilson, John Walker.
- Principles and Techniques of Biochemistry and Molecular biology: Keith Wilson, John Walker.
- Basic Biostatistics: Bert Gurtzman.

4. Bio-techniques and Biostatistics (Core course-III):

Semester	Core Course	Course Title	Credits
4 th	BT416C	Microbiology, Immunology & Animal Sciences	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- Experiential learning and critical thinking of the structure and function of both prokaryotic and eukaryotic cells (including the molecular basis and role of sub-cellular compartmentalization).
- To become aware with the contributions of Louis Pasteur, Edward Jenner and Robert Koch in microbiology and immunology.
- To isolate microbes from provided samples and to perform bacterial cultures in different media.
- To get trained in performing routine microbiological practices such as sterilization, media preparation, maintenance of microbial culture, staining etc.
- Understanding of the overview of immune system including cells, organs and receptors.
- To learn structure and functions of different classes of immunoglobulins, the genetic basis of antibody diversity and the importance of humoral, cell-mediated and innate immune responses in combating pathogens.
- Students will understand the basic techniques involved in animal cell culture and maintenance of culture.

MICROBIOLOGY, IMMUNOLOGY & ANIMAL SCIENCES**THEORY****CREDITS: 04****Unit-1**

Introduction to bacterial cell: Bacterial Cell wall structure & biosynthesis. structure and functions of outer membrane flagella. cell inclusions. Introduction to viruses ., Classification of viruses: RNA and DNA viruses, plus & negative stranded, Genome and life cycle of lambda phage. Gene transfer in bacteria: Transformation, Conjugation and transduction.

Unit-2

Anatomical barrier to infections (mechanical, chemical and biological). Cellular barrier to infection. Phagocytosis & intracellular killing. Respiratory burst & intracellular killing.

Mechanism of inflammation, Acute phase proteins. Lymphatic system. Organization and Structure of Lymphoid Organs; Hematopoiesis and Differentiation Basic concept of cytokines. Toll like receptors. B and T Lymphocytes (TH1 & TH2), Dendritic Cells, Eosinophils, Neutrophils, Mast Cells, Natural Killer.

Unit-3

Mechanism of Humoral and Cell mediated Immune response. Primary and secondary immune responses. Complement System (pathways) & its regulation. Nature of Antigens, Structure, types and function of Antibody. Monoclonal antibodies; ; Antigen-Antibody interaction, Antigen Processing and Presentation: Structure and Function of MHC molecules.

Unit-4

Primary and Secondary Cell Line Cultures. Media for cell lines. Suspension & Adherent monolayer cultures, Commonly used Cell Lines. Basic Techniques of Cell culture in vitro, Disaggregation of tissue and primary culture, Maintenance of cell culture. Laminar flood hood. CO2 incubator, aseptic conditions for cell culture.

PRACTICAL

CREDITS: 02

1. Sterilization techniques for glassware and Plastic ware. Operational use of autoclave and lamina airflow.
2. Media preparation and sterilization.
3. Gram staining
4. Study of microbial growth kinetics.
5. Separation of serum from blood.
6. Blood grouping.

SUGGESTED READINGS:

- Immunology: Kuby
- Immunology: Tizard
- General Microbiology: Roger Stanier, Ingraham, Wheelis, painter.
- Animal Cell Science: Freshney

4. Molecular Biology and Genetic Engineering (Core course-III):

Semester	Core Course	Course Title	Credits
5 th	BT516D	Molecular Biology and Genetic Engineering	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

1. Students will acquire knowledge related to discovery of DNA as genetic material, DNA replication, transcription, DNA repair and translation. Coding and non-coding regions of eukaryotic genome and their importance will be analyzed. *E. coli lac* operon, PCR, expression vectors and their importance in Biotechnology will be studied.
2. They will develop understanding of the molecular basis of RNA processing and RNA splicing and also the ways in which the biological processes are regulated and the significance of regulation in maintaining different life forms.
3. The students will acquire basic knowledge of recombinant DNA technology, DNA manipulation in prokaryotes and eukaryotes, engineering of DNA molecules using restriction and modification enzymes. They will get acquainted with the use of cloning and expression vectors, creation of genomic and cDNA libraries and their applications. Students will also understand the methods for production of proteins using recombinant DNA technology and their application in industrial systems.

MOLECULAR BIOLOGY AND GENETIC ENGINEERING**THEORY****CREDITS: 04****Unit-1**

Structure of DNA and its various forms (A, B, Z); Forces stabilizing the DNA Structure. General features of Replication (mode of replication, directionality of replication, primer synthesis). Enzymes and Proteins involved in Replication; Origin of Replication & its organization with examples from prokaryotic & eukaryotic systems. Mechanism of Replication Initiation, Elongation and Termination in Prokaryotes and Eukaryotes; End Replication of Linear DNA & Role of Telomerase.

Unit-2

Transcription, Structure and Function of RNA Polymerase; Basal Transcription machinery, Organization of promoter in prokaryotic & eukaryotic systems. Enhancers and Silencer elements. Transcription initiation, elongation & termination. Operon Concept: Positive and Negative Regulation with reference to lac and trp operons. Post Transcriptional Modifications: Mechanism of RNA splicing, capping and polyadenylation.

Unit-3

Translation: Structural features of eukaryotic and prokaryotic mRNAs. Genetic Code: General features of genetic code. Wobble hypothesis. Basic features of translation machinery: Ribosome, t-RNA, protein factors involved in translation, amino-acyl t-RNA synthetases. Mechanism of translation initiation, elongation and termination (Prokaryotic and eukaryotic).

Unit-4

Recombinant DNA technology tools: Restriction enzymes, Ligases, Phosphatases, T4 Polynucleotide kinase, DNA Pol I and Klenow fragment. Cloning vectors: General Features of Plasmids, Bacteriophages (lambda & M-13), Cosmids & Phagemids as cloning vectors. Selection marker genes of bacterial vectors & yeast vectors. Blue-white selection. Ethics & Biosafety of DNA recombinant technology.

PRACTICAL**CREDITS: 02**

1. Isolation of genomic DNA and its analysis by agarose gel electrophoresis
2. Restriction digestion of isolated DNA/plasmid DNA.
3. Quantification of DNA by spectrophotometry.
4. Formation of bacterial competent cells
5. Transformation of plasmid in competent cells

SUGGESTED READINGS

- Genes-XI: Benjamin Lewin
- Molecular Biology: Robert Weaver
- Molecular and Cell Biology: John Reece
- Principles of gene manipulations: Old And Primrose

5. Plant Biotechnology & Bioprocess Engineering (Discipline Specific Elective):

Semester	Core Course	Course Title	Credits
6 th	BT616D	Plant biotechnology & bioprocess engineering	Theory: 04; Practical: 02 Total : 06

Course Specific Outcomes:

1. Understand principles of plant culture, media preparation and can explain *invitro* fertilization and embryo transfer technology, meristem culture and clonal propagation of plants.
2. Students will have an insight in applications of recombinant DNA technology in agriculture, production of therapeutic proteins and can describe commercial production of fuels, microbial enzymes and can apply them in research work.
3. Students can give specific examples of agricultural and horticultural biotechnology applications, including genetically modified organism (GMO) crops, hydroponics, and plant-made pharmaceuticals.
4. To understand bioprocesses for industrial applications and ways in which industrial productivity can be enhanced.
5. To gain a hands-on experience in techniques used in bioprocess technology and their applications.
6. Also the course will provide information how cell suspension cultures can be utilized for molecular farming for commercially synthesizing products such as vaccines, hormones, proteins, enzymes, etc

PLANT BIOTECHNOLOGY & BIOPROCESS ENGINEERING**THEORY****CREDITS: 02****Unit-1**

Concept of Plant cell Totipotency. Organization of Root apical meristem and shoot apical meristem. Plant Tissue Culture media composition (M.S media and others) Role of micro, macro nutrients, vitamins & hormones in plant tissue culture; Initiation and maintenance of Callus and Suspension cultures. Shoot Tip Culture; Production and applications of Haploids. Isolation, culture & fusion of Protoplast; Cybrids; Somatic Embryogenesis. Cryopreservation.

Unit-2

Gene Transfer in Plants using *Agrobacterium tumefaciens*, features of Ti plasmid, role of virulent proteins in T-DNA transfer. Concept of Binary vectors. Vectorless Gene Transfer (Gene Gun, whisker method, electroporation, Polyethylene glycol) General Concept of Transgenic Plants, and their utility, Golden Rice, Bt Cotton. Issues with Genetically Modified plants

Unit-3

Kinetics and growth of microbial cells. Methods for measuring cell growth. Concept of Fermentation; Types of fermenters. Batch type Continuous type. Substrate and Product inhibition of Product Biosynthesis, Effect of pH, Temperature and inducers on Product Synthesis; Fermentation Media composition and Sterilization;

Unit-4

Bioreactors: Design and Types, Agitation and Aeration, Impeller and Sparger. Steps involved in Down Stream Processing; Separation of Cells and Broth, Sedimentation, Filtration, Centrifugation, Solvent extraction, Chromatography: Gel filtration, ion-exchange and Affinity (all the above methods are with special reference to product recovery in bioprocess technology) Immobilization of enzymes, Industrial Applications of Enzymes.

PRACTICALS**CREDITS: 02**

1. Preparation of plant tissue culture media.
2. Explant culture (embryo/ovary).
3. Protoplast isolation.
4. Immobilization of sheep RBC's in alginate

SUGGESTED READINGS:

- Plant Biotechnology: Slater, Scott and Fowler.
- Introduction to Plant Biotechnology: H.S. Chawla
- Principles of Fermentation technology: Stanbury and Whitaker.

**Course Structure and distribution of different courses with their credits for
B.Sc. Botany**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Biodiversity (Microbes, Algae, Fungi and Archegoniate)	Core Course	6 credits 4(T)+2(P)
2.	II	Plant Ecology and Taxonomy	Core Course	6 credits 4(T)+2(P)
3.	III	Plant Anatomy and Embryology	Core Course	6 credits 4(T)+2(P)
4.	III	Medicinal Botany	Skill Enhancement Course	4 credits 2(T)+2(P)
5.	IV	Plant Physiology and Metabolism	Core Course	6 credits 4(T)+2(P)
6.	V	Cell and Molecular Biology	Discipline Specific Elective	6 credits 4(T)+2(P)
7.	V	Preservation of Fruits & Vegetables	Skill Enhancement Course	4 credits 2(T)+2(P)
8.	VI	Economic Botany and Biotechnology	Discipline Specific Elective	6 credits 4(T)+2(P)

Course Outcomes

This course provides students with an in-depth knowledge of the Plant diversity in form, structure and habits.

Students will acquire systematic and comprehensive understanding of the fundamental concepts and principles in Taxonomy. Students will be able to learn in-depth knowledge and understanding about the various processes occurring in nature at ecosystem level.

This course provides students with the basic knowledge in plant growth and development from both functional and evolutionary points of view. It will also introduce students to the different strategies made by the plants in-order to survive in different climatic conditions.

An understanding of how Plants work is provided in this course to the students. The rules and laws that govern the processes in plants are taught which give a strong understanding to the students for understanding the physiology, Biochemistry and other Biological processes.

This course provides students with the basic knowledge related to the cell, the various organelles and their functioning. It will also introduce students to the molecular and cellular mechanisms going on in the body of an organism.

This course will introduce students to the plants that are to be used in day to day life. The students are supposed to get the information of various parts of the plants that are medicinally very important. Medicinal plants and their role is to be learnt in detail.

1. Biodiversity (Microbes, Algae, Fungi and Archegoniate) (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Biodiversity (Microbes, Algae, Fungi and Archegoniate)	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Knowledge about the lower plants like algae, bryophytes and pteridophytes is provided wherein the students are made aware of various degrees of structural complexities among the different groups of lower plants ranging from simplest unicellular or multicellular thalloid body organization to highly advanced and complex forms.

BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONIATE)**THEORY****(CREDITS 4)****Unit 1****Microbes and Fungi**

Viruses: Discovery, general structure, replication, DNA virus (T-phage); lytic and lysogenic cycle, RNA virus (TMV).

Bacteria: General characteristics and cell structure; reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); economic importance.

Fungi: General characteristics, classification (Alexopolous, Mims & Blackwell), cell wall composition, nutrition and reproduction; life cycle of Rhizopus (Zygomycota), Venturia (Ascomycota), Agaricus (Basidiomycota).

Symbiotic Associations: Lichens and Mycorrhiza - general account and significance.

Unit 2**Algae**

General characteristics, classification of algae (Round 1965), criteria for algal classification; range of thallus organization; morphology, reproduction and life cycle of Nostoc, Chlamydomonas, Oedogonium, Vaucheria, Ectocarpus, Batrachospermum; economic importance of algae.

Unit 3**Bryophytes**

Archegoniate – General characteristics, adaptations to land habit.

Bryophytes - General characteristics, Proskauer's classification (upto family); morphology, anatomy and reproduction (excluding developmental details) of *Marchantia* and *Funaria*; Evolution of sporophyte; apogamy and apospory; alternation of generation; economic importance of bryophytes.

Unit 4**Pteridophytes and Gymnosperms**

Pteridophytes - General characteristics; classification of pteridophytes (Sporne 1965); Early land plants (*Rhynia*); morphology, anatomy and reproduction (excluding developmental details) of *Equisetum* and *Dryopteris*; heterospory and origin of seed habit; evolution of stellar systems in pteridophytes.

Gymnosperms - General characteristics, classification – Christenhusz et al. 2011 (upto family); morphology, anatomy and reproduction (excluding developmental details) of *Cycas* and *Pinus*; economic importance of gymnosperms.

PRACTICAL**(CREDITS 2)**

1. Models / photographs of viruses – T-Phage and TMV, drawing / photograph of lytic and lysogenic Cycle.
2. Types of bacteria from temporary/permanent slides/photographs; Gram staining.
3. Study of vegetative and reproductive structures of *Nostoc*, *Chlamydomonas*, *Oedogonium*, *Vaucheria*, *Ectocarpus* and *Batrachospermum* through temporary preparations, and permanent slides.
4. *Rhizopus* and *Venturia*: Asexual stages from temporary mounts and sexual structures through permanent slides.
5. *Agaricus*: Specimens of button stage and full grown mushroom; sectioning of gills of *Agaricus*.
6. Study of growth forms of lichens (crustose, foliose and fruticose).
7. *Marchantia*- morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemma cup, w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s sporophyte (all permanent slides).

8. *Funaria*- morphology, w.m. leaf, rhizoids, operculum, peristome, annulus, spores (temporary slides); permanent slides showing antheridial and archegonial heads, l.s. capsule and protonema.
9. *Selaginella*- morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, w.m. microsporophyll and megasporophyll (temporary slides), l.s. strobilus (permanent slide).
10. *Equisetum*- morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore, w.m. spores (wet and dry - temporary slides); t.s. rhizome (permanent slide).
11. *Dryopteris*- morphology, t.s. rachis, v.s. sporophyll, w.m. sporangium, w.m. spores (temporary slides), t.s. rhizome, w.m. prothallus with sex organs and young sporophyte (permanent slide).
12. *Cycas*- morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet, v.s. microsporophyll, w.m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).
13. *Pinus*- morphology (long and dwarf shoots, w.m. dwarf shoot, male and female), w.m. dwarf shoot, t.s. needle, t.s. stem, l.s./t.s. male cone, w.m. microsporophyll, w.m. microspores (temporary slides), l.s. female cone, t.l.s. & r.l.s. stem (permanent slide).

SUGGESTED READINGS

- Alexopoulos, C.J. and Mims, C.W. 2002. Introductory Mycology. 5th edition. John Wiley and Sons, New York.
- Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons(Asia), Singapore. 4th edition.
- Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
- Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.
- Kumar, H.D. 1999. Introductory Phycology. East-west Press Ltd., New Delhi.
- Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.
- Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
- Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.

- Singh, R.S. 1990. Principles of Plant Pathology. Oxford and IBH Publishers, New Delhi.
- Singh, V., Pande, P. C. and Jain, D. K. 2010. Diversity of Microbes and Cryptogams. Rastogi Publications, Meerut, India.
- Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
- Vashishta, B.R., Sinha, A.K. and Singh, V.P. 2008. Botany for Degree Students-Algae. S. Chand and Company Pvt. Ltd., New Delhi.
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.

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2. Plant Ecology and Taxonomy (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Plant Ecology and Taxonomy	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Students can name and recognize different types of plants growing around in various habitats.
- They will be familiar to flora of the region and the seasonal know-how of these plants. Information is also provided about the description and classification of these plants.
- Plants in relation to their environment are studied.
- Various eco-edaphic factors of a region, their effects on distribution of flora, productivity and efficiency on different ecosystems are taught to students.
- The qualitative and quantitative analysis of vegetation of a particular area is also taught.

PLANT ECOLOGY AND TAXONOMY**THEORY****(CREDITS 4)****Unit 1****Ecology, ecological factors and plant communities**

Introduction to ecology; soil-origin, formation and composition, soil profile; water-states of water in the environment, precipitation types; light and temperature as ecological factors; adaptation of hydrophytes and xerophytes.

Plant communities - characteristics; ecotone and edge effect; succession processes and types.

Unit 2**Ecosystem and Phytogeography**

Structure; energy flow; trophic organization: food chains and food webs; ecological pyramids, primary productivity: biogeochemical cycling of carbon, nitrogen and Phosphorous.

Phytogeography - biogeographical zones of India, concept of endemism.

Unit 3**Plant Taxonomy and classification**

Introduction to plant taxonomy; types of classification - artificial, natural and evolutionary.

Classification systems - Bentham and Hooker (upto series), Angiosperm Phylogeny Group

(AGP) (up-to order level).

Numerical taxonomy-OTUS, character weighing and coding, cluster analysis, Phenograms and Cladograms (definitions and differences).

Roles of herbarium and botanical garden, important herbaria and botanical gardens of the world and India.

Unit 4

Identification and nomenclature

Flora, identification Keys: single-access and multi-access; taxonomic evidences from cytology, phytochemistry and molecular data; taxonomic hierarchy - ranks, categories and taxonomic groups.

Botanical nomenclature principles of ICN; binominal system of nomenclature, typification, authorcitation, valid publication, principle of priority.

PRACTICAL

(CREDITS 2)

1. To determine minimum number of quadrats required for reliable estimate of density in a grassland.
2. To study frequency and importance value index of species in a grassland.
3. To estimate bulk density and porosity of grassland and forest soils.
4. To determine moisture content and water holding capacity of grassland and forest soil.
5. Determination of pH, and analysis of two soil samples for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field test.
6. To estimate transparency, pH and temperature of different water bodies. Preparation of identification keys from the available specimens.
7. Taxonomic description of the following families: Malvaceae (*Malva/Althea*), Fabaceae (*Trifolium/Lathyrus*), Rosaceae (*Rosa/ Potentilla*), Asteraceae (*Helianthus / Taraxacum*), Solanaceae (*Solanum / Datura*), Apiaceae (*Daucus / Scandix*), Lamiaceae (*Mentha / Nepeta / Salvia*) and Liliaceae (*Hemerocallis / Tulipa*), Poaceae (*Avena / Poa*).
8. Mounting of a properly dried and pressed specimen of any wild plant with herbarium label (to be submitted in the record book).

SUGGESTED READINGS

- Chapman, J.L. and Reiss, M.J. 1997. Ecology: principles and Applications. Cambridge University Press, London.
- Colinvaux, P. 1993. Ecology. John Wiley, New York.
- Dash, M.C. 1993. Fundamental of Ecology. 1993. Tata McGraw Hill Publishing Company, Ltd.
- Judd, S., Walter et al. 2008. Plant Systematics: A Phylogenetic Approach. Sinauer Associates, Inc. Sunderland, USA.
- Molies, M.C. Jr. 1999. Ecology: Concepts and Applications. WCB/McGraw-Hill Company, London.
- Odum, E.P. and Barrett, G.W. 2004. Fundamentals of Ecology. Brooks, Cole.
- Pooja, S. N. 2010. Economic Botany. Discovery Publishing House, New Delhi.
- Simpson, Michael G. 2006. Plant Systematics. Elsevier, California, USA.
- Singh, Gurcharan 2012. Plant Systematics: Theory and Practice. Oxford and IBH Publishers, New Delhi
- Singh, V., Pande, P. C. and Jain, D.K. 2010. Diversity and Systematics of Seed Plants. Rastogi Publications, Meerut, India.
- Stiling, P. 2001. Ecology: Theories and Applications. Printice-Hall Inc.
- Wikens, G. E 2004. Economic Botany- Principles and Practices. Kluwer Publishers, Netherlands.
- Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
- Singh, G. (2012). *Plant Systematics: Theory and Practice*. Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition.
- J.S. Singh, S. R. Gupta & S P Singh. Ecology, Environmental Science and Conservation. S. ChandPublishing Company.

3. Plant Anatomy and Embryology (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	Plant Anatomy and Embryology	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- The anatomical structures of different plant organs are taught to the students.
- Moreover, they are trained for cutting sections of the parts for use in anatomical studies.
- The students are also made aware of the occurrence of different tissue systems in plants.
- Students also gain knowledge about fundamental steps in plant reproduction and will be able to explicate the methodologies specifically used to study the process of embryonic development in plants.

PLANT ANATOMY AND EMBRYOLOGY**THEORY****(CREDITS 4)****Unit 1****Plant tissues and Organs**

Meristematic and permanent tissues: Simple and Complex tissue (Types and Functions); Organization of root and shoot apical meristem- Histogen theory; Tunica and corpus theory. Plant organs: Structure of a typical dicot and monocot root, stem and leaf.

Unit 2**Secondary Growth and Adaptations**

Secondary growth: Cambium- types, structure and function; Secondary growth in typical dicot root and stem (Helianthus, Sunflower); General account of wood structure (Heart wood and Sap wood).

Adaptations: General structure and function of cuticle, epidermis and stomata; General account of adaptations in xerophytes and hydrophytes.

Unit 3**Flower and Pollination**

Embryo and Endosperm: Endosperm development, structure and functions; Structure and development of dicot and monocot embryo (Capsella-bursa pectoris; maize).

Apomixis and Embryogeny: Definition, types and practical applications of apomixis and polyembryony.

Unit 4**Embryo and Endosperm**

Embryo and Endosperm: Endosperm development, structure and functions; Structure and development of dicot and monocot embryo (*Capsella-bursa pectoris*; maize).

Apomixis and Embryogeny: Definition, types and practical applications of apomixis and polyembryony.

PRACTICAL**(CREDITS 2)**

1. Study of meristems through permanent slides/bio-visual aids.
2. Tissues (Parenchyma, Collenchymas and Sclerenchyma) through permanent slides and photographs.
3. Adaptive anatomy: Xerophytes (*Nerium* leaf); Hydrophyte (*Hydrilla* stem).
4. Structure of anther (young and mature), Tapetum -amoeboid and secretory (through permanent slides/materials/ bio-visual aids).
5. Types of Ovules; anatropous, orthotropous, circinotropous, amphitropous, campylotropous (through permanent slides/materials/ bio-visual aids).
6. Female gametophyte; *Polygonum* (monosporic) type of embryo sac development (through permanent slides and photographs).
7. Ultrastructure of mature egg apparatus cells through electron micrograph.
8. Pollination types and seed dispersal mechanisms (including appendages, aril, caruncle) through photograph and specimens.
9. Root: Monocot: *Zea mays*; Dicot: *Helianthus* (preparation of temporary mount and permanent slides) Secondary: *Helianthus* (Permanent slides only).
10. Stem: Monocot: *Zea mays*; Dicot: *Helianthus* (preparation of temporary mount and permanent slides) Secondary *Helianthus* (Permanent slides only).
11. Leaf: Dicot and monocot leaf (preparation of temporary mount and permanent slides).
12. Dissection of embryo/endosperm from developing seeds.
13. Calculation of percentage of germinated pollen in a given medium.

SUGGESTED READINGS

- Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of angiosperms. Vikas Publication House Pvt. Ltd. New Delhi. 5th Edition.
- Singh, V., Pande, P. C. and Jain, D.K. 2010. Structure, Development and Reproduction in Angiosperms. Rastogi Publications, Meerut, India.
- Maheshwari, P. 1950. An Introduction to the Embryology of Angiosperms. McGrawHill, New York.
- Pandey, A.K. 1997. Introduction to Embryology of Angiosperms. CBS Publishers and Distributors, New Delhi.
- Pandey, S.N. and Chadha. 1996. Embryology. Vikas Publishing house, New Delhi.
- Cutler, D.F., Botha, T. and Stevenson, D.W. 2008. Plant anatomy: An applied approach. Wiley-Blackwell Publishers.
- Evert, R.F. and Esau, K. 2006. Esau's Plant Anatomy. John Wiley and Sons.
- Pandey, B.P. (2001). Plant Anatomy. S. Chand and Company, New Delhi.
- Mauseth, J.D. (1988). Plant Anatomy. The Benjamin/ Cummings Publisher, USA
- Pandey, B.P.(2010). Modern practical botany volume II.S. Chand & Company Ltd. New Delhi.
- Bendre, A. and Kumar, A. (2012). A text book of practical botany volume II. Rastogi publications Meerut.

4. Medicinal Botany (Skill Enhancement Course-I)

Semester	Skill Enhancement Course	Course Title	Credit
III	SEC-I	Medicinal Botany	Theory: 02; Practical: 02 Total: 04

Course specific outcomes

- This course is designed to provide students with an understanding of the conservation strategies of different medicinal plants.
- Students will be able to understand the concept, methods of different methods related to conservation of those medicinal plants that are facing extinction due to multiple reasons.
- Students will be able to understand the different types of chemicals that the plants possess which will make them suitable for industry to make their own small business.

MEDICINAL BOTANY**THEORY****(CREDITS 4)****Unit 1****Introduction and Scope**

Introduction to medicinal plants; status & scope of medicinal Botany.

Indian contribution to medicinal botany; brief account of traditional medicinal systems Ayurvedha, Unani, & Homeopathy.

Some common herbal practices used to cure - fever, worms, diarrhea, cough & cold, Arthritis & rheumatism, stone in urinary tract, eczema or fungal infections.

Unit 2**Cultivation technologies**

Agro & Cultivation technology (nursery raising, cultivation, inter-culture and fertilizers, pests & Diseases, harvesting & profits) for some economically important medicinal plants *Withania somnifera*, *Aloe vera*, *Rauwolfia serpentine*, *Podophyllum hexandrum*, *Arnebia benthamii* & *Lavendula*.

Green House technology - principles, methodology & applications.

Propagation of medicinal plants through cuttings, rhizomes, bulbs & seeds.

Unit 3

Medicinal plant constituents

Plant secondary metabolites of medicinal importance- Alkaloids, glycosides, mucilages & sterols (Brief account).

Sources and uses of Morphine, Reserpine, Atropine, Codeine & Ephedrine in modern medicine.

Chemical constituents & Traditional uses of some medicinal plants of Kashmir Himalaya.

Aconitum heterophyllum, *Artemisia absinthium*, *Fritillaria roylei*, *Thymus serpyllum* & *Crocus sativus*.

Unit 4

Conservation of medicinal plants

Concept of IUCN, Red List criteria, threat categories; concept of endemism, threatened and endemic medicinal plants.

Conservation, In-situ conservation strategies (National Parks, Sanctuaries, Biosphere reserves & sacred grooves), Ex-situ conservation (Botanical Gardens, Ethno-medicinal herbal gardens & Seed banks).

Conservation through tissue culture and cryopreservation; Brief account of wild life protection Act 1972.

PRACTICAL

(CREDITS 2)

1. Study the botanical features of some medicinally important plants *Artemisia absinthium*, *Lavendula* & *Datura stramonium*.
2. Microscopically study the mucilage from the seeds of *Ocimum* and *Cydonia*.
3. Detection of alkaloids through Alkaloid colour reagent alkaloid precipitants from some common plants.
4. Detection of glycosoids, tannins, saponins, steroids through the colour reagents.
5. Detection and extraction of oils from some plants through colour reagent or any other method.
6. Preparation and compilation of medicinal plant inventory (with photographs) of some local medicinal plants by each student.
7. Study the distribution of cilia using Sudan IV stain in the seeds of *Brassica campestris*, *Sesamum indicum* & *Prunus amygdalis*.
8. Visit to IIM institutes to make students aware about the extraction processes.

SUGGESTED READINGS

- Economic Botany, Rashtra Vardhna, Sarup Book Publishers, New Delhi.
- Indigenous Herbal Medicines, tribal formulations and traditional herbal practices: Deepakaharya and Anshu Srivastava; Avishkar publication, India.
- Glossary of Indian medicinal plants, R.N., Chopra, S.L. Nayar, and L. C. Chopra, 1956. CSIR. New Delhi.
- Medicinal plants: Ethnobotanical approach, Trivedi PC. 2006 Agrobios, India.
- Medicinal plant cultivation: A scientific approach 2 ed. Parshit and Vyas, 2008 Agrobios, India.

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5. Plant Physiology and Metabolism (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Plant Physiology and Metabolism	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- The understanding of the physiological and biochemical aspects of the metabolic reactions occurring in the plant systems is provided to the students.
- They come to know about the various biochemical processes, their regulation and the biochemical pathways governing the synthesis of many biomolecules.
- Moreover, the students are acquainted to the structure, composition and significance of important biomolecules like sugars, amino acids, proteins, nucleic acids and lipids etc.

PLANT PHYSIOLOGY AND METABOLISM**THEORY****(CREDITS 4)****Unit 1****Plant-Water Relations and Transport**

1. Plant Water Relations: water potential and its components; Transpiration and its significance; Factors affecting transpiration; Ascent of Sap, Pressure flow model; Phloem loading and unloading.
2. Mineral nutrition: Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport.

Unit 2**Photosynthesis and Respiration**

1. Photosynthesis: Photosynthetic Pigments (Chl-a, Chl-b, xanthophylls, carotene); light harvest complexes, Photosystem I and II, Electron transport and mechanism of ATP synthesis; C₃, C₄ and CAM pathways of carbon fixation; Photorespiration.
2. Respiration: Glycolysis, anaerobic respiration, TCA cycle; Electron Transport system and Oxidative phosphorylation.

Unit 3**Enzymes and Nitrogen metabolism**

1. Enzymes: Structure, Classification and properties; Mechanism of enzyme action and enzyme inhibition.
2. Nitrogen metabolism: concept of symbiotic and asymbiotic associations, Biological nitrogen fixation; Nitrate and ammonia assimilation.

Unit 4**Plant Growth and Response**

1. Plant growth regulators: Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA and ethylene.
2. Plant response to light and temperature: Photoperiodism (SDPs, LDPs, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on photomorphogenesis; Vernalization.

PRACTICAL**(CREDITS 2)**

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. To study the effect of two environmental factors (light and wind) on transpiration by excised twig.
3. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.
4. Demonstration of Hill reaction.
5. Demonstration of catalase activity and study the effect of pH and enzyme concentration.
6. Demonstrate the activity of Peroxidase and study the effect of pH and enzyme concentration.
7. To study the effect of light intensity and bicarbonate concentration on Oxygen evolution in photosynthesis.
8. Comparison of the rate of respiration in any two parts of a plant.
9. Separation of photosynthetic pigments by paper chromatography.
10. Separation of photosynthetic pigments by Thin Layer Chromatography (TLC).

Demonstration experiments (any four)

1. Bolting.
2. Effect of auxins on rooting.

3. Suction due to transpiration.
4. To determine the value of R.Q. of different respiratory substrates.
5. Respiration in roots.

SUGGESTED READINGS

- Taiz, L., Zeiger, E., (2010). Plant Physiology. Sinauer Associates Inc., U.S.A. 5th Edition.
- Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.
- Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.
- Dennis, D.T., Turpin, D.H., Lefebvre, D.D. and Layzell (eds.). 1997: Plant Metabolism (2nd Edition), Longman, Essex, England.
- Galston, A.W. 1989: Life Processes in Plants, Scientific American Library, Springer-Verlag, New York, USA.
- Hopkins, W.G., 1995: Introduction to Plant Physiology, John Wiley & Sons, Inc., New York, USA.
- Mohr, H. and Schopfer, P. 1995: Plant Physiology. Springer-Verlag, Berlin Germany.
- Salisbury, F.B. and Ross, C.W. 1992. Plant Physiology. 4th Edition. Wadsworth Publishing Company, Inc. California, USA.
- Sharma, O.P and Dixit Shivani. 2008. Practical Botany –III. Pragati Prakashan, Meerut, India.

6. Cell and Molecular Biology (Discipline Specific Elective-I)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-I	Cell and Molecular Biology	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- The subject deals with the basic unit of living organisms (Cell) and the students are acquainted with the structure, types and functions of a cell.
- The studies related to the cell organelles, cell division (Mitosis and Meiosis) and chromosome studies (Number, structure, ploidy level and karyotype) are taught.

CELL AND MOLECULAR BIOLOGY**THEORY****(CREDITS 4)****Unit 1****Cell as a unit of Life, Cell wall and Plasma membranes**

The cell theory; prokaryotic and eukaryotic cells; properties of cell; eukaryotic cell components. Bio-membranes; structure and function, fluid mosaic concept, fluidity of bio-membranes; membrane proteins and their functions; carbohydrates in the plasma membrane; Faces of the membranes. Cell wall-structure and functions.

Unit 2**Cell Organelles**

Non-membranous organelles: Structure and functions of ribosomes, centrioles and basal bodies

Single membrane bound organelles: endoplasmic reticulum, golgi bodies and lysosomes, peroxisomes and glyoxisomes.

Double membrane bound organelles: Mitochondria; structure and functions, semi-autonomous nature; endosymbiont hypothesis; mitochondrial DNA. Chloroplast; structure and functions; semiautonomous nature, chloroplast DNA. Nucleus: Nuclear Envelope-structure of interphase nucleus; chromatin material, euchromatin and heterochromatin, nucleolus.

Unit 3**Cell Cycle & Genetic Material**

Overview of Cell cycle, mitosis and meiosis. DNA- Watson and Crick's model, Griffith's and Avery's transformation experiments. Hershey-Chase bacteriophage experiment, DNA-structure, types, replication (Prokaryotes and eukaryotes).

Unit 4**Gene Expression & Gene Regulation**

Types of RNA (mRNA, tRNA, rRNA), RNA polymerase- various types; Transcription and translation in prokaryotes, genetic code. Gene regulation in Prokaryotes: Lac operon and Tryptophan operon.

PRACTICAL**(CREDITS 2)**

1. To study prokaryotic cells (bacteria), viruses, eukaryotic cells with the help of light and electronmicrographs.
2. Study of the photomicrographs of cell organelles.
3. To study the structure of plant cell through temporary mounts.
4. Study of mitosis and meiosis (temporary mounts and permanent slides).
5. Study the effect of temperature, organic solvent on semi permeable membrane.
6. Study of plasmolysis and deplasmolysis in onion peelings.
7. Study the structure of nuclear pore complex by photograph.
8. Study of special chromosomes (polytene & lampbrush) either by slides or photographs.
9. Preparation of the karyotype and ideogram from given photograph of somatic metaphase chromosome.

SUGGESTED READINGS

- Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. John Wiley & Sons. Inc.
- De Robertis, E.D.P. and De Robertis, E.M.F. 2006. Cell and Molecular Biology. 8th edition. Lippincott Williams and Wilkins, Philadelphia.
- Cooper, G.M. and Hausman, R.E. 2009. The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.

- Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. 2009. The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco.
- Bruce Alberts, James Watson, Dennis Bray, J. Lewis. Molecular Biology of Cell. Garland Science Publishers.
- Bruce Alberts & Lewis. Essential Cell Biology. Garland Science.
- Watson J.D. Molecular Biology of the Gene. 7th Edition. Melno Park Calif, Benjamin/Cummings.
- Lodish et al. Molecular Cell Biology. W. H. Freeman and Co.
- David E. Sadava. Cell Biology: Organ.
- David Freifelder. Molecular Biology.

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7. Preservation of fruits and vegetables (Skill Enhancement Course):

This course provides students with a detailed knowledge of Preservation of fruits and vegetables.

Semester	Core Course	Course title	Credit
5 th	SEC-I	Preservation of fruits and vegetables	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- To learn through direct experience the use of fruits and vegetables
- To learn the basics of preservation of fruits and vegetables.
- The students are provided the knowledge of contemporary methods of preservation of fruits and vegetables.

PRESERVATION OF FRUITS AND VEGETABLES**THEORY****CREDITS: 02****UNIT 1: Need and scope for preservation of fruits and vegetables**

Concept and significance; Nutritional importance of fruits and vegetables; Fruit and vegetable spoilage, causes and consequences; Principles and methods of fruits and vegetable preservation;

Selection of fruits and vegetables for preservation; Processing of fruits and vegetables: Preparation of fruit candy, chutney, sauces and ketchups; Tomato products-Juice, paste, puree, sauce/ketchup, cocktail; Preparation of jam, jellies, Marmalades (Apple, plum, peach).

UNIT 2: Preparation and preservation of fruits and vegetables

Drying and dehydration of fruits and vegetables: Merits of Sun drying and Dehydration, Drying of Apricot and tomato; Pickles and causes of spoilage of pickles; Preparation of mixed vegetable pickles, tomato juice, sauce/ ketchup. Freezing-Types of freezing; Packing and storage of dehydrated products, Containers for packing; Canning and bottling of fruits and vegetables: General steps in canning of fruits and vegetables, Canning of apple pear and cherry; Requirements for a small scale fruit and vegetable based processing plant.

PRACTICAL**CREDITS: 02**

1. Preparation of tomato juice, sauce/ketchup
2. Preparation and preservation of apple juice, orange juice and apple jam
3. Preparation of syrups and brines
4. Test of blanching
5. Sun drying and dehydration of apple, pear, tomato and brinjal

6. Canning of fruits and vegetable
7. Preparation of preservatives
8. Quality evaluation of fruits and vegetable products
9. Identification of machinery and equipments required for establishing a cottage scale fruit preservation unit.

SUGGESTED READINGS:

- Home scale preservation of fruits and vegetables-CFTRI Lab Manual.
- The technology of Food preservation by Desrosier.
- Food science by N.N. Potter.
- Fruits vegetable products by Girdhari Lal, Siddhapa & Tandon.
- Preservation of fruits & vegetables: Girdhari lal, G.S.S. Siddapa and G.L.Tandon IARI New Delhi.
- Fruit and vegetable preservation by Srivastava.
- Post- harvest Technology of Fruits & Vegetables-L.R.Verma & V.K.Joshi.
- Post- harvest management & processing of fruits and vegetables-Satish Kumar Sharma New India Publishing agency-New Delhi.
- Food preservation principles and practices: Arti Sankhla, Renu Mogra and Kusum Babel. Agrotech Publishing Academy Udaipur- In.

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8. Economic Botany and Biotechnology (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-II	Economic Botany and Biotechnology	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Information regarding the use of plants in human welfare is provided to the students. They get acquainted to different classes of economically important plants like cereals, pulses, oil crops, fruits, vegetables, ornamentals, fiber yielding plants, wood plants, medicinal plants etc.
- Use of different medicinal plants is to be read in detail.
- Students are supposed to acquire the basic knowledge of Biotechnology.

ECONOMIC BOTANY AND BIOTECHNOLOGY**THEORY****(CREDITS 4)****Unit 1****Origin of cultivated plants**

Concept of centres of origin, their importance with reference to Vavilov's work; crop domestication and loss of genetic diversity; importance of germplasm diversity.

Cereals: Origin, morphology and uses of Wheat, Rice and Maize. Brief account of millets and pseudo-cereals.

Unit 2**Legumes, Spices and Sugars**

Legumes: Introduction, importance to man and ecosystem with special reference to Gram, Soyabean and Kidney Bean.

Spices and condiments: Introduction; systematic position, morphological features and uses of *Crocus sativus*; *Curcuma domestica*; *Syzygium aromaticum*; *Piper nigrum*; *Elettaria cardamomum* & *Bunium persicum*.

General account of Starch and Sugars with special reference to Potato & Sugar cane.

Unit 3**Beverages, Oils, fibres & Medicinal plants**

Beverages: Introduction; processing and uses of Tea.

General account of Oils and Fats; extraction methods of essential oils; Systematic position and uses of *Brassica*, Coconut, Lavender.

Fibres: Classification of fibres (Based on origin); morphology, extraction & uses of Cotton.

Medicinal & Narcotic Plants: Systematic position, chemical constituents and uses of *Saussurea costus*, *Arnebia benthamii* & *Papaver somniferum*.

Unit 4

Biotechnology & Biotechnological techniques

Introduction & importance of Biotechnology; brief account of plant tissue culture, concept of somaclonal variation; germplasm storage (cryopreservation). Concept of restriction enzymes.

Cloning Vectors for recombinant DNA: Plasmids (Ti & Ri plasmids of *Agrobacterium*), Transposons (Ac & Ds of Maize).

Biotechnological techniques: Gene transfer techniques in plants, transgenic plants with special reference to Bt- Cotton & Golden rice; Blotting techniques (Northern, Southern and Western), DNA finger printing; Molecular DNA Markers (RAPD, RFLP & SNPs). Principle and applications of Polymerase Chain Reaction (PCR); Hybridoma & monoclonal antibodies.

PRACTICAL

(CREDITS 2)

1. Study of economically important plants: Maize, Rice & Potato – (Habit sketch, starch grains and micro-chemical tests).
2. Study the distribution of oil bodies in some oil yielding seeds – Almond, Walnut, Ground nut, Sarson.
3. Study the surface fibres (Cotton) and Bast fibres (Hemp).
4. Study the different types of spices & condiments – Saffron, Piper, Curcuma, Clove, Cardamom, Black Caraway.
5. Preparation of basic standard culture media from dry powdered media.
6. Study through photographs the 4-step and 3-step micro-propagation of plant material.
7. Study through photographs the process of DNA finger printing.
8. Study through photographs the procedures of AFLP, RFLP and SNPs.

SUGGESTED READINGS

- Bhojwani, S. S. & Razdan, M. K. (1996). Plant tissue culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
- Chrispeels, M. J. & Sadava (2003). Plants, Genes and Agriculture. Jones and Bartlett Publishers.
- Glick, B. R., Pasternak, J. J. (2003). Molecular Biotechnology- Principles & applications of recombinant DNA. ASM Press, Washington.
- Kochhar, S. L. (2011). Economic Botany in the Tropics, MacMillan Publishers India Ltd., New Delhi. 4th edition.
- Panday, B. P. (1999) Economic Botany. S. Chand and Company Ltd.
- Sambamurthy A.V.S.S. & Sambamurthy (2000). Economic Botany of Crop Plants. Asiatech Publishers Inc.
- Simmonds N. W. (1984). Evolution of crop plants (edited by Norman Willison Simmonds). Longman Inc., New York.
- Wickens, G. E. (2001). Economic Botany- Principles & Practices. Kulwer Academic Publishers. The Netherlands.

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Course Structure and distribution of different courses with their credits for

B.Sc. Chemistry

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Inorganic and Organic Chemistry	Core Course	6 credits 4(T)+2(P)
2.	II	Organic and Physical Chemistry	Core Course	6 credits 4(T)+2(P)
3.	III	Inorganic and Physical Chemistry	Core Course	6 credits 4(T)+2(P)
4.	IV	Inorganic and Physical Chemistry	Core Course	6 credits 4(T)+2(P)
5.	V	Polymer Chemistry	Discipline Specific Elective	6 credits 4(T)+2(P)
6.	VI	Instrumental Methods of Chemical Analysis	Discipline Specific Elective	6 credits 4(T)+2(P)

Course outcomes

Acquire systematic and comprehensive understanding of the fundamental concepts and principles in Organic, Inorganic, Physical, Analytical and other fields of Chemistry (ii)

Gather knowledge about basic principles of instruments and their use for characterisation of materials

Acquire skill in problem solving, critical thinking and analytical reasoning applicable to scientific problems

Demonstrate experimental techniques and methods for synthesis, isolation and characterisation of simple compounds

Exposure to skill enhancement courses to improve job opportunities in industry, scientific projects and other allied sectors.

1. Inorganic and Organic Chemistry (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Inorganic and Organic Chemistry	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Understand the nature and strength of forces between chemical constituents.
- Understand the applications of different theories of chemical bonding.
- Gain knowledge about the chemical reactivity of S-Block elements.
- Understand stereochemical aspects of organic molecules.
- Acquire knowledge of aromaticity and reaction intermediates.
- Gain knowledge about the chemical properties of unsaturated hydrocarbons.

INORGANIC AND ORGANIC CHEMISTRY**THEORY****(CREDITS 4)****Unit 1****Chemical Bonding and Molecular Structure****Chemical Bonding-I**

Ionic Bond: Lattice energy and Born Haber Cycle. Factors affecting the structure of ionic solids; Radius ratio effect; Coordination number and limitations of radius ratio rule. Fajan's rules and its applications. Solvation energy and solubility of ionic solids. Factors affecting the solubility of ionic solids.

Metallic bond: Characteristics, comparison with ionic and covalent bonds. Theories (Free electron, VB and MO).

Chemical Bonding-II

Valence bond theory: Directional characteristics of covalent bond and types of hybridizations. Limitations of VB theory. Percent ionic character from dipole moment and electronegativity difference.

VSEPR theory: Assumptions; Shapes of some molecules (BF₃, NH₃, H₂O, SF₄, ClF₃ and XeF₂)

Molecular Orbital Theory: Energy level diagrams, Bond order and its significance.

Magnetic properties of homo & hetero nuclear diatomic molecules (N_2 , O_2 , F_2 , HCl , CO & NO).

Multicentre bonding in electron deficient molecules.

Unit 2

S Block Elements

Chemical Reactivity towards Water, Oxygen, Hydrogen, Nitrogen and Halogens. Anomalous behaviour and diagonal relationships (Lithium, Beryllium, Magnesium and Aluminium). Chemical characteristics of the compounds of alkali and alkaline earth metals (Oxides and Hydroxides).

Hydrides: Classification and general properties.

Some commercially important compounds: Sodium carbonate, Calcium carbonate and Calcium sulphate (Preparation, properties and Uses).

Effective nuclear charge and its calculation by Slater rules. Electronegativity and Electron Affinity: Trends, Methods of determination; Applications in predicting and explaining the chemical behaviour of elements.

Unit 3

Aromaticity and Methods of determination of Reaction Mechanism

Aromaticity: Requirements of aromaticity. Huckel's rule and its significance. Explanation using molecular orbital diagram of benzene. Aromaticity of non-benzenoid compounds like pyrrole, thiophene, furan and aromatic ions (3, 5 and 7-membered rings).

Reactive intermediates: Structure, generation and stability of Carbocations, Carbanions, Free radicals, Carbenes, Benzynes and Nitrenes.

Methods of determination of Reaction Mechanism: Identification of Products, Isotope labelling, Stereochemical and Kinetic evidences.

Stereochemistry: Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newman, Sawhorse and Fischer representations. Concept of chirality (upto two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). Threo and erythro; D and L; *cis-trans* nomenclature; CIP Rules: R/ S (for upto 2 chiral carbon atoms) and E / Z Nomenclature (upto two C=C systems).

Unit 4

Structure, Synthesis and Reactions of Alkenes, Dienes, Alkynes and Alkyl halides

Alkenes: Preparation of alkenes from alcohols and alkyl halides through elimination reaction. Hoffman

and Saytzev's rules. Mechanism and Stereochemical implications. Mechanistic details including regioselectivity and stereochemical implications of halogenation, hydrohalogenation, hydroboration, epoxidation, hydroxylation and ozonolysis. Substitution at allylic and vinylic positions of alkenes.

Dienes: Structure of isolated, conjugated and cumulative dienes. 1,2 and 1,4-additions of 1,3-butadiene. Mechanism and Stereochemistry of Diels's-Alder reaction. Mechanism of Birch reduction.

Alkynes: Structure and acidic character of alkynes. Mechanisms of addition of halogens, hydrogen, halides, hydration, hydroboration and catalytic and metal-ammonia reductions of alkynes.

Alkyl halides: Classification, methods of preparation and reactions of alkyl halides. Mechanistic details of S_N1 and S_N2 E1 and E2 reactions. Effects of structure of alkyl halides, nature of nucleophiles, leaving groups, solvent and stereochemical implications of S_N reactions. Substitution versus Elimination.

PRACTICAL

(CREDITS 2)

Section A: Inorganic Chemistry - Volumetric Analysis

1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
2. Estimation of oxalic acid by titrating it with $KMnO_4$.
3. Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$.
4. Estimation of Fe (II) ions by titrating it with $K_2Cr_2O_7$ using internal indicator.
5. Estimation of Cu (II) ions iodometrically using $Na_2S_2O_3$.

Section B: Organic Chemistry

1. Detection of extra elements (N, S, Cl, Br, I) in organic compounds (containing upto two extraelements)
2. Separation of mixtures by Chromatography: Measure the R_f value in each case (combination of two compounds to be given)
 - (a) Identify and separate the components of a given mixture of two amino acids (glycine, aspartic acid, glutamic acid, tyrosine or any other amino acid) by paper chromatography
 - (b) Identify and separate the sugars present in the given mixture by paper chromatography.

SUGGESTED READINGS

- Basic Inorganic Chemistry; F. A. Cotton, G Wilkinson & P.L. Gaus; 3rd ed.; Wiley; 2002.
- Inorganic Chemistry; A. G. Sharpe; 3rd ed.; ELBS, 1992.
- Concise Inorganic Chemistry; J. D. Lee; 5th ed.; ELBS; 2003.
- Inorganic Chemistry . G. L. Miessler, T. A. Tarr; 3rd ed.; Prentice Hall; 2009

- Inorganic Chemistry; D. E. Shriver; P. W. Atkins & C. H. Langford; 4th ed.; Oxford; 2006
- Concepts and Models of Inorganic Chemistry; B. Douglas; D. Mc. Daniel & J. Alexander; 3rd ed.; Wiley; 2001.
- McMurry, J. E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013.
- Sykes, P. A Guidebook to mechanism in organic chemistry, Orient Longman, New Delhi (1988).
- Eliel, E.L. Stereochemistry of Carbon Compounds, Tata McGraw Hill education, 2000.
- Finar, I. L. Organic Chemistry (Vol. I & II), E. L. B. S.
- Morrison, R.T. & Boyd, R.N. Organic Chemistry, Pearson, 2010.
- Bahl A. & Bahl B. S. Advanced Organic Chemistry, S. Chand, 201
- Svehla, G. Vogel's Qualitative Inorganic Analysis, Pearson Education, 2012.
- Mendham, J. Vogel's Quantitative Chemical Analysis, Pearson, 2009.
- Vogel, A.I., Tatchell, A. R., Furnis, B.S., Hannaford, A. J. & Smith, P.W.G., Textbook of Practical Organic Chemistry, Prentice-Hall, 5th edition, 1996.
- Mann, F.G. & Saunders, B. C Practical Organic Chemistry Orient-Longman, 1960

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2. Organic and Physical Chemistry (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Organic and Physical Chemistry	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Laws of thermodynamics and their application to chemical and phase equilibria.
- The electrochemistry of electrodes and cells.
- Aromatic electrophilic and nucleophilic substitution reactions.
- The preparation and chemical reactions of carbonyl compounds.

ORGANIC AND PHYSICAL CHEMISTRY**THEORY****(CREDITS 4)****Unit 1****Thermodynamics and Equilibrium**

Thermodynamic functions: State and path functions and their differentials. Thermodynamic processes. Concept of heat and work. Heat capacity, heat capacities at constant volume and constant pressure and their relationship. Joule's law, Joule-Thomson coefficient and inversion temperature. Calculation of U & ΔH for the expansion of ideal and non-ideal (van der Waals) gases under isothermal and adiabatic conditions. Temperature dependence of enthalpy, Kirchhoff's equation. Bond dissociation energy and its calculation from thermochemical data with applications.

Second law of thermodynamics: Need for the law, different statements of the law. Carnot cycle and its efficiency, Carnot theorem. Thermodynamic scale of temperature. Concept of entropy, entropy as a function of V & T , and as a function of P & T . Clausius inequality; entropy as criteria for spontaneity and equilibrium. Entropy change in physical processes, ideal gas expansion and entropy of mixing of ideal gases.

Third law of thermodynamics: Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities, Nernst heat theorem, third law of thermodynamics, concept of residual entropy, evaluation of absolute entropy from heat capacity data. ΔG & ΔA as criteria for thermodynamic equilibrium and spontaneity. Their advantage over entropy change. Variation of G and A with P , V and T , Gibbs-Helmholtz equation.

Unit 2

Electrochemistry

Migration of ions and Kohlrausch's law, Arrhenius theory of electrolyte dissociation and its limitations. Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment without derivation). Transport number, definition and determination by Hittorf's and moving boundary methods. Application of conductivity measurements: determination of degree of dissociation and dissociation constants of acids, solubility product of a sparingly soluble salt, conductometric titrations.

Types of reversible electrodes (half-cells): metal-metal ion, gas-metal-ion, metal-insoluble salt-anion and redox electrodes. Standard hydrogen electrode, glass electrode, reference electrodes (calomel, Ag/AgCl). Electrode reactions, Nernst equation and cell E.M.F. Electrochemical series and its significance.

Electrolytic and Galvanic cells. Measurement of EMF of a cell. Concentration cells, electrolyte concentration cell (with and without transport), electrode concentration cell. Application of standard potentials: determination of thermodynamic functions of cell reactions (ΔG , ΔH and K), pH and pKa, solubility product and activity coefficient; potentiometric titrations.

Unit 3

Aromatic Compounds and Oxygen Bearing Compounds-I

Aromatic Electrophilic Substitution Reactions: General mechanism of aromatic electrophilic substitution reactions. Formation of Sigma and pi-complexes with energy profile diagram. The second substitution-concept and role of activating and deactivating groups. *Ortho* and *para* ratio. Mechanisms of Fries and Claisen rearrangements and Gatterman, Huben-Hoesch, Veils-Meir-Haack and Riemer-Tieman reactions.

Aromatic Nucleophilic Substitution Reactions

Aryl halides: Methods of preparation of aryl halides with mechanistic details of the reactions involved. Addition-Elimination and Elimination-Addition mechanisms of nucleophilic aromatic substitution reactions involving aryl halides. Mechanism of nucleophilic aromatic substitution reaction in nitroarenes.

Oxygen bearing compounds-I

Alcohols: Classification. Methods of formation of monohydric alcohols through reduction of aldehydes, ketones, carboxylic acids and esters using different reducing agents including mechanistic details of the reactions involved. Reactions of alcohols including Pinacol-

Pinacolone rearrangement with mechanism. Methods of formation and the oxidative cleavage reactions of diols.

Epoxydes: Methods of formation and mechanism of acid/base catalysed ring openings of epoxydes. Reactions of Grignard and organolithium reagents with epoxydes.

Ethers: Mechanisms involved in the synthetic procedures of ethers, their cleavage and auto-oxidation.

Unit 4

Oxygen Bearing Compounds-II

Aldehydes and Ketones: Structure and reactivity of carbonyl groups. Synthesis of aldehydes starting from acid chlorides and those of ketones from nitriles, carboxylic acids and 1, 3-dithianes. Stereochemistry and mechanism of nucleophilic additions to carbonyl groups. Cram's rule.

Mechanisms involved in Benzoin, Aldol/Cross Aldol, Perkin, Knoevenagel, Cannizzaro and Mannich condensations/reactions. Meerwein-Ponndorf-Verly, Clemensen and Wolf-Kishner reductions and Baeyer-Villiger & Oppenauer Oxidations. Mechanisms of acid and base catalysed halogenation in aldehydes and ketones.

Carboxylic acids and their derivatives: Structure of carboxylic group. Factors affecting strength of carboxylic acids. Mechanistic details of preparation of carboxylic acids using Grignard reagent and from hydrolysis of nitriles. Mechanisms involved in the HVZ reaction, conversion of acids to corresponding chlorides, esters, anhydrides and amides. Relative stabilities and interconversion of acid derivatives into one another. Reduction of carboxylic acids and their derivatives. Transesterification and hydrolysis of esters. Applications of Ethyl acetoacetate and Malonic ester in organic synthesis.

PRACTICAL

(CREDITS 2)

Section A: Physical Chemistry

Thermochemistry

1. Determination of heat capacity of calorimeter for different volumes.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Determination of enthalpy of ionization of acetic acid.
4. Determination of integral enthalpy of solution of salts (KNO_3 , NH_4Cl).

5. Determination of enthalpy of hydration of copper sulphate.
6. Study of the solubility of benzoic acid in water and determination of ΔH .

Ionic equilibria

pH Measurements:

1. Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (usedilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter.
2. Preparation of buffer solutions of the following compositions:
 - (a) Sodium acetate-acetic acid
 - (b) Ammonium chloride-ammonium hydroxide

Measurement of the pH of above buffer solutions and comparison of the values with theoretical values.

Section B: Organic Chemistry

1. Purification of organic compounds by crystallization (from water and alcohol) and distillation.
2. Criteria of Purity: Determination of melting and boiling points.
3. Preparations: Mechanism of various reactions involved to be discussed.

Recrystallisation, determination of melting point and calculation of quantitative yieldsto be done.

- (a) Bromination of Phenol/Aniline
- (b) Benzoylation of amines/phenols
- (c) Oxime and 2,4-dinitrophenylhydrazone of aldehyde/ketone

SUGGESTED READINGS

- Principles of Physical Chemistry; Puri, Sharma and pathania; S. Nagin Chand & Co; 2011
- The Elements of Physical Chemistry; P.W. Atkins; Oxford University Press;
- Physical Chemistry; G.M. Barrow; McGraw-Hill; 5th ed.; International Student edition; 1992.
- Physical Chemistry; R.A. Alberty; Wiley; Eastern Ltd.
- Physical Chemistry; Castellan, G.W. 4th ed. Narosa; 2004.

- Selected Experiments in Physical Chemistry, N. G. Mukherjee, J. N. Ghosh & Sons.
- Experiments in Physical Chemistry, R. C. Das and B. Behra (Tata McGraw Hill)
- Advanced Practical Physical Chemistry, J. B. yadav; Goel Publishing House; 20th ed.; 2001.
- Advanced Experimental Chemistry; J. N. Gurtu and R. Kapoor; Vol. I; 1st ed.; S. Chand & Co; 2000.
- Practical Physical Chemistry; Khosla, B. D.; Garg, V. C. & Gulati, A. R. Chand & Co.; 2011.
- Textbook of Practical Organic Chemistry; Vogel, A. I.; Tatchell, A. R; Furnis, B.S., Hannaford, A.J. & Smith, P. W. G; 5th ed.; Prentice-Hall; 1996.
- Practical Organic Chemistry; Mann, F. G. & Saunders, B. C.; Orient-Longman; 1960.
- Laboratory Manual in Organic Chemistry; R. K. Bansal; Wiley Eastern.
- Experimental Organic Chemistry; P. R. Singh, D. S. Gupta and K. S. Barpal; Vol I & II TataMcGraw Hill.
- Advanced Practical Organic Chemistry; N. K. Vishnoi; Vikas Publishing House Pvt Ltd; 1996.

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3. Inorganic and Physical Chemistry (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	Inorganic and Physical Chemistry	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Understand the structure, bonding, synthesis, properties and use of the various compounds of P-block elements.
- The trends in the chemical and physical properties of transition and inner transition elements along with their compounds.
- Application of thermodynamic principles to phase equilibria and solutions.
- Understand the rates of second, third order reactions, the dependence of reaction rate on temperature and comparative account of photochemical and thermal reactions.

INORGANIC AND PHYSICAL CHEMISTRY**THEORY****(CREDITS 4)****Unit 1****P-Block Elements**

Boranes: Nomenclature, Classification, Preparation, Properties, Structure and Bonding with special reference to Diborane.

Bonding in higher boranes: Types of bonds, Introductory concept about carboranes and metallocarboranes.

Carbides: Classification, Preparation, Properties and Uses. Intercalation compounds of graphite.

Nitrogen Compounds: Preparation, properties and uses of Hydrazine, Hydroxylamine and Oxides and Oxoacids of nitrogen. Ammonia as a non-aqueous solvent.

Oxygen: Chemistry of different forms (atomic, molecular and ozone). Oxides, Fluorides and Oxyacids of Sulphur: Properties, Structure & Bonding. Hydrogen Peroxide: Preparation, Properties and Uses.

Halogens: Comparative chemical reactivity, Types, Properties, Structure & Bonding of hydrogen halides, Interhalogens and Polyhalides. Oxyacids of Chlorine: Structure and Bonding.

Noble gases: Isolation and importance of noble gases in theoretical chemistry.

Fluorides, oxides and oxyfluorides of Xenon: Structure and bonding (VB and MO treatment)

Unit 2

Transition and Inner-Transition Elements

Transition Elements: Variation in atomic and ionic sizes, Ionization enthalpies, Variable oxidation states. Standard electrode Potentials of M^{2+} / M and M^{3+} / M^{2+} systems. Ionic / Covalent and Acidic / Basic character of transition metal oxides in various oxidation states. Stabilization of unusual oxidation states. Spectral and Magnetic Properties; Calculation and Uses of magnetic moment value. Interstitial Hydrides, Carbides and Oxides of first transition series:- Preparation, Properties & Uses.

Inner-Transition Elements: Electronic Configuration, Oxidation States, Magnetic Properties and Complexing behaviour of inner transition elements. Cause and Consequences of Lanthanoid/ Actinoid Contraction.

Separation of Lanthanoids: Fractional Crystallization, Ion-exchange and Solvent extraction methods.

Unit 3

Equilibrium and Solution thermodynamics

Equilibrium: Equilibrium constant and free energy change. Thermodynamic derivation of law of mass action. Reaction isotherm and reaction isochore, Clapeyron equation and Clausius-Clapeyron equation, applications.

Phase Equilibria: Phase rule, Meaning of the terms: phase, component and degree of freedom, statement and derivation of Gibbs phase rule, phase diagrams of one component system – water and sulphur systems. Phase equilibria of two component system: solid-liquid equilibria, simple eutectic system (Pb-Ag), desilverisation of lead. Solid solutions-compound formation with congruent melting point (Mg-Zn) and incongruent melting point ($FeCl_3$ - H_2O systems). Freezing mixtures, acetone- dry ice. Liquid-liquid mixtures: Ideal liquid mixtures, Raoul's and Henry's law. Non-ideal systems, azeotropes (HCl - H_2O and C_2H_5OH - H_2O systems.) Partially miscible liquids:

Lower and upper consolute temperatures, (examples of phenol-water, trimethylamine-water, nicotine-water systems).

Nernst distribution law: Statement and thermodynamic derivation, applications.

Thermodynamics of Solutions: Thermodynamics of elevation in boiling point and depression in freezing point. Activity and activity coefficient, determination of activity and activity coefficient with freezing point and EMF methods. Excess thermodynamic functions of non-ideal solutions.

Unit 4

Chemical kinetics & Photochemistry

Order of reaction; derivation of rate equations for second (two reactants) and third order reactions. Determination of order of reaction by differential rate, integration, half-life period and isolation methods. Temperature dependence of reaction rates:- Arrhenius equation, concept of activation energy.

Theories of chemical kinetics: Simple collision theory based on hard sphere model, evaluation of rate constants of atomic reactions, extension to molecular reactions, limitations. Brief idea of transition state theory (equilibrium hypothesis).

Catalysis: Characteristics of catalysed reactions, Acid-Base catalysis with examples.

Photochemistry: Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of photochemistry. Grothus-Drapper law, Stark-Einstein law, Jablonski diagram depicting various processes occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing) quantum yield, photosensitized reactions, energy transfer processes (simple examples).

Kinetics of photochemical reactions: Photochemical decomposition of hydrogen iodide. Hydrogen-chlorine and hydrogen-bromine reactions, Comparison with thermal decomposition reactions.

PRACTICAL

(CREDITS 2)

Section A: Inorganic Chemistry

(a) **Qualitative Analysis:** To identify the given Inorganic mixture containing three acidic and three basic radicals (excluding insoluble and interfering radicals) by Macro Scale Analysis (06 known and 06 unknown mixtures)

(b) Paper Chromatography: Separation and identification of metals from mixtures containing two cations (03 exercises)

Section B: Physical Chemistry

Phase equilibria

- Construction of the phase diagram of a binary system (simple eutectic) using cooling curves.
- Determination of the critical solution temperature and composition of the phenol water system and study the effect of impurities on it.
- Study of the variation of mutual solubility temperature with concentration for the phenol water system and determination of the critical solubility temperature.

Chemical Kinetics

Study the kinetics of the following reactions.

- Initial rate method: Iodide-persulphate reaction
- Integrated rate method:
 - Acid hydrolysis of methyl acetate with hydrochloric acid.
 - Saponification of ethyl acetate.
 - Compare the strengths of HCl and H₂SO₄ by studying kinetics of hydrolysis of methyl acetate.

SUGGESTED READINGS

- Basic Inorganic Chemistry; F. A. Cotton; G. Wilkinson & P. L. Gaus; 3rd ed.; Wiley; 2002.
- Chemistry of Elements; Greenwood Earnshaw; 2nd ed.; Butterworth; 2000.
- Advanced Inorganic Chemistry; Prakash, S.; Tuli, G. D.; Basu, S. K. & Madan, R. D.; Vol. 1.; S. Chand & Co.
- Inorganic Chemistry; Miessler G. L. & Tarr, T. A.; 3rd ed.; Prentice Hall; 2009
- Inorganic Chemistry; Shriver, D. E.; Atkins, P. W. & Langford, C. H.; 4th ed.; Oxford; 2006.
- Concepts and Models of Inorganic Chemistry; Douglas, B.; Daniel, D. Mc. & Alexander, J.; 3rd ed.; Wiley; 2001.
- Advanced Inorganic Chemistry; Prakash, S.; Tuli, G. D.; Basu, S.K. & Madan, R. D.; Vol. 1.; S. Chand & Co.
- Principals of Physical Chemistry; Puri, Sharma and Pathania; S. Nagin Chand & Co;

2011.

- The Elements of Physical Chemistry; Atkins, P. W.; Oxford University Press.
- Physical Chemistry; Barrow, G. M.; 5thed.; McGraw-Hill; International Student edition; 1992.
- Physical Chemistry; Alberty, R. A.; Wiley Eastern Ltd.
- Essentials of Physical Chemistry; Kapoor, K. L.; Vols. III & IV; 2nded.; Macmillan India Ltd; 2005.
- Physical Chemistry through Problems; Dogra, S. K.; Wiley Eastern Ltd; 1991. University General Chemistry; Rao, C. N. R.; MacMillan. Experimental Inorganic Chemistry; Palmer, W. G.; Cambridge.
- Analytical Chemistry; Christian, G. D.; 6th ed.; Wiley; 2008.\
- Practical Physical Chemistry; Khosla, B. D.; Garg, V. C. & Gulati, A.; R. Chand & Co.; 2011.
- Selected Experiments in Physical Chemistry; Mukherjee N. G. & Ghosh, J. N.; S. Chand & Sons.
- Experiments in Physical Chemistry; Das, R. C. and Behra, B.; Tata McGraw Hill.

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4. Inorganic and Physical Chemistry (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Inorganic and Physical Chemistry	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Understand the structure, bonding, synthesis, properties and use of the various compounds of P-block elements.
- The trends in the chemical and physical properties of transition and inner transition elements along with their compounds.
- Application of thermodynamic principles to phase equilibria and solutions.
- Understand the rates of second, third order reactions, the dependence of reaction rate on temperature and comparative account of photochemical and thermal reactions.

INORGANIC AND ORGANIC CHEMISTRY**THEORY****(CREDITS 4)****Unit 1****Coordination and Bioinorganic Chemistry**

Coordination Chemistry: Experimental verification of Werner's theory. Effective Atomic number: Concept and its significance.

Stereochemistry of Coordination compounds: With coordination numbers 2-6; Optical and Geometrical isomers of MA_4B_2 , MA_3B_3 and MABCD type Complexes.

Bonding in Complexes: Comparison of valence bond and Crystal field theories; CFT of tetrahedral, square planar and octahedral systems. Factors affecting magnitude of Δ ; pairing energy and CFSE of weak and strong field ligands. Limitations of Crystal field theory. Applications of Coordination compounds. Jahn Teller Distortion.

Bioinorganic Chemistry: Biomolecules and their Metal coordination behaviour: Proteins, Nucleic acids and Lipids. Abundance of elements in living systems; Concept and Criteria for essentiality of elements in living systems.

Distribution and biological role of essential elements in life: Na^+ , K^+ , Ca^{2+} , Mg^{2+} , Fe^{2+} and halogens.

Haemoglobin and Chlorophyll: Structural and Biological role.

Unit 2

Amines and Nitrogen bearing Heterocyclic compounds

Amines: Classification and factors affecting basicity of amines. Mechanistic details (wherever applicable) of methods of formation of alkyl and arylamines through reduction of nitro compounds and nitriles. Gabriel-Phthalimide reaction and Hofmann rearrangement. Mechanisms involved in the formation and reactions of arenediazonium salts including Azo coupling.

Heterocyclic compounds bearing one nitrogen atom: Structural features of pyrrole, pyrrolidine, pyridine and piperidine and comparative account of their basic strength. Aromaticity and electrophilic substitution reactions of pyrrole and their comparison with those of furan and thiophene. Mechanisms involved in the preparations of Indole and quinoline using Fischer-Indole and Bischler-Napieralski syntheses.

Unit 3

States of Matter

Gaseous State: Deviation of gases from ideal behaviour, van der Waal's equation of state.

Critical Phenomenon: PV isotherms of real gases, continuity of states, the isotherms of van der Waal's equation. Relationship between critical constants and van der Waal's constants, the law of corresponding states, reduced equation of state.

Molecular velocities: Root mean square, average and most probable velocities; qualitative discussion of the Maxwell's distribution of molecular velocities. Collision number, mean free path and collision diameter.

Liquid State: Liquification of gases and adiabatic expansion. Intermolecular forces. Structure of liquids (a qualitative description), structural differences between solids, liquids and gases.

Solid State: Symmetry elements in crystals, Lattice planes and Miller indices. X-ray diffraction by crystals, derivation of Bragg's equation and its application. Interplanar distances in terms of miller indices. Determination of crystal structure by Laue's method and powder method. Systematic absence of diffraction lines in the X-ray pattern of cubic crystals with reference to NaCl, KCl & CsCl.

Unit 4

Spectroscopy

Spectroscopy: Electromagnetic radiation, regions of the spectrum, basic features of different spectrometers. Statement of Born-Oppenheimer approximation.

Rotational spectrum: Moment of inertia, classification of molecules on the basis of moment of

inertia. Energy of a rigid diatomic rotor, selection rules for rotational transition and associated spectrum, relative population of rotational levels and spectral intensity, determination of bond length.

Vibrational Spectrum: Classical and quantum mechanical (qualitative) treatment of simple harmonic oscillator, selection rules for vibrational transition, pure vibrational spectrum of a diatomic molecule, determination of force constant, relation of force constant with bond length and bond energy, vibrational degrees of freedom, idea of vibrational frequencies of different functional groups. The infrared region, Molecular vibrations, significance of Hook's law and selection rules. The infrared spectrum. Fingerprint region and its significance. Effect of resonance, inductive effect and H-bonding on infrared absorptions. Characteristic absorptions of Alkanes, alkenes, alkynes, alcohols, ethers, carbonyl compounds, amines and carboxylic acids and their derivatives.

Ultraviolet Spectroscopy: The electromagnetic spectrum. Beer-Lambert law, molar absorptivity, presentation and analysis of electronic spectra. Types of electronic excitations. Effects of conjugation and solvents on absorption. Chromophores and Auxochromes. Bathochromic and hypochromic shifts. Ultraviolet spectra of enes and enones. Prediction of maxima of enes and enones using Woodward's rules.

Nuclear Magnetic Resonance Spectroscopy: Basic principles of NMR spectroscopy. Shielding and deshielding of protons. The chemical shift. Equivalent and non-equivalent protons. Spin-spin splitting, coupling constants for vicinal, germinal and long-range couplings. Characteristic functional group NMR absorptions. The NMR spectra of ethyl bromide, ethanol, acetaldehyde, ethyl acetate, methyl propionate, toluene and acetophenone.

PRACTICAL

(CREDITS 2)

Section A: Inorganic Chemistry

A. Gravimetry

1. Estimation of Copper as CuSCN .
2. Estimation of Nickel as $[\text{Ni}(\text{dmg})_2]$.
3. Estimation of Silver as AgCl .
4. Estimation of Barium as BaSO_4

B. Titrimetry

1. Calibration of fractional weights and Analytical Lab wares (Pipette, Burette, Volumetric Flask)
2. Preparation of Standard Solution (Oxalic-acid, Sodium Hydroxide, Potassium permanganate and Potassium dichromate)
3. Dilution of a Standard Solution (0.1M-0.001M).

4. Determination of Acetic acid concentrations in commercial Vinegar using NaOH.
5. Determination of alkali content in antacid tablets using HCl.
6. Determination of Calcium Content in chalk as Calcium Oxalate by Titrimetry.
7. Determination of Ferrous and Ferric ions by Dichromate method.
8. Estimation of hardness of water by EDTA.
9. Estimation of Copper using thiosulphate.

C. Spectrophotometry

1. Spectrophotometric determination of Fe (II), using 1, 10-Phenanthroline
2. Spectrophotometric determination of Fe (III) with EDTA.

Section B: Organic Chemistry

A. Separation and Identification of binary mixtures of Organic Compounds:

Qualitative analysis of Organic mixture containing two solid components using H_2O , NaHCO_3 or NaOH for separation.

B. Synthesis of Organic Compounds (Any two of the following single stage preparations).

- a) Acetylation of Salicylic acid
- b) Preparation of Iodoform from acetone.
- c) Preparation of m-dinitrobenzene from benzene.
- d) Preparation of p-bromo acetanilide from acetanilide.

Section C: Physical Chemistry

A. Surface tension measurement (use of organic solvents excluded).

1. Determination of the surface tension of a liquid or a dilute solution using a stalagmometer.
2. Study of the variation of surface tension of a detergent solution with concentration.

B. Viscosity measurement (use of organic solvents excluded).

1. Determination of the relative and absolute viscosity of a liquid or dilute solution using an Ostwald's viscometer.
2. Study of the variation of viscosity of an aqueous solution with concentration of solute.

C. Polarimetry:

1. To determine the angle of rotation and hence specific rotation of an optically active compound.
2. To study the kinetics of inversion of cane sugar.

D. Refractometry

1. To determine refractive index of a liquid by using Abbe's refractometer.
2. To determine percentage composition of a mixture of two liquids by refractometry (Glycerol and water).

SUGGESTED READINGS

- Coordination Chemistry; Banerjee, D.; Tata Mc Graw Hill; 1997.
- Concise Coordination Chemistry; Gopalan, R. & Ramalingam, V.; Vikas; 2003.
- The Biological Chemistry of Elements; Frausto de Silva, J.J. R. & Williams, R.J.P.; Oxford; 1994.
- Bio-inorganic Chemistry of Elements; Hussain Reddy, K.; New Age; 2005.
- A textbook of Organic Chemistry; Bansal, R.K.; 4th ed.; Wiley Eastern; 2003.
- Organic Chemistry; Morrison and Boyd ; 6th ed. ; PHI; 2003.
- Fundamentals of Organic Chemistry; Solomon's and Frye ; 10th ed.; John-Wiley; 2012.
- Reaction Mechanism in Organic Chemistry; Mukherji and Singh; 3rd ed.; Macmillan; 2007.
- Physical Chemistry; Barrow, G. M.; 5th ed.; McGraw-Hill; International Student edition; 1992.
- Physical Chemistry; Alberty , Selby et al; Wiley Eastern Ltd.
- Fundamentals of Molecular Spectroscopy; Barnwell, C.N., E. M. Mc. Cash; 4th ed.; Tata McGraw Hill; 1994.
- Electronic Absorption Spectroscopy and related techniques; Satyanarayana, D N; Universities Press.
- Vogel's text book of Quantitative Inorganic Analysis (revised); Bassett, J., Denney, R. C., Jeffery, G. H and Mendham, J.; 6th ed.; ELBS; 2007.
- Experimental Inorganic Chemistry; Palmer, W.G.; Cambridge.
- Analytical Chemistry; Gary D-Christian; 6th ed.; Wiley; 2008.
- Vogel's Textbook of Quantitative Inorganic Analysis; Bassett, J.; Denny, R.C; 6th ed.; ELBS; 2007.
- Vogel's Qualitative Inorganic Analysis; Svehla, G.; Pearson Education; 2012.
- Vogel's Quantitative Chemical Analysis; Mendham, J.; Pearson; 2009.
- Vogel's book of Practical Organic Chemistry; Furniss, B. S., Hannaford, A. J.; Rogers, V.; Smith P.W.G.; 5th ed.; ELBS; 2009.

- Laboratory manual in Organic Chemistry; Bansal, R. K.; Wiley Eastern.
- Experimental Organic Chemistry; Singh, P.R.; Gupta, D.S. and K.S. Barpal; Vol I & II; Tata McGraw Hill.
- Comprehensive Practical Organic Chemistry; Ahluwalia, V. K. & Aggarwal, R.; Universities Press.
- Practical Physical Chemistry; Khosla, B. D.; Garg, V. C. & Gulati, A., Chand, R. & Co.; 2011.
- Selected Experiments in Physical Chemistry; Mukherjee N. G. & Ghosh, J. N.; S. Chand & Sons.
- Experiments in Physical Chemistry; Das, R. C, and Behra, B.; Tata McGraw Hill.

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5. Polymer Chemistry (Discipline Specific Elective -I)

Semester	Core Course	Course Title	Credit
V	DSE-I	Polymer Chemistry	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Understand the structure, properties and methods of determining molecular weight of polymers.
- Acquire knowledge on synthesis, kinetics, characterisation and processing of polymers.
- Polymer additives and application of polymers in modern technology and day-to-day life.

POLYMER CHEMISTRY

THEORY

(CREDITS 4)

Unit 1

Introduction

Introduction: Polymer structure; Stereochemistry; Nomenclature of polymer based on source, structure and trade; Molecular interactions and Polymer Crystals; Rheology and solubility of Polymers.

Molecular weight of polymers: Number average, weight average and viscosity; Osmometry, lightscattering; End group analysis and gel permeation chromatography.

Naturally Occurring Polymers: Proteins, Nucleic acids and polysaccharides.

Unit 2

Polymerisation Reactions

Polycondensation/Step reaction Polymerisation: Interfacial, homogenous and ring opening polymerisation.

Chain reactions/ addition/ radical Polymerisation: Radical chain polymerisation, Polymerisation techniques, ionic polymerisation and complex catalysis systems; polyenes

Copolymerisation: Kinetics of copolymerisation and composition of copolymers; Block copolymers and graft copolymers.

Ionic polymers (Brief introduction)

Unit 3

Characterisation and Processing of Polymers:

Characterisation: UV-Visible spectrophotometry, IR, NMR, ESR, X-ray, electron diffraction, thermal analysis and Chromatography.

Processing: Compression molding, injection molding, extrusion and blow molding, fabrication and finishing.

Additives: Fillers, Reinforcements, Plasticizers, Antioxidants, Thermal stabilizers, UV-stabilizers and colorants.

Unit 4

Polymer Technology and Applications

Fibers, Textile properties, Spinning, fibre-after treatment, Elastomers, Films, Coatings, Adhesives, laminates, Cellular Polymers, Polyelectrolytes, Plastic pipes and molded plastics, vulcanisation.

Thermosetting Resins: Phenolic resins, Amino resins, Unsaturated polyester resins, Epoxy resins, Ion-exchange resins and Zeolites.

PRACTICAL

(CREDITS 2)

1. Determination of Critical Micelle Concentration (CMC) of a surfactant by conductometry.
2. Determination of biological polymers (carbohydrates) in a sample.
3. Preparation of polymer: Urea-Formaldehyde Resin.
4. Preparation of Bakelite polymer.

SUGGESTED READINGS

- Introduction to Polymer Chemistry; Raymond B-Seymour; McGraw Hill Book Company; 1971
- Text Book of Polymer Science, 2nd edition; Fred W. Billmeyer, Jr.; Wiley Interscience New York; 1974.
- Physical Chemistry of Polymers; 2nd edition; A. Tager; Mir Publishers Moscow; 1978.
- Principles of Polymerisations; 4th edition Wiley; Odian, G, 2004.
- Seymour/ Carragher's Polymers Chemistry; 9th edition; Charles E. Carraher Jr.; 2013.
- Inorganic Polymers, James E. Mark; Harry R. Allcock and Robert West; 1992.

6. Instrumental Methods of Chemical Analysis (Discipline Specific Elective -II)

Semester	Core Course	Course Title	Credit
VI	DSE-II	Instrumental Methods of Chemical Analysis	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Acquire basic knowledge of spectroscopy and its applications.
- The regions of electromagnetic spectrum, their properties and interactions with matter.
- The underlying principles involved in transitions (rotational, vibrational, electronic, NMR, atomic), interpretation of the corresponding spectra and applications.

INSTRUMENTAL METHODS OF CHEMICAL ANALYSIS**THEORY****(CREDITS 4)****Unit 1****Introduction to Spectroscopic Methods of Analysis**

(i) Properties of Electromagnetic Radiations: The Electromagnetic spectrum. General nature of electromagnetic waves; wave parameters, radiant power (Intensity), superposition of waves, diffraction, transmission, dispersion, refraction, reflection, scattering and polarization of radiation. Absorption, emission, fluorescence and phosphorescence.

(ii) Instruments for Optical Spectroscopy: Components of optical instruments: radiation sources; continuous sources, line sources, lasers. Wavelength selectors, sample holders. Radiation detectors; photon detectors; vacuum phototubes, photomultiplier tubes, photoconductivity detectors, silicon diode detectors. Signal processors and read outs.

Unit 2**Molecular Spectroscopy**

(i) UV-Visible -Near IR spectroscopy: UV-Visible-Near IR regions of EMS. Transmittance, absorbance, Beer-Lambert. law, limitations to the applicability of the Beer's law, molecular electronic excitations (π - π^* , n - π^* , d-d transitions, charge transfer transitions, intra-ligand transitions). Fluorescence, phosphorescence. Instrumentation: Light sources, wavelength dispersion (gratings, prisms, interference filters, lasers). Sample holders, detection of signals (photocells, photo multipliers, diode arrays), Sensitivity and S/N ratio. Single and double beam instruments.

(ii) Infrared spectroscopy: Theoretical principles, vibrational modes and IR absorption process, selection rules. Vibrational IR region (4000-400 cm^{-1}); group frequency region, the fingerprint region, metal• ligand absorption region, IR peak positions of some common functional groups of organic

molecules- IR correlation tables.

Instrumentation: Light sources, infrared detectors, sample preparation techniques; liquids, solids. Dispersive IR spectrometer. Fourier transfer spectrometer (FTIR), construction and advantages.

Unit 3

Atomic Spectroscopy

Sample atomization; continuous atomizers, discrete atomizers. Sources of atomic spectra; atomic absorption spectra, atomic emission spectra, atomic fluorescence spectra. Flame atomization (fuel and oxidants), Electrothermal atomization.

Atomic absorption spectroscopy; radiation sources-hollow cathode lamps, instruments-single beam spectrophotometer, double beam spectrophotometer.

Flame emission spectroscopy; instrumentation, spectrophotometer, photometer.

Unit 4

Chromatographic techniques

(i) **Introduction to Chromatography:** Basic Concept of chromatography; mobile phase and stationary phase. Classification of chromatographic methods, chromatogram, partition coefficients, retention times, retention volumes, the capacity factor, the selectivity factor theoretical plates and efficiency, Van Deemter equation, column resolution.

(ii) **Gas chromatography:** Principle of Gas Chromatography. *Instrumentation*· carrier gas, sample injection systems, column configuration and column ovens. Detectors; flame ionization detectors, thermal conduction detectors, electron capture detectors etc. Columns; packed columns, solid support materials, particle size; open tubular columns. The stationary phase materials.

(iii) **Liquid chromatography:** HPLC, column efficiency in liquid chromatography. Instruments for liquid chromatography; mobile gas reservoirs, solvent treatment system, pumping systems, liquid chromatographic columns, detectors.

PRACTICAL

(CREDITS 2)

1. Determination of concentration of an acidic solution by pH metric titrations.
2. Determination of the isoelectric pH of a protein.
3. Potentiometric titration of a Chloride-Iodide Mixture.
4. The standardization of an Fe (II) solution with a standard dichromate solution over Pt and Calomel assembly.
5. Determination of concentration of Ce (IV) Sulphate solution with a standard Fe (II) Solution over Pt and calomel assembly.
6. Determination of λ_{max} of Potassium permanganate ($KMnO_4$) solution.
7. Determination of Fe (II) in a sample of well water with thiocyanate as complexation agent, spectrophotometrically.
8. Determination of Aluminium in a given sample solution, spectrophotometrically.

9. Determination of concentration of sodium in an aqueous solution by using a flame photometer.
10. Separation of permanganate and dichromate ions from a binary mixture on an alumina column.

SUGGESTED READINGS

- Principles of Instrumental Analysis - 6th Edition by Douglas A. Skoog, F. James Holler, and Stanley Crouch.
- Instrumental Methods of Analysis, 7th ed, Willard, Merritt, Dean, Settle.
- P.W. Atkins: Physical Chemistry.
- G.W. Castellan: Physical Chemistry.
- C. N. Barnwell: Fundamentals of Molecular Spectroscopy.
- Brian Smith: Infrared Spectral Interpretations: Systematic Approach.
- W.J. Moore: Physical Chemistry.

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Course Structure and distribution of different courses with their credits for BSc Food Science and Technology

S.No.	Semester	Course Title	Course Type	Total Credits
1	I	Food Chemistry & Nutrition	Core Course	6 credits 4(T)+2(P)
2	II	Introductory Food Microbiology	Core Course	6 credits 4(T)+2(P)
3	III	Principles of Food Processing	Core Course	6 credits 4(T)+2(P)
4	IV	Processing Foods of Plant Origin	Core Course	6 credits 4(T)+2(P)
5	V	Food Quality Assurance & Packaging	Discipline Specific Elective Course	6 credits 4(T)+2(P)
6	V	Handling & Storage of Agricultural Produce	Discipline Specific Elective Course	6 credits 4(T)+2(P)
7	VI	Processing of Foods of Animal Origin	Discipline Specific Elective Course	6 credits 4(T)+2(P)
8	VI	Advances in Food Processing and Food Analysis	Discipline Specific Elective Course	6 credits 4(T)+2(P)

Course outcomes

- Students will get knowledge of various areas related to Food Science and Technology
- Students will be enabled to understand food composition and its physicochemical, nutritional, microbiological and sensory aspects
- Students will get familiarize about the processing and preservation techniques of pulses, oilseeds, spices, fruits and vegetables, meat, fish, poultry, milk & milk products
- Students will be able to understand the importance of food safety, food quality, food plant sanitation, food laws and regulations, food engineering and packaging in food industry

1. Food Chemistry & Nutrition (Core Course –I)

This course provides students with an in-depth knowledge of food chemistry & nutrition.

Semester	Core Course	Course Title	Credit
I	FT120C	Food Chemistry & Nutrition	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- To provide understanding of chemistry of major components of food
- To provide understanding of role of macro and micro nutrients in human health
- To provide understanding role of antioxidants, dietary fibre and pigments in human health
- To provide students with an understanding of the chemical structure of important food components
- To enable the students to understand the relationship between nutrition and human well being

FOOD CHEMISTRY & NUTRITION**THEORY****(CREDITS4)****UNIT- 1****Introduction to Food Chemistry and Nutrition**

- Definitions & concepts: Food, food chemistry, nutrition, nutrients, adequate nutrition, malnutrition.
- Importance of food chemistry.
- Recommended dietary intake (RDI), Basal metabolism (BM), factors affecting RDI and BM.
- Classification of foods.
- Water in foods: Concept of water-solute interactions, Water activity and its relation with shelf-life of foods.

UNIT – 2**Macronutrients**

- Carbohydrates: Definition, chemistry, classification, sources, properties. Nutritional and industrial importance. Starch gelatinization and retrogradation. Use of polysaccharides in

food industry.

- Proteins: Definition, chemistry, classification, sources, properties, chemical makeup and industrial importance.
- Non enzymatic browning reactions in foods- Caramelization and Maillard reaction.
- Fats: Definition, sources, chemistry, properties and rancidity. Significance of MUFAS and PUFAS.

UNIT- 3

Micronutrients

- Vitamins: Importance, sources; fat soluble and water soluble vitamins.
- Effect of processing and storage on vitamins.
- Minerals: Importance and sources.
- Enzymes: Definition, sources, classification; Application in food processing, enzymatic browning in foods and its control

UNIT- 4

Functional Foods and Pigments

- Functional foods: Definition & classification.
- Dietary fibre and its role in disease prevention.
- Antioxidants: Sources and role in health.
- Pigments: Myoglobin, chlorophyll, anthocyanin and carotenoids. Their sources and stability during processing.

PRACTICALS

(CREDITS: 02)

- Preparation and standardization of solutions.
- Determination of moisture content.
- Determination of ash content.
- Qualitative and quantitative tests for proteins.
- Determination of crude fat.
- Qualitative and quantitative tests of carbohydrates.
- Determination of crude fibre.
- Determination of chlorophyll content.

- Determination of free fatty acid and acid value.
- Determination of peroxide value.

SUGGESTED READINGS

- Food Chemistry by Meyer
- Mechanism & Theory in Food Chemistry by Wong.
- Principles of Food Chemistry by John M. deMan
- Textbook and Biochemistry by A.V.S.S Rama Rao
- Food and Nutrition by M. Swaminathan
- Food: Facts and Principles by Shakuntala Manny
- Nutrition and Dietetics by Joshi
- Nutritive Value of Indian Foods by Gopalan C

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2. Introductory Food Microbiology (Core Course –II)

This course provides brief knowledge about the microbiology and its role in food spoilage. Students will also be able to learn about the structure and classification of different microbe groups.

Semester	Core Course	Course Title	Credit
II	FT220C	Introductory Food Microbiology	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- To provide knowledge of different microorganisms associated with food and their role in spoilage and preservation of food.
- To discuss the microbiology of different types of food commodities
- To explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival.
- To develop an understanding of the role of microorganisms in environment, Industry and in maintenance of health.

INTRODUCTORY FOOD MICROBIOLOGY

THEORY

(CREDITS4)

UNIT – 1

Introduction to Microbiology

- History and scope of microbiology.
- Distribution of microorganisms.
- Microbial growth curve.
- Factors effecting microbial growth – extrinsic and intrinsic factors.

UNIT- 2

Introduction to Microbes

- Bacteria: Structure, classification.
- Fungi: Structure and classification, harmful and beneficial fungi, mycotoxins.
- Viruses: Structure and classification.

- Economic importance of bacteria, fungi and virus.

UNIT – 3

Microbial Spoilage of Foods

- Microbial spoilage of fresh foods-fruits, vegetables, cereals, pulses.
- Spoilage of meat and milk.
- Microbial spoilage of canned food
- Microbiological hazards associated with foods-Botulism, Salmonellosis, mycotoxins

UNIT – 4

Industrial Microbiology

- Industrial microbiology-scope and development
- Fermented food and their benefits: sauerkraut, yoghurt, cheese, miso, tempeh
- Industrial production of enzymes and single cell protein
- Probiotics and their health benefits

PRACTICALS

(CREDITS: 02)

1. Microscope: Types and working of microscope
2. Cleaning and sterilization of glassware
3. Demonstration of sterilization of equipments
4. Preparation of nutrient agar medium
5. Enumeration of microbes from food samples
6. Inoculation techniques
7. Gram staining
8. Identification of bacteria on the basis of:
 - Cultural characteristics
 - Morphological characteristics
9. Enumeration of micro-organisms-TPC
10. Demonstration and identification of permanent slides

SUGGESTED READINGS

- Food Microbiology by Frazier
- Modern Food Microbiology by James Jay

- A Text Book of Microbiology byDubey
- Basic Food Microbiology byBanwart
- Laboratory Manual in Microbiology byGunasekaran

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3. Principles of Food Processing (Core Course –III)

This course provides brief information about the food processing and different food preservation methods.

Semester	Core Course	Course Title	Credit
III	FT320C	Principles of Food Processing	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- To acquaint the students about the concepts and technologies of processing and preservation of food.
- The goal of this course is to provide students with a fundamental understanding of food preservation and to ensure students are technically ready for the food industry through a practical, problem-solving approach.
- Student will develop an understanding of shelf life and nutritional consequences of preservation.

PRINCIPLES OF FOOD PROCESSING**THEORY****(CREDITS4)****Unit – 1**

- Status of Indian food industry with emphasis on Jammu and Kashmir.
- Classification of foods on basis of shelf life, pH, origin.
- Different types of food spoilage viz. Microbiological, Biochemical and Physical and their effects on food quality.
- Importance of food processing and preservation.

Unit – 2

- Preservation by low temperature: Refrigeration; refrigeration systems. Freezing process- slow and fast freezing, Types of freezers. Storage and thawing of frozen food.
- Preservation by high temperature: Pasteurization, sterilization, canning and aseptic processing.
- Principles of preservation by evaporation, concentration, drying and dehydration.

Unit – 3

- Principle of preservation by sugar and salt.
- Preservation of foods by chemical preservatives. Types of chemical preservatives used in different food products.
- Intermediate moisture food (IMF).
- Fermentation and its types
- Irradiation of foods: Mechanism, doses of irradiation, its effect on food quality.

Unit – 4

- New and unconventional methods of food processing:
 - High pressure processing technology
 - Infra-red (IR) technique
 - Microwave heating
 - Pulse electric field processing
 - Membrane processing

PRACTICALS**(CREDITS: 02)**

1. Identification of common microbial disorders of foods - Black mold rot, Green mold rot, Yeast growth, Bread mold, Spoilage of canned foods.
2. Alkaline phosphatase test for pasteurized milk
3. Drying of vegetables and calculation of dehydration/rehydration ratio.
4. Preparation of pickles and estimation of acidity.
5. Canning of foods
6. Preparation and preservation of apple jam.
7. Visit to food industries to study pasteurization and sterilization, Refrigeration cycle, preparation of processed products

SUGGESTED READINGS

- Food Processing Technology by P. Fellows.
- The Technology of Food Preservation by Desrosier.
- Food Science by N.N. Potter.
- Introduction to Food Science and Technology by Stewart.
- Handbook of Food Preservation by M. Shafiur Rahman

4. Processing of Foods of Plant Origin (Core Course –IV)

This course provides brief information about the food processing and different food preservation methods.

Semester	Core Course	Course Title	Credit
IV	FT420C	Processing of Foods of Plant Origin	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- To make the students understand about production, composition and processing of various staple food crop
- To acquaint the students about production, post-harvest physiology and processing of different fruits and vegetables
- To acquaint the students about processed products of fruits and vegetables
- Students will be able to understand the relationship between vegetable/fruit consumption and health.
- Students will be able to get the brief knowledge on Chemical composition and nutritional significance of cereals, pulses and oilseeds

PROCESSING OF FOODS OF PLANT ORIGIN

THEORY

(CREDITS: 04)

Unit – 1

- Production trends of different cereals.
- Chemical composition and nutritional significance of cereals, pulses and oilseeds.
- Structure of cereal grains-wheat, rice and maize.
- Milling of wheat and rice

Unit – 2

- Status of bakery Industry in India
- Requirements of setting a bakery plant.
- Specification of raw materials for bakery industry-flour, sugar, shortenings, yeast,salt.
- Additives used in bakery products, flour improvers and bleachingagents
- Manufacturing of bakery products-bread, biscuits andcakes.

Unit –3

- Nutritional significance of fruits and vegetables.
- Post-harvest losses in fruits and vegetables.
- Post-harvest physiology and handling of fruits and vegetables, respiration, transpiration, etc.
- Maturity and ripening.
- Packaging requirements of fruits & vegetables.
- Storage of fruits and vegetables. Refrigerated and controlled atmospheric storage.

Unit – 4

- Processed products of fruits and vegetables (jam, jelly, marmalade, sauce and pickles).
- Beverages: Juice, nectar, squash, cordial, concentrate
- Specifications of various fruit and vegetable products.
- Tomato products-puree, ketchup, cocktail.
- Processing of Mushrooms.
- Dehydration, freezing and canning of fruits and vegetables.
- Requirements for a fruit and vegetable based processing plant.

PRACTICALS**(CREDITS: 02)**

1. Quality tests of wheat grain and flour
2. Quality tests of rice grain
2. Preparation & evaluation of bakery and confectionary products
 - a. Bread
 - b. Cake
 - c. Biscuits
3. Identification and commentary on appliances used in a baking unit.
4. Preparation of preserves.
5. Preparation of squash.
6. Preparation of tomato sauce/ketchup
7. Preparation and preservation of apple juice.
8. Preparation of syrup & brine solutions
9. Cut out analysis of canned fruits & vegetables.

10. Project formulation for a fruit/vegetable/cereal based processing plant.

SUGGESTED READINGS

- Food Processing Technology by P. J. Fellows
- The Technology of Food Preservation by Desrosier
- Food Science by N.N.Potter

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5. Food Quality Assurance and Packaging(Discipline Specific Elective Course –I)

This course provides brief knowledge about different aspects of food quality and food packaging.

Semester	Discipline Specific Elective Course	Course Title	Credit
V	FT520DA	Food Quality Assurance and Packaging	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- To make students understand about food quality and its evaluation.
- To acquaint students about packaging requirements of food and properties of different packaging materials used in food packaging.

FOOD QUALITY ASSURANCE AND PACKAGING**THEORY****(CREDITS: 04)****Unit – 1**

- Sampling-Definition and types.
- Establishment of quality control laboratory.
- Hazard Analysis Critical Control Point (HACCP), Good Manufacturing Practices(GMP).
- Introduction of National and International Food laws.
- Food Safety and Standards Act-2006.

Unit –2

- Sensory evaluation of foods-Introduction; Sensory perception-Appearance, flavour, texture.
- Selection of sensory panellists.
- Classification of sensory tests.

Unit –3

- Refractometry: Basic principles and applications.
- Optical aspects of Colour (Tinto meter).
- Viscosity and Viscometers
- Spectroscopy- Principles and applications.
- Texture Analysis of Foods

Unit – 4

- Packaging- definition and functions
- Properties of different packaging materials-glass, metal, polymers.
- Packaging requirements of various food-fruits, vegetables, spices, milk, meat and their processed products.
- Novel Food Packaging techniques- Active packaging, MAP.

PRACTICALS**(CREDITS: 02)**

1. To examine the quality of fruits, vegetables, milk and meat.
2. Sensory methods for measuring food attributes- Difference tests and Rating tests.
3. Common adulterants in milk, chillies, honey and their detection.
4. Identification of different packaging materials.
5. Determination of shelf life of packaged foods
6. Working of spectrophotometer and Refractometer.
7. Visit to research labs and industries.

SUGGESTED READINGS

- Food Quality Evaluation by Eram SRao.
- Food Packaging Principles by Gordon Robertson..
- Handbook of Food Packaging by Paine and Paine.
- Food Packaging- Science & Technology by Lee
- Food Analysis by Pomeranz.
- Food Analysis by S. Suzanne Nielsen

6. Food Quality Assurance and Packaging (Discipline Specific Elective Course –II)

This course provides brief knowledge about different aspects of food quality and food packaging.

Semester	Discipline Specific Elective Course	Course Title	Credit
V	FT520DB	Food Quality Assurance and Packaging	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- To impart knowledge related to the storage requirements of fruits, vegetables and cereals.
- To study the structure and design of storages for fruits, vegetables and cereals.
- To acquaint with the post-harvest handling technologies of fruits and vegetables to reduce postharvest losses and their value addition

HANDLING AND STORAGE OF AGRICULTURE PRODUCE**THEORY****(CREDITS4)****Unit – 1**

- Fruit maturity and ripening indices.
- Postharvest changes in fruits and vegetables.
- Ethylene biosynthesis, mode of action, inhibition of ethylene synthesis.
- Precooling and transport of horticultural commodities.
- Cold chain management.

Unit – 2

- Storage: Definition & functions
- Types of storage: low cost and high cost storage systems
- Hypobaric storage
- Zero energy cool chamber: Its construction and advantages.

Unit – 3

- Controlled atmospheric storage.
- Construction of CA storage

- Role of different gases in CA storage and control of gases.
- CA storage requirements for various fruits and vegetables (Elementary idea).
- Adverse effects of CA storage on fruits and vegetables.

Unit – 4

- Grain storage: Types of storages used for cereals; Solid-wall bins and silos for bulk storage; Reinforced concrete silos; Steel bins
- Bag storage of grains
- Insect control: Losses caused by insects and their management.
- Rodent and bird control in stores.
- Storage management, hygiene and safety

PRACTICALS

(CREDITS: 02)

1. Maturity indices of different fruits and vegetables.
2. Identification of postharvest diseases and physiological disorders of fruits and vegetables.
3. Visit to cold storage and controlled atmospheric stores
4. Checking of grains for insect infestation.
5. Visit to FCI godown.

SUGGESTED READINGS

- Postharvest Technology of Fruit & Vegetables by A.K. Thompson.
- Postharvest Technology of Fruits & Vegetables by Verma & Joshi 2000. Indus publications, New Delhi.
- Rural Structures in the Tropics: Design and Development by Geoffrey C. Mrema, Lawrence O. Gumbe, Hakgamalang J. Chepete, Januarius O. Agullo, FAO.
- Grain Storage Techniques by D.L. Proctor, FAO.
- Engineering for Storage of Fruits and Vegetables by Chandra Gopala Rao, Elsevier.
- Controlled Atmosphere Storage of Fruits and Vegetables by A. Keith Thompson. CABI.

7. Processing of Foods of Animal Origin (Discipline Specific Elective Course –III)

This course provides information about milk composition and its processing. Students will also be able to get knowledge on composition, processing and preservation of meat, egg and fish.

Semester	Discipline Specific Elective Course	Course Title	Credit
VI	FT620DA	Processing of Foods of Animal Origin	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- To study the composition of milk and milk products.
- To study the processing technology of milk and milk product
- To describe structure, composition, nutritional quality & preservation technology of animal products

PROCESSING OF FOODS OF ANIMAL ORIGIN**THEORY****(CREDITS4)****Unit – 1**

- Sources and composition of milk, nutritive value.
- Chemistry of Milk- Milk fat, proteins, lactose, vitamins, minerals & salts
- Processing of market milk- standardization, toning of milk, homogenization, Pasteurization, Sterilization.

Unit – 2

- Storage, transportation and distribution of milk.
- Milk products - Processing of cream, condensed milk, whole and skimmed milk, fermented milks; Butter and its manufacture.
- Cheese and its types,
- Production of Icecreams

Unit – 3

- Introduction to Indian Meat, Fish and Poultry Industry.
- Scope and problems faced by meat industry in J&K.
- Structure of Muscle; Slaughtering of meat animals. Post mortem changes in meat.
- Tenderization and aging of meat.

- Different cuts of lamb and their uses.

Unit – 4

- Preservation of meat by freezing, curing, pickling and smoking of meat.
- Traditional meat products of J&K.
- Structure, composition and nutritive value of eggs
- Preservation of fish by freezing, canning, smoking, irradiation and dehydration.
- Packaging requirements of meat and meat products.

PRACTICALS

(CREDITS: 02)

1. Market survey of meat and milk products.
2. Preparation of meat pickle.
3. Slaughtering of poultry and determination of meat to bone ratio.
4. Dressing of fish and calculation of dressing percentage.
5. Quality evaluation of eggs.
6. Evaluation of milk-total solids, fat.
7. Determination of acidity and specific gravity of milk.
8. Preparation of common milk products like Flavoured milks, Yoghurt, Butter.
9. Visit to local milk processing plant and slaughterhouse.

SUGGESTED READINGS

- Outlines of Dairy Technology by S. K. De
- Chemistry and Testing of Dairy products by H. V. Atherton & J. A. Newlander
- Milk and dairy Product Technology by Edger Spreer.
- Dairy Chemistry by H. H. Sommer
- Principles of Meat Science by Forest.
- Developments in Meat Science by Lawrie.
- Processed Meats by Pearsons.

8. Processing of Foods of Animal Origin (Discipline Specific Elective Course –IV)

This course will enable the students to get knowledge food analysis and the equipment's associated with it.

Semester	Discipline Specific Elective Course	Course Title	Credit
VI	FT620DB	Advances in Food Processing and Food Analysis	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- To provide knowledge about advanced methods of food processing and analysis.
- To illustrate the principle and mechanism of analytical instruments.
- To describe bio-chemical analysis of food components

ADVANCES IN FOOD PROCESSING AND FOOD ANALYSIS**THEORY****(CREDITS: 04)****Unit – 1**

- Microwave processing of foods-Principles, equipment and applications.
- Membrane processing-types and applications
- Irradiation-sources, effects on foods

Unit – 2

- Ultrasound processing of foods.
- High Hydrostatic Pressure (HHP) processing.
- Extraction Techniques- Liquid-Liquid batch extraction, Continuous extraction, Discontinuous extraction, Counter-current extraction

Unit – 3

- Chromatography (Paper, Thin layer & Column)-Principle, working and application.
- Atomic Absorption Spectroscopy (AAS) and its application.
- Mass Spectroscopy (MS) and its application

Unit – 4

- Fluorimetry- Instrument components and applications.

- Electrophoresis- Principle, Types- Continuous & Discontinues, PAGE, AGAROSEGel.
- Scanning ElectronMicroscopy.
- Texture Profile Analysis (TPA) offoods.

PRACTICALS

(2

CREDITS)

1. Visit to Food Analysis Lab to perform followingpracticals.
2. SEM
3. PAGE
4. AAS
5. Rheometry
6. TPA
7. Microwave heating offoods

SUGGESTED READINGS

- Novel Food Processing Technologies by Gustavo V. Barbosa-Canovas, Maria S. Tapia, and M. Pilar Cano
- New Methods of Food Preservation by G. W Gould, 2012;*Springer*
- Food Analysis by S. SuzanneNielsen
- Advances in Food Diagnostics by Leo M. L. Nollet and Y.HHui
- Food Analysis by Pomeranz.

Course Structure and distribution of different courses with their credits for B.A. /B.Sc. Geography

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Elements of Physical Geography	Core Course	6 credits 4(T)+2(P)
2.	II	Philosophies & Methodologies in Geography	Core Course	6 credits 4(T)+2(P)
3.	III	Human Geography	Core Course	6 credits 4(T)+2(P)
4.	IV	Geography of India	Core Course	6 credits 4(T)+2(P)
5.	V	Economic Geography	Discipline Specific Elective	6 credits 4(T)+2(P)
6.	V	GIS & GPS Applications	Skill Enhancement Course	4 credits 2(T)+2(P)
7.	VI	Fundamental of Disaster Management	Discipline Specific Elective	6 credits 4(T)+2(P)

General course outcomes

The study of Geography in B.A./B.Sc. would accomplish the following objectives;

- (i) Understanding the fundamental principles and concepts of Geography and its sub-fields like Geomorphology, Climatology, Oceanography, Bio-geography, Social Geography, Economic Geography, Political Geography, Geographical Thought, Cartography, Remote Sensing and GIS etc.
- (ii) Identification and analysis of various facets of geographical features and processes on earth surface.
- (iii) Development of aptitude for acquiring basic skills of carrying out field work and learning the science and art of collecting, processing and interpreting the data
- (iv) Learning of the skills related to sub-fields of geography which include professionalism of map making, Image interpretation and GIS Analysis, Tourist guides etc.
- (v) Exposure to the use of the updated technologies of remote sensing and Geographical Information System (GIS).
- (vi) To harness the trans-disciplinary nature of the subject and link it with sustainable development goals through a range of multi-dimensional core and elective papers

1. Elements of Physical Geography (Core Course -I):

This course provides students with a detailed and intricate knowledge of the Physical Geography

Semester	Course Code	Course title	Credit (06)
Ist	GG-CR-16101	Elements of Physical Geography	Theory: 04
Ist	GG-CR-16101	Cartography	Practical: 02

Course Specific Outcomes:

- Provide learners an opportunity to understand the Physical Geography and its branches
- Help students to learn the fundamental concepts related to components of earth system- lithosphere, atmosphere and hydrosphere
- Provides a detailed analysis of processes responsible for formation and destruction of various landforms found both on land and ocean surface
- Provides a firsthand experience of drawing scale, maps etc.

ELEMENTS OF PHYSICAL GEOGRAPHY**THEORY****CREDITS: 04****Credit-I**

- 1) Introduction to Physical Geography and its Various Branches
- 2) Structure of Earth's Interior
- 3) Wegener's theory of Continental Drift
- 4) Concept of Sea floor spreading, Plate Tectonics and Isostasy
- 5) Earthquakes: origin, types, measurement

Credit -II

- 1) Origin and characteristics and Classification of rocks
- 2) Weathering: Factors and Types
- 3) Earth movements
- 4) Exogenetic and Endogenetic Forces/Processes
- 5) Landform and their formation (Fluvial, Glacial, Aeolian and Karst)

Credit -III

- 1) Definition and Significance of Climatology
- 2) Insolation and Global Energy Budget
- 3) Atmospheric Pressure and Winds (Planetary, Periodic and Local winds)
- 4) Precipitation: Types and Global Distribution Patterns

5) Atmospheric Disturbances: Tropical and Temperate Cyclones/Anti-cyclones

Credit -IV

- 1) Surface configuration of the Ocean floor- Continental Shelf, Continental Slope, Abyssal Plain, Mid- Oceanic Ridges and Oceanic Trenches
- 2) Coral reefs: Significance, Origin and Types
- 3) Tides: Origin and Types
- 4) Currents: Origin and Types; Currents of Atlantic Ocean
- 5) Oceans as Store-houses of resources for the future

SUGGESTED READINGS

- Singh, S.: Geomorphology, Prayag Pustakalaya, Allahabad, 1998.
- Sparks, B.N.: Geomorphology, Prayag Pustakalaya, Allahabad, 1998
- D. S. Lal, Physical Geography, Sharda Pustak Bhawan, 2009
- Savindra Singh, Physical Geography, Prayag Pustak Bhawan, 2000
- Majid Hussain, Physical Geography, Anmol Publications Pvt. Ltd., 2007
- S. A. Qazi. Principals of Physical Geography, AHP Publishing Co. 2004
- Satopa Mukherjee, Understanding Physical Geography, Oriental Longman 2002
- A. H. Strahler & A. N. Strahler, Modern Physical Geography, John Willy & sons, Inc. 2001
- Barry, R. G & Chorley, R.J., Atmosphere, Weather and Climate Routledge, 1998.
- Critchfield, H. General Climatology, Prentice Hall, New York, 1975.
- Stringer, E.T Foundation of Climatology, Surjeet Publication, Delhi, 1982.
- Grald, S, General Oceanography- An Introduction. John Wiley & Sons, New York, 1980.
- King, C.A.M. Oceanography for Geographers, E Arnold, London, 1975

PRACTICAL

CARTOGRAPHY

CREDITS: 02

Credit – I

- 1) Essentials of Map: Scale, Projection, Direction and Conventional Signs
- 2) Scales: Definition and Types
- 3) Construction of Scales: Plain, Diagonal and Comparative
- 4) Contours: Definition and importance: Representation of different Landforms by Contours

Credit – II

- 1) Drawing of Profile: Serial, Longitudinal, Superimposed, Composite and Projected Profiles
- 2) Uses of line and bar graphs for representing population, agriculture, industry and transport data

- 3) Representation of population distribution, density, growth by different Cartographic methods – Point, Line and Area.
- 4) Digital Cartography: Definition, Scope and Applications

SUGGESTED READINGS

- Robinson, A.H et al., Elements of Cartography, John Wiley & Sons, U.S.A., 1995.
- Sarkar, A.K., Practical Geography: A Systematic Approach, Oriental Longman, Calcutta, 1977
- Singh, R.L and Dutt, P.K., Elements of Practical Geography, Kalyani Publishers New Delhi, 1979
- Gopal Singh, Map World and Practical Geography, Vikas Publishing House, 2000
- Kali Charan Sahu. Textbook of Remote Sensing and Geographic Information System, Atlantic Publishers and Distributors, 2008.

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2. Philosophies & Methodologies in Geography (Core Course-II):

This course acquaints students with the basic knowledge of geographical thought. It provides students with insights about the changing paradigms in Geographical thought over the period of time. It also provides firsthand experience of surveys.

Semester	Course Code	Course title	Credit (06)
2 nd	GG-CR-16201	Philosophies & Methodologies in Geography	Theory: 04
2 nd	GG-CR-16201	Surveying	Practical :02

Course Specific Outcomes:

- The students will attain the knowledge of philosophies and methodologies in Geography
- Encourage students to learn about the growth of the discipline and paradigm shifts through contributions made by different schools of thought from time to time
- Supports learning levels of students about the fundamentals of ecology and environment
- Helps them to understand the basics of field surveys, surveying process and interpretation of topographic maps

PHILOSOPHIES & METHODOLOGIES IN GEOGRAPHY

THEORY

CREDITS: 04

Credit-I

- 1) The Nature of Geography
- 2) Objectives and relevance of Geography
- 3) Various Branches of Human Geography
- 4) Major themes of Geography (Areal Differentiation, Man-Environment Interaction & Spatial organization)
- 5) Dualism in Geography:
 - (i) Regional/Systematic (ii) Physical/Human (iii) Historical/Contemporary

Credit –II

- 1) Contribution of Phoenicians in the field of Geography
- 2) Contribution of Greeks in the field of Geography
- 3) Contribution of Romans in the field of Geography
- 4) Contribution of Arabs in the field of Geography

5) Impact of Dark-ages on Geography

Credit -III

- 1) Geography as the study of Environment
- 2) Definition, Scope and significance of Ecology
- 3) Concept and broad types of Ecosystem
- 4) Biodiversity: Concept, Importance and Conservation
- 5) Ecological imbalances, causes and consequences

Credit -IV

- 1) Quantitative Techniques and their relevance in Geography
- 2) Quantitative Revolution in Geography
- 3) Geomorphic field survey: Meaning, Significance and Procedure
- 4) Socio-Economic field survey: Meaning, Significance and Procedure
- 5) Application of Remote Sensing in Geomorphology, Land use and Natural Hazards

SUGGESTED READINGS

- Dikshit R D: Geographical Thought -A contextual History of Ideas. Prentice Hall India, New Delhi, 2000.
- Hartshorne, R. Perspectives on the Nature of Geography. R and McNally and Co., Chicago-959
- Harvey, David. Explanation in Geography. Edward -Arnold London, 1972.
- Husain, Majid: Evolution of Geographical Thought, Rawat Publications, Jaipur, 1984.
- James, P E: All Possible Worlds: A History of Geographical Ideas, Sachin Publication, Jaipur, 1980.
- A.H.Strahler & A.N.Strahler. Modern Physical Geography. John Willey & sons, Inc 2001
- M. Z. A. Khan & S.K. Agarwal, Environmental Geography, AHP Publishing Co.2010
- S. Gupta & M. Gupta. Environment Population and Resources, 1997.

GGP-CR-16201- PRACTICAL

SURVEYING

CREDITS:02

Credit – I

- 1) Introduction to Surveying, Classification and types of Surveying
- 2) Plain Table Survey: Definition, Accessories, Procedure and Precautions
- 3) Radial, Intersection and Resection methods of Plain Table Survey
- 4) Tracing Paper Method and Trial and Error Method

Credit - II

- 1) Study of survey of India Topographic maps
- 2) Interpretation of survey of India topo-sheets with respect to Relief, Drainage, Settlements and Communication patterns
- 3) One day Socio-economic field survey of local area within the district

SUGGESTED READINGS

- Robinson, A.H *et al.* Elements of Cartography, John Wiley & Sons, U.S.A., 1995.
- Sarkar, A.K., Practical Geography: A Systematic Approach, Oriental Longman, Calcutta, 1997.
- Singh, R.L and Dutt, P.K., Elements of Practical Geography, Kalyani Publishers New Delhi, 1979.
- Gopal Singh. Map World and Practical Geography, Vikas Publishing House 2000
- Kali Charan Sahu. Textbook of Remote Sensing and Geographic Information System, Atlantic Publishers and Distributors, 2008.

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3. Human Geography (Core Course-III)

This course provides students with the knowledge and understanding of Human Geography. Moreover, it lets students to understand the fundamentals of statistical techniques and their relevance in Geography.

Semester	Course Code	Course title	Credit (06)
3 rd	GG-CR-16301	Human Geography	Theory: 04
3 rd	GG-CR-16301	Quantitative Techniques	Practical :02

Course Specific Outcomes:

- The students will acquire knowledge of philosophical approaches in Geography
- Boost students to understand the different racial and religious groups of the world
- Enhancement of the learning levels of students about the fundamentals Human Population Structure and Natural resources
- Helps them to understand various statistical techniques and methods and their utility in geographical studies
- Provides an opportunity to students for a field tour and observation of physical features

HUMAN GEOGRAPHY

THEORY

CREDITS: 04

Credit -I

- 1) Determinism and Possibilism
- 2) Pragmatism, Radicalism and Positivism
- 3) Behavioural Approach
- 4) Humanistic Approach

Credit -II

- 1) Races: Physical and Socio-Economic Characteristics, Spatial Distribution
- 2) Major Religious Groups: Spatial diffusion and distribution (Christianity, Islam, Hinduism and Buddhism)
- 3) Economic activities (Primary Secondary, Tertiary and Quaternary)
- 4) Human Adaptation and Environment

- (i) Cold region- Eskimo (ii) Mountain-Gujjars

Credit -III

- 1) Population: Structure and Composition (Age, Gender), Comparison between developed and developing countries
- 2) Distribution and density of Population: Factors (Geographic, Socio-Economic and Demographic)
- 3) Concepts of Over-Population, Under-Population and Optimum-Population, Zero Population growth
- 4) Theories of Population Growth: Malthus and Demographic Transition

Credit -IV

- 1) Meaning, Nature and Classification of Resources
- 2) Resource Conservation: Meaning and Importance
- 3) Methods of Conservation of Resources: Soil, Water, Forests and Minerals
- 4) Land degradation: Causes and Consequences

SUGGESTED READINGS

- Beblig, H.J., Human Geography: Culture, Society and Space, John Wiley, New York, 1996.
- Singh, K.N., People of India, An Introduction, Seagul Book, 1992.
- Spate O.H.K, People of India, An Introduction, Seagul Books, 1992.
- Majid Hussain. Human Geography, Rawat Publications 1994
- L. N. Verma. Urban Geography, Rawat Publications 2006
- Grish Chopra. Economic Geography, Commonwealth 2006
- T. C. Sharma. Economic Geography of India, Rawat Publications 2013
- R. K. Jain. A Textbook of Population Studies, Astha Publishers and Distributors 2014
- Hans Raj. Fundamentals of Demography, Surjeet Publications

PRACTICAL

QUANTITATIVE TECHNIQUES

CREDITS: 02

Credit – I

- 1) Measures of Central Tendency: Mean, Median, Mode, Partition Values (Quartiles, Deciles & Percentiles)
- 2) Measures of Dispersion: Mean Deviation, Standard Deviation and Coefficient of Variation in data analysis
- 3) Correlation Analysis: Scatter Diagram and Karl Pearson's method
- 4) Use of above mentioned Statistical tools in Physical and Socio-Economic Data Analysis

Credit – II

Field work and Field report of Physical Geography of the Area

SUGGESTED READINGS

- Pal, S.K., Statistics for Geographers- Techniques and Applications, Concept, New Delhi, 1998.
- Jones, p .A. , Fieldwork in Geography, Longman,1968.
- Khan, Z.A., Text Book of Practical Geography. Concept Publications, New Delhi, 1963.
- Singh, R.L. and Dutt, P.K.: Elements of Practical Geography Kalyani Publishers, New Delhi.
- Steers, J.A., Map projections, University of London press, London
- Ashis Sarkar. Quantitative Geography- Techniques and Presentation, Oriental Blackswan, 2013
- B. C. Panda, Remote Sensing- Principles and Applications, Viva Books 2008
- Khan. Z.A. Text Book of Practical Geography, Concept Publications, New Delhi, 1998.
- Monkhouse, F.J. & Wilkinson, H.R. Maps and Diagrams.Mithuen, London, 1994.
- Sarkar ,A.K., Practical Geography- A Systematic Approach, orient Longman, Calcutta, 1997.
- Singh, R.L. Elements of Practical Geography, Kalyani Pub, New Delhi.
- L. R. Singh, Fundamentals of Practical Geography, Sharda Pustak Bhawan, 2006
- Gopal Singh. Map World and Practical Geography. Vikas Publishing House 2000
- N. N. Basak. Surveying and Levelling, Tata McGraw Hill, 1997
- D. N. Elhance, V. Elhance & B. M. Aggarwal. Fundamentals of Statistics, Kitab Mahal 2008

4. Geography of India (Core Course-IV):

This course provides students with the basic knowledge of various facets of Geography of India. Moreover, it boosts students understanding about the modern technology of Remote Sensing.

Semester	Course Code	Course title	Credit (06)
4 th	GG-CR-16401	Geography of India	Theory: 04
4 th	GG-CR-16401	Remote Sensing Techniques	Practical :02

Course Specific Outcomes:

- An in-depth study of the physical and socio-economic domains of the country as well as the UT of Jammu and Kashmir
- Provides a detailed analysis of the land and mineral resources of the country
- Promotes understanding of the recent technologies of Remote Sensing, GIS and GPS

GEOGRAPHY OF INDIA

THEORY

CREDITS: 04

Credit -I

- 1) Land: Physical Divisions and Drainage Systems of India.
- 2) Climate: General Climatic Conditions and Seasonal Variations in India
- 3) Monsoons: Mechanism and its types (Classical and Modern theory)
- 4) Soil: Types and Distribution

Credit –II

- 1) Population: Distribution, Density and Growth since 1951
- 2) Land Resources and Utilization
- 3) Characteristics of Indian Agriculture
- 4) Distribution and Production of Food Crops: Rice and Wheat

Credit – III

- 1) Distribution and production: Iron Ore, Coal and Petroleum in India
- 2) Cotton Textiles Industry
- 3) Iron and Steel Industry
- 4) Major Industrial Regions of India

Credit –IV

- 1) Physical Divisions: Drainage, Climate and vegetation (J&K)

- 2) Population Distribution: Density and Growth (J&K)
- 3) Agriculture with special reference to Horticulture and Saffron (J&K)
- 4) Tourism industry (J&K)

SUGGESTED READINGS

- Drew, F .K. The territories of India, Kashmir State. Standard Press London. 1979
- Gazetter of Kashmir and Ladakh. (1890) Reprint (1974).
- Lawrence, S.W. The Valley of Kashmir, Oxford University Press. 1895.
- Raina, A.N. Geography of Jammu and Kashmir. National Book Trust, New Delhi, 1971.
- Spate, O.H.K., India and Pakistan, Mac Million & Co. 1967.
- Singh, R.L. India, Regional Geography, Banarus Hindu University, 1987
- Qazi, S.A. Geography of India with special reference to J&K State, APH Publishing Co. 2000.
- Majid Hussain. Systematic Geography of Jammu and Kashmir, Rawat Publications 2000
- R. L. Singh, India- A Regional Geography, National Geographical Society of India 2003
- Chandra V. P. Geography of India, ABD Publishers, 1999
- Majid Hussain, Geography of India, 2nd Ed. Tata McGraw Hill, 2011
- D. R Khullar, Geography of India.

PRACTICAL REMOTE SENSING TECHNIQUES CREDITS: 02

Credit -1

- 1) Remote Sensing: Definition, Scope and Applications
- 2) Types of Remote Sensing.
- 3) Sensors and their types
- 4) Satellite Images and their Interpretation

Credit -II

- 1) Types of Remote Sensing Data
- 2) Scale of Aerial Photographs and Methods of its Determination
- 3) GPS: Definition, Principles
- 4) Applications of GPS

SUGGESTED READINGS

- Kali Charan Sahu. Textbook of Remote Sensing and Geographic Information System, Atlantic Publishers and Distributors 2008
- B.C. Panda. Remote Sensing- Principles and Applications, Viva Books, 2008

- Jensen, R. Fundamentals of Remote Sensing. Shree MaitreePrintech Pvt Ltd Noida, 2007
- Gopal Singh. Map World and Practical Geography, Vikas Publishing House, 2000

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5. Economic Geography (Discipline Specific Elective Course):

This course provides students with an in depth study of Economic Geography. Moreover, it boosts students understanding about the map projection techniques.

Semester	Course Code	Course title	Credit (06)
5 th	GG516D2	Economic Geography	Theory: 04
5 th	GG516D2	Map Projections	Practical :02

Course Specific Outcomes:

- Equips students with an understanding of the impact of geographical factors on the economic set up of the country
- Provides a detailed knowledge about the Industrial sector of the country and factors (physical, cultural and global) affecting their location, size, input and output
- Enhances the ability of learners to know the resource potential and distribution of the UT of Jammu and Kashmir
- Promotes understanding of the vital components of map projections and their types

ECONOMIC GEOGRAPHY**THEORY****CREDITS: 04****Credit-I**

- 1) Introduction to Economic Geography
- 2) Factors influencing Location of industry
- 3) Sectoral analysis of Economic activity in India
- 4) Regional disparities in economic Development

Credit-II

- 1) Classification of Industries
- 2) Heavy Industries- Petrochemical
- 3) Agro-based Industries- Cotton Textile and Sugar
- 4) Locomotive industry

Credit-III

- 1) Globalization and Privatization
- 2) Globalization and its Impact on Indian Economy
- 3) Concept of Knowledge Economy

4) Emerging trends in Indian Economy -Economic Reforms Post-1991

Credit-IV

- 1) Sectoral composition of the economy of Jammu and Kashmir
- 2) Energy resources of J&K
- 3) Mineral resources of J& K
- 4) Contribution of Handicrafts and Cottage Industry in the employment generation in J&K State

PRACTICAL

MAP PROJECTIONS

CREDITS: 02

Credit - V

1. Map Projection and its significance
2. Classification of Map Projections
3. Limitations of existing projections
4. Conformality or Orthomorphism
5. True directions, True Distances and Equivalence

Credit – VI

1. Simple Cylindrical Projection (4 Exercises)
2. Cylindrical Equal Area Projection (4 Exercises)
3. Conical and Polyconic Projection (4 Exercises)
4. Zenithal Map Projection (4 Exercises)

SUGGESTED READINGS

- Coe, N., Kelly, P., and Yeung, H. (2007). Economic Geography: A Contemporary Introduction, London: John Wiley & Sons
- Leyshon, A., Lee, R., McDowell, L and Sunley, P. (eds) (2011). The Sage Handbook of Economic Geography, London: Sage
- Aoyama, Murphy, J., and Hanson, S. (2010) Key Concepts in Economic Geography, London: Sage
- Clark, G., Gertler, M. and Feldman, M.(eds) (2003) The Oxford Handbook of Economic Geography, Oxford: Oxford University Press
- Economic Geography of India by T. C Sharma
- Economic Geography by Majid Hussain
- Economic Geography By Prithwish Kumar Roy

6. GIS & GPS Applications (Skill Enhancement Course):

This course enhances student's abilities with the basic knowledge of Geographical Information System (GIS) and Global Positioning System and their utility in the geographical studies in current times.

Semester	Course Code	Course title	Credit (04)
5 th	GG517S	GIS & GPS Applications	Theory: 02
5 th	GG517S	Practical	Practical :02

Course Specific Outcomes:

- Equips students with an understanding of the Basics of GIS & GPS
- Provides a detailed knowledge about the application of GIS in geographical studies
- Builds among students the capacity of learning the role of modern technologies in handling the geo-environmental problems.

GIS & GPS APPLICATIONS**THEORY****CREDITS: 04****Credit-I**

- 1) Definition and Scope of GIS
- 2) Components of GIS
- 3) Spatial and Non-spatial Data
- 4) Data Processing and Analysis

Credit-II

- 1) Global Positioning System- An Introduction
- 2) GPS Structure (Segments)
- 3) Fundamentals of GPS Positioning

PRACTICAL**CREDITS: 02****Credit - III**

- 1) Generation of Thematic Layers-Point, Line & Polygon (**18 Exercises**)

Credit – IV

- 1) GPS operations: Calibration-Determination of Latitude, Longitude and Altitude (**10 Exercises**)

2) Mapping of Different Land Use/Land cover Parcel With GPS (10 Exercises)**SUGGESTED READINGS**

- Kali Charan Sahu, Textbook of Remote Sensing and Geographic Information System, Atlantic Publishers and Distributors 2008
- B.C. Panda, Remote Sensing- Principles and Applications, Viva Books 2008
- Jensen, R Fundamentals of Remote Sensing. Shree Maitree Printech Pvt Limited Noida 2007
- Gopal Singh, Map World and Practical Geography, Vikas Publishing House 2000

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7. Fundamentals of Disaster Management (Discipline Specific Elective Course):

This course provides students with the basic knowledge of various aspects of Disaster Management. Moreover it equips them with the practical knowledge of managing disasters.

Semester	Course Code	Course title	Credit (06)
6 th	GG616D	Fundamentals of Disaster Management	Theory: 04 Practical :02

Course Specific Outcomes:

- The students will attain an in depth understanding of the various kinds of disasters
- Generates a broad outlook among learners about the genesis, impact and mitigation measures of the natural and man-made disasters
- Enhances the ability of learners to know the phases of disaster management cycle
- Promotes the skill among learners to locate by mathematical calculations the epicentre and intensity of earthquakes
- Helps students to know about the emergency responses for fire and flood disasters
- Provides an opportunity to visit a disaster hit area and gain firsthand experience about the vital aspects of disaster management

FUNDAMENTALS OF DISASTER MANAGEMENT**THEORY****CREDITS: 04****Credit-I**

- 1) Meaning and Definition- Hazard and Disaster
- 2) Introduction to Geo-Physical Disasters
- 3) Earthquakes
- 4) Landslides
- 5) Tsunami

Credit-II

- 1) Introduction to Hydro-meteorological Disasters
- 2) Cyclones
- 3) Cloud bursts, Floods and Droughts
- 4) Introduction to Man-made Disasters- Nuclear & Chemical Disasters

Credit-III

- 1) Meaning & Scope of Disaster Management
- 2) Elements of Disaster Management
- 3) Concept of Disaster Risk & Vulnerability

Credit-IV

- 1) Disaster Management Cycle
- 2) Response Phase
- 3) Recovery Phase
- 4) Reconstruction and Rehabilitation Phase
- 5) Disaster Mitigation & Preparedness Phase

PRACTICAL**CREDITS: 02****Credit - V**

1. Determination of Earthquake Epicentre (6 Exercises)
2. Earthquake Intensity Measurements (Scales) (6 Exercises)
3. Earthquake Response through Mock drill (6 Exercises)
4. Preparation of First Aid Box and its application in specific disasters (4 Exercises')

Credit-VI

1. Emergency Response for Flood and Fire Hazard
2. Project Report based on Field Study of any disaster hit area

SUGGESTED READINGS

- Bryant Edwards (2005): Natural Hazards, Cambridge University Press, U.K
- Carter, W. Nick, 1991: Disaster Management, Asian Development Bank, Manila
- Firefly Guide to Global Hazards, Robert Louis Kovach, Bill McGuire, Firefly Books, 2004
- H.K. Gupta (2003): Disaster Management
- David Etkin (2014): Disaster Theory, Elsevier

Course Structure and distribution of different courses with their credits for B.Sc. Geology

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Fundamentals of Geology	Core Course	6 credits 4(T)+2(P)
2.	II	Petrology	Core Course	6 credits 4(T)+2(P)
3.	III	Sedimentary and Economic Geology	Core Course	6 credits 4(T)+2(P)
4.	III	Megascopic and Microscopic Techniques in Identification of Minerals	Skill Enhancement Course	4 credits 2(T)+2(P)
5.	IV	Geochemistry and Geophysics	Core Course	6 credits 4(T)+2(P)
6.	IV	Water Quality Analysis	Skill Enhancement Course	4 credits 2(T)+2(P)
7.	V	Structural Geology	Core Course	4 credits 2(T)+2(P)
8.	VI	Paleontology and Societal Remote Sensing	Discipline Specific Elective	6 credits 4(T)+2(P)

General course outcomes

The study of Geography in B.Sc. would accomplish the following objectives;

- (i) The study of “Geology” helps students to understand the Planet Earth like its origin, evolution and modification since its formation.
- (ii) The study of “Geology” helps students to know the Scope and Practical importance of Geology to mankind like (1) Discovering Earth’s Mineral, Oil and Gas and Ground Water (2) To Understand Climate Change in the Past (3) For Mining (4) For Map Reading (4) Engineering Geology etc.

1. Fundamentals of Geology (Core Course -I):

This course provides students with knowledge of Fundamentals of Geology.

Semester	Core Course	Course title	Credit
Ist	CC-I	Fundamentals of Geology	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- The study of this course will help the students to learn the “Basics of Geology”, “Importance and Scope of Geology” and alliance of Geology with other branches of Science particularly Physics and Chemistry.
- Under this course, the students learn the basics of “Mineralogy” and “Crystallography”. This course will help student to learn how to identify minerals using “Hand Specimens” and the Microscopic Properties of Minerals under “Petrological Microscope”.

FUNDAMENTALS OF GEOLOGY**THEORY****CREDITS: 04****Unit-1**

Introduction to the science of geology: Definition, branches, scope and importance, History of Geology; Modern theories about the origin of solar system; Evolution of continents and oceans Relation with other branches of sciences; Role of physics, chemistry and paleobiology in the development of ideas about earth. Role of Physics in crystallography, gravity, geomagnetism, isostasy, earthquakes and microscopy. Role of Chemistry in chemical bonds, crystal chemistry, solution chemistry, chemical energetics.

Unit-2

Introduction to rocks and minerals: Rocks as natural mineral aggregates; types of rocks: igneous rocks; sedimentary rocks; metamorphic rocks.

Preliminary knowledge about the most common rock forming and economic minerals.

Physical properties and chemical composition of the earth and earth's crust.

Geology as the history of Earth: How the rocks record history – (a) Fossils (b) Mineralogy and the texture; (c) Structures; (d) Palaeogeography, Paleoclimate. Surface relief of the earth.

Exogenous and endogenous process.

Various Geospheres: Atmosphere; origin and evolution; structure, composition and energy balance;

Heat budget; Ocean; origin and evolution; ocean circulation and its role in global climate.

Unit-3

Crystallography: Introduction to crystallography, geometrical nature of the order of crystals. Translation vectors, planar and space lattices. Normal class of crystal systems.

Morphology of crystals: Face, edge and solid angle, interfacial angle and Law of constancy of interfacial angles. Axial system and axial ratios. Parameter system of Weiss, Miller indices. Law of Rationality of indices.

Crystal growth and twining: Growth of crystals from solutions and from a melt under controlled conditions, crystal growth in open fractures, solution cavities and vesicles.

Twining in crystals: Types, causes and laws

Crystal forms: Crystallized, crystalline, cryptocrystalline and amorphous. Crystal habit: elongated, tabular, flattened and equant. Form of crystalline and cryptocrystalline aggregates—types, examples and use in mineral identification.

Crystal chemistry: Dimorphism, polymorphism, Pseudomorphism, isomorphism and solid solution.

Unit-4

Mineralogy: definition, scope and classification of silicate minerals and ore forming (oxide/sulphide) minerals. Scalar and vector properties of minerals; Moho's scale of hardness.

Physical properties and the mode of occurrence of the following groups of minerals: Quartz, Feldspar, Mica, Amphibole, Pyroxene, Olivine, Garnet, Chlorite, and Carbonate.

Mineral optics: Elements of optics. Optics of isotropic medium – refractive index, Snell's law of critical angle, anisotropic media.

Polarization and interference of light. Polaroid, polarizing microscope- construction and use. Use of accessory plates. Pleochroism and Birefringence.

Optical indicatrix: isotropic, uniaxial and biaxial indicatrix.

Optical properties of minerals under plane-polarized and cross-polarized light: Forms, cleavage, fractures and parting, refractive index and relief, Becke line and its use.

PRACTICAL**CREDITS: 02**

Field Work: Study of landforms, erosional and depositional features. Handling of Clinometer and Brunton compass for Measuring dip and strike, and plotting of field data on toposheets.

Crystallography & Mineralogy: Demonstration of space lattice, model-Galena, Fluorite, Sphalerite, Pyrite and Calcite. Clinographic projection of the following crystals form: Cube, Octahedron, Zircon, Beryl, Calcite and Gypsum. Study of the physical properties of important rock-forming minerals as included in the theory paper. Study of optical properties of important rock forming minerals as included in the theory paper. Clinographic projections of the following crystals forms: Cube, Octahedron, Zircon Beryl, calcite and Gypsum.

SUGGESTED READINGS:

- Holmes, A., 1996: Principles of Physical Geology, EUBS, Chapman.
- Judson, S. and Kaufman, M. E., 1990: Physical Geology, Prentice Hall.
- Press, F. and Seiver, R., 1989: The Earth, W. H. Freeman.
- Terrly, G. W., 1958: Principles of Petrology, Mathuen.
- Tarbuck, E. J. and Lutgens, F. K., 1997: Earth Science, Prentice Hall.
- Lutgens, F. K. and Tarbuck, E. J., 1998: Essentials of Geology, Prentice Hall.
- Gribble, D. D., 1988: Rutley's Elements of Mineralogy, DBS Publications.
- Kerr, P. F., 1984. Optical Mineralogy.
- Phillips, Wm, R. and Griffen, D.T., 1986: Optical Mineralogy. CBS Edition.
- Putnis, A., 2001: Introduction to mineral Science. Cambridge University Press. Putnis, A., 1992:
- Introduction to mineral Science. Cambridge University Press.
- Richard, V. G., 1997: Dana's new Mineralogy. John Wiley.

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2. **Petrology (Core Course -II):**

This course provides students with knowledge of Petrology.

Semester	Core Course	Course title	Credit
2 nd	CC-II	Petrology	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- The study of this course will help the students to learn the “Formation” Texture” “Structures” of Igneous Rocks and Metamorphic Rocks.
- This course helps students how to classify the “Igneous Rocks” using various “Classification Schemes” of the International Standards. Under this course, the students learn various “Geomorphological Processes that Shape and modify the “Planet Earth”. This course will help student to learn how to identify “Igneous and Metamorphic Rocks” using “Hand Specimens” and the Microscopic Properties of “Igneous and Metamorphic Rocks” under “Petrological Microscope”.

PETROLOGY

THEORY

(CREDITS: 04)

Unit-1

Nature and scope of petrology: Difference between Petrography and petrogenesis.

Texture and structure of igneous rocks: Large structures- blocky lava, amygdaloidal lava, and vesicular structures, pillow structures, flow structures, sheet and platy structures, prismatic and columnar structures. Crystallinity, granularity (phaneric and aphanitic), shapes of crystals, mutual relations of crystals, equigranular and unequigranular textures, porphyritic, poikilitic, ophitic, intersertal and intergranular textures, directive textures, intergrowth textures. Reaction textures. Reaction structures – corona and kelyphitic borders.

Unit-2

Classification of igneous rocks: Principles of classification, CIPW classifications, IUGS classification and tabular classification. Nomenclature and description of common igneous rocks
Composition and constitution of magma: Definition of magma, composition of magma, types of magma, physico-chemical constitution of magma, primary magma.

Processes resulting in diversity in igneous rocks: Fractionation and differentiation – Gravity settling, filter-press differentiation, flow diffusion and gaseous transfer within magma; liquid immiscibility, mixing of magmas. Assimilation.

Unit-3

Metamorphic rocks: Definition of metamorphism; Controls of metamorphism – bulk composition and motivating forces in metamorphism- heat, pressure and chemically active fluids. Types of metamorphism–Contact, cataclastic, regional. Metasomatism, anataxis, palingenesis, migmatization.

Unit-4

Fundamental concepts. Catastrophism, uniformitarianism, cycle of erosion, and base level of erosion.

Weathering: definition and types, agents of weathering. Products of weathering.

Mass wasting: Definition, types, and factors affecting mass wasting-lithology, stratigraphy, structure, topography, climate, vegetation. Epeirogenesis and orogenesis.

Oceans: Topography of sea floor. – Continental shelves, slope, abyssal plains, Ocean ridges and, submarine valleys, canyons, deep-sea trenches and guyots.

Oceanic erosion and deposition. Coral reefs: types fringing, barrier and atolls.

Volcanoes: types, distribution and eruptional features.

Glaciers: Definition and types, snowline, glacial movements and crevasses.

Geological work of glaciers: Erosion and deposition.

Aeolian processes: erosional and depositional features.

Geological work of river; erosional and depositional features. Drainage patterns

Karst topography: Surface and sub-surface features

Structural landforms: Definition and types, Inversion of topography.

Climate and landforms: humid, sub-humid, arid, semi-arid.

Soils: Soil formation, Soil profiles, Soil types of India.

PRACTICAL**CREDITS: 02**

Igneous & Metamorphic Petrology: Study in hand specimen and under microscope of the mineral composition, textures and structures of important igneous and metamorphic rocks as included in theory paper.

SUGGESTED READINGS:

- Best, M. G., 1986: Igneous Petrology, CBS Pub.
- Bose, M. K., 1997: Igneous Petrology. World Press.
- Ehlers and Blatt, 1999: Petrology, (Igneous, Sedimentary and Metamorphic). CBS Pub.
- Miyashiro, A., 1994: Metamorphic Petrology. UCL Press Ltd., London.
- McBirney, A. R., 1993: Igneous Petrology. John Wiley.

- Turner & Verhoogen, 1999: Igneous and Metamorphic Petrology. CBS Pub.
- Tyrrell, G. W., 1987: Principles of Petrology. CBS Pub
- Winter, J.D. 2010. Igneous and Metamorphic Petrology.
- Yardley, B. W., 1989: An Introduction to Metamorphic Petrology. Longman, New York.

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3. Sedimentary & Economic Geology (Core Course -III):

This course provides students with knowledge of sedimentary and economic Geology

Semester	Core Course	Course title	Credit
3 rd	CC-III	Sedimentary and Economic Geology	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- The study of this course will help the students to learn about the “Sedimentary Rocks”, Sedimentary Structures”, and Classification of “Sedimentary Rocks”.
- This course gives students elementary concepts about “Economic Ore Minerals” like their geological occurrences and mode of formation particularly great emphases have been given on “Fossil Fuels” like Coal and Petroleum.
- This course will help student to learn how to identify “Sedimentary and Economic Minerals” using “Hand Specimens” and the Microscopic Properties of “Sedimentary Rocks and Economic Minerals” under “Petrological Microscope”.

SEDIMENTARY AND ECONOMIC GEOLOGY

THEORY

CREDITS: 04

Unit-1

Sedimentary rocks: Processes involved in formation of sedimentary rocks: erosion, transportation, deposition, diagenesis and lithification.

Texture: size, roundness, sphericity. Surface texture, fabric, porosity and permeability. Grain size, grade scale, and methods of grain size analysis by sieving. Use of textural properties. Structure: primary, secondary and biogenic structures.

Major primary structure; cross bedding, cross lamination, horizontal bedding, graded bedding, sole marks, ripple marks, rain-imprints and dunes.

Classification of clastic and non-clastic sedimentary rocks: Rudaceous, Arenaceous, Argillaceous and calcareous.

Unit-2

Ore minerals and gangue. Concept of metallogenic Epochs and provinces. Classification of minerals deposits – genetic and associational parameters.

Magmatic deposits; Hydrothermal deposits with reference to: a) Porphyry copper deposit b) Vein deposits of tin and tungsten.

Formation of pegmatite and pegmatite deposits in India

Oceanic mineral resources (manganese nodules).

Ores formed by metamorphic processes. Supergene enrichment deposits.
Placer & residual deposits.

Unit-3

Mode of occurrence of following minerals deposits in India: Banded iron formation, Gold, Thorium, Mica, Bauxite and Tungsten deposits.

Origin of Petroleum – Organic versus inorganic theories, transformation of organic matter into petroleum (geochemical aspects, pressure, temperature, depth of occurrence). Limiting conditions of petroleum occurrence.

Unit-4

Reservoir rocks – definition and types. Source rocks; definition and types.
Migration and accumulation of petroleum: primary and secondary migration.
Reservoir Traps, classification (structural, stratigraphic); Cap rocks – types.

Coal; Introduction; Constituents of coal: Rank and grade of coal; Varieties of coal (physical and chemical characters); Origin of coal. Distribution of Coal in time and space.

PRACTICAL

CREDITS: 02

Sedimentary Geology and ore study: Study in hand specimen and under microscope of the mineral composition, textures and structures of important sedimentary rocks as included in theory paper.

Megascopic study of ore minerals of Cu, Fe, Al, Mn, Pb and Zn. Precious and semi-precious stones diamond, ruby, sapphire, emerald, opal, jasper, agate and garnet.

SUGGESTED READINGS:

- Aguado, E., and Burt, J., 2009. Understanding weather and climate. Prentice Hall.
- Collinson, J. D., 1999: Sedimentary Structures. Springer Verlag.
- Lutgens, Tarbuck & Tasa 2009. The Atmosphere: An Introduction to Meteorology. Pearson Pub.
- Miall, A. D., 1999: Principles of Sedimentary Basin Analysis. Springer-Verlag.
- Pettijohn, F. J., Potter, P.E. and Siever, R., 1990: Sand and Sandstone. Springer Verlag.
- Reading, J. G. 1996: Sedimentary Environment and Facies. Black well.
- Rohli, R.Y., and Vega, A.I., 2007. Climatology. Jones and Barlatt
- Ruddiman, W.F., 2001. Earth's climate: past and future. Edition 2, Freeman Publisher. .
- Selley, R. C., 1976: Introduction of Sedimentology. Academic Press, London.
- Sengupta, S., 1997: Introduction to Sedimentology. Oxford-IBH.

4. Megascopic and Microscopic Techniques in Identification of Minerals (Skill Enhancement Course):

This course provides students with knowledge of Megascopic and Microscopic Techniques in Identification of Minerals

Semester	Skill Course	Course title	Credit
3 rd	SEC-I	Megascopic and Microscopic Techniques in Identification of Minerals	Theory:02; Practical:02 Total:04

Course Specific Outcomes

- The study of this course will help the students to learn the basics of Mineralogy like Physical and Optical Properties of Minerals.
- This course will help student to learn how to identify minerals using “Hand Specimens” and the Microscopic Properties of Minerals under “Petrological Microscope”.

MEGASCOPIK AND MICROSCOPIC TECHNIQUES IN IDENTIFICATION OF MINERALS

THEORY

CREDITS: 02

Unit-1

Mineral definition, Crystalline and amorphous substances, structure, form, cleavage, colour, luster, transparency, streak, hardness, sp. gravity, tenacity, feel, taste, odour. Electrical, Magnetic and Thermal Properties. Empirical and Structural formula of minerals. Isomorphism, polymorphism and pseudomorphism. Non-crystalline minerals. Fluorescence in minerals.

Unit-2

Plane polarized light-Double refraction-Snells law. Optical properties of minerals: Colour, Form, Cleavage, Refractive Index, Relief, Alteration, inclusions, Zoning, Pleochroism, Pleochroic haloes, Twinkling, Isotropism and anisotropism, Extinction, Polarisation colours, Birefringence, Twinning.

PRACTICAL

CREDITS: 02

Unit-1

Megascopic identification of some important minerals: Quartz, Mica, Tourmaline, Topaz, Beryl, Zircon, Rutile, Apatite. Calcite, Gypsum, Garnet, Cordierite, Kyanite, Sillimanite, Andalusite, Sphene, Staurolite, Chondrodite.

Unit-2

Microscopic study of some important minerals: Quartz, Mica, Tourmaline, Topaz, Beryl, Zircon, Rutile, Apatite. Calcite, Gypsum, Garnet, Cordierite, Kyanite, Sillimanite, Andalusite, Sphene, Staurolite, Chondrodite.

SUGGESTED READINGS

- W. A. Deer, R. A. Howie and J. Zussman, 1966, An Introduction to the Rock Forming minerals, Longmans.
- Alexander N. Winchell, 1968, Elements of Optical Mineralogy, Parts I and II, Wiley Eastern (P) Ltd.,
- Ernest, E. Walhstrom, 1960, Optical Crystallography, John Wiley and Sons.
- E. S. Dana, 1935, A Text Book of Mineralogy, John Wiley & Sons.
- L. G. Berry Mason, 1961, Mineralogy, W. H. Freeman & Co.,
- Kerr, B. F., 1995, Optical Mineralogy 5th Ed. Me Graw Hill, New York.
- S. Mitra, 1994, Fundamentals of Optical, Spectroscopic and X-ray Mineralogy, S. R. Technico Book House, Ashok Raj Path, Patna.

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5. Geochemistry & Geophysics (Core Course -IV):

This course provides students with knowledge of Geochemistry & Geophysics.

Semester	Core Course	Course title	Credit
4 th	CC-IV	Geochemistry & Geophysics	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- The study of this course will help the students to learn about the basic concepts of “Geochemistry”, “Geochronology”, “Radioactivity”, and Dating Techniques to know the “Age of the Earth” .
- This course gives students elementary concepts about “Geophysics”, Seismology and Hydrogeology. This course will help student to learn how to solve basic problems in “Hydrogeology”.

GEOCHEMISTRY & GEOPHYSICS**THEORY****CREDITS: 04****Unit-1**

Introduction to geochemistry: Crystal chemistry-chemical bonds, coordination number, radius ratio, ionization potential, electro-negativity, atomic substitution, phase rule. Cosmic abundance of elements. Major element, trace elements and Rare earth elements, Large ion lithophile elements and High field strength elements. Partition Coefficient.

Gold Schmidt’s geochemical classification of elements. Geochemical characteristics of crust, mantle and core

Geochronology and age of Earth. Relative and absolute dating techniques for age determination. Radioactivity and concept of half-life, decay constant, natural radioactive isotopes.

Unit-2

Introduction and scope of geophysics, Spheroidal shape of earth and Geoid, magnetic field of the earth, paleomagnetism, Exploring Earth's interior with geophysical techniques.

Applications of geophysics in mineral and energy resources exploration.

Earth's thermal history: Heat conduction and heat flow. Thermal gradient of the earth. Convection Currents-evidence and models.

Gravitational Field: Concept, its variability with latitude, altitude, topography, and subsurface density variations. Gravity instruments: Pendulum gravimeters, Ship borne measurements

Units of gravity, gravity anomaly - definition, types (Free- air, Bouguer), local and regional concepts. Detection of cavities at engineering sites.

Isostasy: Observation; Pratt and Airy schemes of the isostatic compensation, elastic crust on

viscous mantle.

Unit-3

Seismology: Earthquake and Seismic waves, effects of seismic waves and damage to structures and natural objects. Basic features of seismographs; Magnitude and intensity of an earthquake
Types of earthquakes: tectonic and volcanic. Induced seismicity, Neotectonics. Elastic rebound theory - statement and geodetic evidence.

Earthquake location: Focus, epicenter and hypocenter; Earthquake belts; Focal depth of earthquakes. Earthquake focal mechanisms - how these are obtained.

Seismic wave reflection and refraction. Structure of the Earth: Crust, mantle; Outer core, inner core; wave speed and density distribution.

Earthquake Prediction: Need, definition, possibility, results; Seismic gap theory.

Unit-4

Distinction between Hydrology, Geohydrology and hydrogeology;

Occurrence of groundwater, water table, aquifer and its types (unconfined, confined and perched). Hydrological properties of rocks—porosity, permeability, specific yield, specific retention, hydraulic conductivity, transmissivity, and storativity. Hydrological classification of geological formations. Darcy's law

Hydrological cycle and its components. Water quality parameters and standards for drinking purposes. Fundamentals of groundwater exploration – geological and geophysical methods. Water resources of J&K.

PRACTICAL

CREDITS: 02

Hydrogeology: Delineations of hydrological boundaries on water table contour maps and estimation of aquifer properties as hydraulic conductivity. Storage coefficient and Transmissivity.

SUGGESTED READINGS:

- Gunter, F., 1991: Principles and Applications of Inorganic Geochemistry, Prentice Hall.
- Albarede, F., 2003: Geochemistry - An Introduction, Cambridge.
- Marshal, C. P. & Fairbridge, R. W., 1999: Encyclopaedia of Geochemistry, Kluwer Academic.
- William, L., 1998: Introduction to Geophysics, Cambridge.
- Todd, D. K., 1980: Groundwater Hydrology, John Wiley.
- Karanth, K. R., 1987: Groundwater assessment, Development and Management, MG. Hill.

6. Water Quality Analysis (Skill Enhancement Course):

This course provides students with knowledge of Water Quality Analysis.

Semester	Core Course	Course title	Credit
4 th	SEC	Water Quality Analysis	Theory:04; Practical:00 Total:04

Course Specific Outcomes

- The Study of this Course will help the students to learn physical and chemical parameters of water, water pollution and geochemical analysis of water.
- This course will help the students how to carry the sampling of Lake Water and Ground water and hand Pumps to know the standards of water for drinking, irrigation and industrial quality.
- Under this course, the student learns the basics of GIS and its applications.

WATER QUALITY ANALYSIS**THEORY****CREDITS: 04****Unit-1**

Physico-chemical parameters of water quality. Sampling and analysis of physico-chemical parameters of water (surface and groundwater). Pollution of groundwater by agriculture and chemical industries. Pollution control, Prevention and control of salt water intrusion.

Unit-2

Methods of water collection and preparation of samples for analysis. Analysis of major and minor elements. Analytical techniques – Titration, spectrophotometric methods. BIS and WHO standards for drinking, irrigation and industrial uses, Treatment methods for improving water quality.

Geographic information System (GIS)**Unit-3**

Geographic information system, concepts, data types: GIS Hardware and software component. Input data for GIS (sources), digitization methods, data models.

Unit-4

Spatial data, introduction, maps and their influence on the character of spatial data. Thematic characteristics. Other sources of spatial data, Spatial data models, structures and computer applications. Introduction to open source GIS software, GIS applications in Geosciences.

SUGGESTED READINGS:**For Units I & II**

- Hydrogeology, Davies and De Weist, John Wiley & Sons 1965.
- Groundwater Hydrology, Todd.D.K. 1988, John Wiley & Sons.
- Groundwater Management, K.R.Karant, S.R.Technico Book House, Ashokrajpath, Patna-

800 006.

- H.M.Ragunath, 1983, Ground water, John Wiley & Sons Ground water and wells, 2nd Ed.
- Dr.B.D.Patak, 1988, Hydrogeology of India, Central Board Irrigation and power, Mecha Marg, Chanakayapuri, New Delhi.

For Units III & IV

- Anji Ready M 2000 Remote Sensing and Geographic Information systems. Book syndicate publishing company, Hyderabad.
- Heywood 2000 An Introduction to Geographical Information system, Longman Ltd, New York. Burrow, 1982, GIS, Introductory spatial analysis, London.
- B.Sc. Geology: Syllabus (CBCS) 55
- Goodchild, M.F. Parks, Steyaert, L.T. 1993 (Eds.) Environmental Modeling with GIS, Oxford University Press.
- Hearnshaw, H.M. Unwin, D.J. 1994, Visualisation in Geographical information systems, New York.
- Laurini, R. Thompson.D, 1992, Fundamentals of Spatial Information Systems, Academic Press, London.
- Wood Harper A.T., Antill, L. Avison, D.E. 1995, Information System, Definition: the multiview approach, Black well Scientific, Oxford.
- Zeiler, M. 1994, Inside ARC/INFO. Onword Press, USA.

7. Structural Geology (Discipline Specific Elective):

This course provides students with knowledge of Structural Geology.

Semester	Core Course	Course title	Credit
5 th	DSE	Structural Geology	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- The study of this course will help the students to learn about the basics of “Structural Geology”.
- Under this course, the student learns how stress and strain leads to the formation of geological structures like folds, faults, Joints, Foliation and Lineation.
- This course gives students information about “Global Tectonics” that shapes the “Planet Earth”.
- This course will help student to learn how to study “Geological Maps” and to solve basic geological Map Problems.

STRUCTURAL GEOLOGY**THEORY****CREDITS: 04****Unit-1**

Basic concepts of field geology: Maps—definition, topographic and geological maps.

Dip and strike of stratified rocks, True dip, apparent dip, plunge and pitch of linear structures. Outcrop patterns. True thickness and vertical thickness. Width of the outcrop, relation between true thickness and the width of outcrop.

Criteria for distinction between normal and overturned sequences: ripple marks, cross bedding, graded bedding, mud cracks, rain-imprints, Pillow lava, vesicular tops of lava beds, Relationship of cleavage with bedding, Paleontological methods.

Mechanical principles:

Stress; definition of force and stress. Normal and shear stress. Basic concept of stress ellipse. Strain definition and computation of changes in line length. Basic concept of strain ellipse.

Unit-2

Folds: Definition and classification (geometrical); fold parameters/components

Unconformities: Definition, types of unconformities. Criteria for recognition of unconformities.

Concordant pluton: sills, laccoliths, lopoliths, and phacoliths. Discordant pluton: dykes, volcanic vents, ring dykes.

Joints- Morphology and classification (Geometrical).

Foliation: Definition and classification; Schistosity, gneissosity, slaty cleavage

Lineation: Definition and classification, slickenside, mineral lineation Cleavage/ bedding

intersections, pucker lineation, boudinage, quartz roding and mullion.

Unit-3

Faults: Definition, terminology and classification (geometrical)

Criteria for recognition of faults: discontinuity of structures, repetition and omission of strata, features characteristic of fault plane: slickenside, gouge, fault breccias, mylonites, silicification and mineralization, differences in sedimentary facies. Physiographic criteria: scraps, triangular facets. Offset streams.

Important concepts about Earth dynamics: outline description of Contraction, Expansion, Plate tectonic models. Plate tectonics - basic concepts and definitions, types of plate margins, important characters of plate margins.

Unit-4

Mechanism of plate movement; Mantle plumes vis-à-vis island chains.

Plate tectonics in relation to the distribution of seismic, volcanic and island arc belts.

Plate tectonic models for the origin of mountain belts: Ocean-ocean, ocean-continent, Continent-Continent types of convergent boundaries

Tectonics of the Indian subcontinent: Tectonic divisions (Extra-peninsula; Indo- Gangetic Plain and Peninsular Shield), their tectonic characters and major structural trends.

Northward movement of the Indian Plate and the origin and evolution of the Himalayas and its thrust belts.

Tectonic models for the origin and evolution of the Indo-Gangetic plain. Seismicity of the Indian subcontinent.

PRACTICAL

CREDITS: 02

Structural Geology: Study of contours and landforms; Strike, true dip and Apparent dip problems; Measurement of thickness and width of outcrops; Completion of outcrops in geological maps; and drawing of profiles and study of geological maps.

SUGGESTED READINGS:

- Condie, K. C., 1997: Plate Tectonics and Crustal Evolution, Butterworth & Heimnemann.
- Keary, P. and Vine, F. J., 2000: Global Tectonics, Blackwell Science.
- Cox, A., 1996: Plate Tectonics. Blackwell Science.
- Meyerhoff, et al., 1996: Surge Tectonics, Kluwer Academics.
- Bell, F. G., 1998: Environmental Geology, Blackwell.
- Bell, F. G., 1999: Geological Hazards, Routledge, London.
- Subramanian, V., 2001: Text Book on Environmental Science, Narosa International.

8. Paleontology & Societal Remote Sensing (Discipline Specific Elective):

This course provides students with knowledge of Paleontology & Societal Remote sensing.

Semester	Core Course	Course title	Credit
6 th	DSE	Paleontology & Societal Remote Sensing	Theory:04; Practical:02 Total:06

Course Specific Outcomes

- The study of this course will help the students to learn the “Origin and Evolution” of Life through Fossil records within the “Stratigraphic Units” of the Earth’s Crust.
- This course also helps students how to study “Stratigraphy”. This course given students the detailed information of “Stratigraphic Units” of the Indian Subcontinents”.
- This course will help student to learn how to identify “Fossils” and importance of Remote Sensing and various techniques to study Images.

PALEONTOLOGY & SOCIETAL REMOTE SENSING**THEORY****CREDITS: 04****Unit-1**

Paleontology: Origin and evolution of the life through ages; Geological time scale; Preliminary idea about faunal succession. Fossils, their characters, conditions necessary for fossilization; types of preservation and occurrence. Application of Paleontology.

Morphology, geological, geographical and stratigraphic distribution of the following: (1) Brachiopoda (2) Bivalvia (3) Gastropoda (4) Cephalopoda (5) Graptoloida (6) Anthozoa (7) Echinoidea (8) Trilobita.

Unit-2

Elementary ideas about Foraminifera, Ostracoda, Radiolarian and Conodonts.
Elementary concept of vertebrate Paleontology with special reference to Siwaliks.
Evolution of Man, Horse & Elephant

Introduction to micropaleontology and microfossils and their application.

Introduction to Palaeobotany with special reference to Gondwana plant fossils.

Extinction of organisms with special reference different hypothesis for the extinction of dinosaurs
Introduction to Palynology and its applications. Application of Paleontological data in paleogeographic reconstructions. Paleontological evidence in favor of continental drift.

Unit-3

Remote sensing: Concept and foundation of RS (Electromagnetic spectrum, radiation laws).
Overview of RS technology. Landsat, IRS, SPOT, MODIS

Interaction of Electromagnetic waves with Earth surface features (water, soil, rocks, and vegetation). Photo-geology and its applications.

Application of remote sensing: geomorphological mapping, geological hazards assessment, hydrology and land use/land cover mapping.

Introduction to GIS and its applications.

Fundamental concept (environment, population needs and planning.

Mineral resources vis-à-vis population needs; environmental impact of exploration and processing of mineral resources on air, soil and surface and subsurface water.

Water supply and water use - human, agriculture and industrial.

Societal implications of major hydroelectric, nuclear and industrial projects.

Natural Hazards:

Earthquakes; Scale of intensity related damage, preventive measures.

Landslides: Slope stability, causes of landslides, anthropogenic activity and landslides, prevention and correction of landslides.

Floods: magnitude and frequency of floods, urbanization and flooding, nature and extent of flood hazard.

Coastal hazards: tropical cyclones, tsunamis and coastal erosion.

Unit-4

Stratigraphy: introduction, nomenclature and Principles. Stratigraphic correlation; imperfection of geological record. Brief introduction to Precambrian rocks of India with special reference to their classification, distribution, lithology and economic importance: Dharwar, Aravalli, Cuddapah, Vindhyan and J&K

Stratigraphy of the following Phanerozoic rocks with special reference to their lithology and fossil content: Paleozoic succession of Kashmir. Triassic of Spiti, Jurassic of Kuch, Cretaceous of Tiruchirapalli. Stratigraphy of Siwaliks and Karewas of Kashmir.

PRACTICAL

CREDITS: 02

Remote Sensing and Palaeontology: Image subset, Landuse and landcover mapping, image georeferencing.

Study of morphological characters of the selected genera- Brachiopoda, Bivalvia, Gastropoda, Cephalopoda, Trilobita, Echinoidea, Graptoloidea and Anthozoa.

SUGGESTED READINGS:

- Jain, P.C. and Anantharaman, M.S., 2018. Palaeontology (Palaeobiology)-Evolution and Animal Distribution. 11th Edition, Vishal Publishing Co, 1-372.
- Lillesand, T.M. and Kiefer, R.W., 2000. Remote Sensing and Image Interpretation. 4th Edition, Wiley, 1-724.
- Anji Ready M 2000 Remote Sensing and Geographic Information systems. Book syndicate

publishing company, Hyderabad.

- Gupta, R.P., 2005. Remote Sensing Geology. 2nd Edition. Springer, 1-655.
- Kathal, P.K., 2000. Microfossils and their Applications 2nd Edition, CBS.
- Singh, P., 2013. Engineering and General Geology. S.K. Kataria & Sons.
- Bangar, K.M., 2020. Principles of Engineering Geology. Standard Publishers Distributors
- Kumar, R. 2003. Fundamentals of Historical Geology and Stratigraphy of India. 2nd Edition, New Age International Publishers.
- Keller, E.A., 2012. Introduction to Environmental Geology. 5th Edition. Pearson

Govt. Model Degree College Shopian

**Course Structure and distribution of different courses with their credits for
B.A./B.Sc. Mathematics**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Calculus	Core Course	6 credits 6(T)
2.	II	Differential Equations	Core Course	6 credits 6(T)
3.	III	Real Analysis	Core Course	6 credits 6(T)
4.	III	Algebra	Core Course	6 credits 6(T)
5.	IV	Numerical Analysis	Discipline Specific Elective	6 credits 6(T)
6.	V	Linear Algebra	Discipline Specific Elective	6 credits 6(T)

Course outcomes

A well-structured Mathematical component in B.A/B.Sc. (Programme) Mathematical Sciences empowers the students to;

- Solve problems using a broad range of significant mathematical techniques, including calculus, algebra, geometry, analysis, numerical methods, differential equations, probability and statistics along with hands-on learning.
- Analyze quantitative data using statistical analysis techniques.
- Combine the principles of physics and chemistry, as supported by mathematics to describe the foundational concepts of the physical world and apply these concepts to new situations.
- Apply the techniques of mathematics to understand experimental observations and predict outcomes.
- Collaborate with others, including multidisciplinary groups, to solve scientific problems, and to recognize ethical issues in each respective profession.

1. Calculus (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Calculus	Theory: 06 Total: 06

Course specific outcomes

This course will enable the students to;

- Learn first and second derivative tests for relative extrema and apply the knowledge in problems in business, economics and life sciences.
- Sketch curves in a plane using its mathematical properties in the different coordinate systems of reference.
- Compute area of surfaces of revolution and the volume of solids by integrating over cross-sectional areas.
- Understand the calculus of vector functions and its use to develop the basic principles of planetary motion.

CALCULUS

THEORY

(CREDITS 6)

Unit 1

Limit and Continuity (ϵ and δ definition), types of discontinuities, properties of continuous functions on closed intervals, differentiability of functions, Successive differentiation, Leibnitz's theorem, partial differentiation, total differentials, Euler's theorem on homogenous functions.

Unit 2

Tangents and Normals (polar coordinates only), pedal equations, curvature and radius of curvature, asymptotes, singular points, tracing of curves in cartesian and polar coordinates.

Unit 3

Rolle's theorem, Mean value theorems, Taylor's theorem with Lagrange's Cauchy's forms of remainder, Taylor's series, Maclaurin's series of $\sin x$, $\cos x$, e^{mx} , $\log(1+x)$, $(1-x)$, maxima and minima, indeterminate forms.

Unit 4

Integration by partial fractions, integration of rational and irrational functions, definite integrals and their properties, reduction formulae for integrals of rational, trigonometric, exponential and logarithmic functions and of their combinations.

SUGGESTED READINGS

- G.B. Thomas and R. L. Finney, *Calculus*, Pearson Education, 2007.
- H. Anton, I. Birens and S. Davis, *Calculus*, John Wiley and Sons, Inc., 2002.
- S. D. Chopra, M. L. Kochar and A. Aziz, *Differential Calculus*, Kapoor Publications.

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2. Differential Equations (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Differential Equations	Theory: 06 Total: 06

Course specific outcomes

The course will enable the students to;

- Learn basics of differential equations and mathematical modeling.
- Formulate differential equations for various mathematical models.
- Solve first order non-linear differential equations and linear differential equations of higher order using various techniques.
- Apply these techniques to solve and analyze various mathematical models.

DIFFERENTIAL EQUATIONS

THEORY

(CREDITS 6)

Unit 1

Differential equations, integrating factors, Bernoulli's equation, exact differential equations, necessary and sufficient conditions for exactness, symbolic operators, homogeneous and non homogeneous linear differential equations with constant coefficients and those reducible to such equations.

Unit 2

Miscellaneous forms of differential equations, first order higher degree equations solvable for X, Y, Z, P equations from which one variable is explicitly absent, Clairut's form, equations reducible to Clairut's form.

Unit 3

Legendre polynomials, Bessel function, recurrence relation and differential equation satisfied by each of these functions, Wronskian and its properties.

Unit 4

Formation of partial differential equations, order and degree of partial differentialequations, concept of linear and non-linear partial differential equations, linear partial differential equation of first order, Lagrange's method, Geometrical interpretation of the form $Pp + Qq = R$, Charpit's method, classification of second order partial differential equations into elliptical, parabolic and hyperbolic through illustrations only.

SUGGESTED READINGS

- I. Sneddon, *Elements of Partial Differential Equations*, McGraw-Hill, International Edition, 1967.
- M. D. Raisinghania, *Ordinary differential Equations*.
- S. D. Chopra and M.L.Kochar, *Integral Calculus*, Kapoor Pub.
- Shepley L. Ross, *Differential Equations*, 3rd Ed., John Willey and Sons, 1984.
- Schaun Series, *Differential Equations*.

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3. Real Analysis (Core Course-III)

Semester	Core Course	Course Title	Credit
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III	CC-III	Real Analysis	Theory: 06 Total: 06
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Course specific outcomes

This course will enable the students to;

- Understand many properties of the real line, including completeness and Archimedean properties.
- Learn to define sequences in terms of functions from \mathbb{R} to a subset of \mathbb{R}
- Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence. Absolute convergence of an infinite series of real numbers.

REAL ANALYSIS

THEORY

(CREDITS 6)

Unit 1

Finite and infinite sets, examples of countable and uncountable sets, real line, bounded sets, suprema and infima, completeness property of \mathbb{R} , Archimedean property of \mathbb{R} , intervals, concept of cluster points and statement of Bolzano- Weierstrass theorem.

Unit 2

Real sequence, bounded sequence, Cauchy convergence criterion of sequences, Cauchy's theorem of limits, order preserving inequalities, Squeeze theorem, monotone sequences and their convergence (monotone convergence theorem without proof).

Unit 3

Infinite series, Cauchy convergence criterion for series, positive term series, geometric series, comparison test, convergence of p-series, Root test, alternating series, Leibnitz's test, definition and examples of absolute, conditional and uniform convergence.

Unit 4

Sequences and series of functions, point wise and uniform convergence, Mn-test, M- test, statements of the results about uniform convergence and integrability and differentiability of functions, power series and radius of convergence.

SUGGESTED READINGS

- T.M. Apostol, *Calculus* (Vol I), John Wiley and Sons (Asia) P. Ltd., 2002.
- R.G.Bartle and D.R. Sherbert, *Introduction to Real Analysis*, John Wiley and Sons (Asia) P. Ltd., 2000.
- E. Fischer, *Intermediate Real Analysis*, Springer Verlag, 1983.
- K.A. Ross, *Elementary Analysis – The Theory of Calculus Series*- Undergraduate Texts in Mathematics, Springer Verlag 2003.

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4. Algebra (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Algebra	Theory: 06 Total: 06

Course specific outcomes

The course will enable the students to;

- Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups, etc.
- Link the fundamental concepts of groups and symmetrical figures.
- Analyze the subgroups of cyclic groups and classify subgroups of cyclic groups.
- Explain the significance of the notion of cosets, normal subgroups and factor groups.
- Learn about Lagrange's theorem and Order of groups.
- Know about group Rings, Integral Domains and Fields.

ALGEBRA

THEORY

(CREDITS 6)

Unit 1

Definition and examples of groups, examples of abelian and non-abelian groups, the group Z_n of integers under addition modulo n and group $U(n)$ of units under multiplication modulo n . Cyclic groups from number systems, complex roots of unity, circle group, the general linear group $GL_n(N, r)$, groups of symmetries of (i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle and (iv) a square, the permutation group $Sym(n)$, groups of quaternion's.

Unit 2

Subgroups, cyclic subgroups, the concept of a subgroup generated by a subset and the commutator subgroup of group, examples of subgroups including the center of a group. Cosets, index of subgroup, Lagrange's theorem, order of an element.

Unit 3

Normal subgroups: their definition, examples, and characterizations, Quotient groups.

Unit 4

Definition and examples of rings, examples of commutative and non-commutative rings: rings from number systems, Z_n the ring of integers modulo n , ring of real quaternion's, rings of

matrices, polynomial rings, and rings of continuous functions, subrings and ideals, integral domain and fields, examples of fields: \mathbb{Z}_p , \mathbb{Q} , \mathbb{R} and \mathbb{C} . Field of rational functions.

SUGGESTED READINGS

- John B. Fraleigh, *A First Course in Abstract Algebra*, 7th Ed., Pearson 2002.
- M. Artin, *Abstract Algebra*, 2nd Ed., Pearson 2011.
- Joseph A Gallian, *Contemporary Abstract Algebra*, 4th Ed., Narosa 1999.
- George E Andrew, *Number Theory*, Hindustan Publishing Corporation, 1984

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5. Numerical Analysis (Discipline Specific Elective-I)

Semester	Discipline Specific	Course Title	Credit
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	Elective		
V	DSE-I	Numerical Analysis	Theory: 06 Total: 06

Course specific outcomes

The course will enable the students to;

- To solve Algebraic and Transcendental equations using various methods like Bisection method and Newton-Raphson Method.
- Link the fundamental concepts of Interpolation and Extrapolation of polynomials.
- Interpolation of given data using Newtons, Gauss and Stirlings formulae.
- Learn about Numerical Differentiation and Numerical Integration using various methods.
- Know about how to solve linear system of equations using Direct methods, Matrix inversion method, Gaussian elimination method, Method of factorization and Iterative methods.
- Learn about Numerical solutions using Picard's method of successive approximations, Euler's method, Modified Euler's method and Runge-Kutta methods.

NUMERICAL ANALYSIS

THEORY

(CREDITS 6)

Unit 1

Errors in Numerical computations: Numbers and their Accuracy, Errors and their Computation, Absolute, Relative and percentage errors, A general error formula, Error in a series approximation.

Solution of Algebraic and Transcendental Equations: The bisection method, The iteration method, The method of false position, Newton-Raphson method, Generalized Newton-Raphson method,

Unit 2

Interpolation: Errors in polynomial interpolation, Forward differences, Backward differences, Central Differences, Symbolic relations, Differences of a polynomial, Newton's formulae for interpolation formulae, Gauss's central difference formula, Stirling's central difference formula, Interpolation with unevenly spaced points, Lagrange's formula, Error in Lagrange's formula, Derivation of governing equations, End conditions, Divided differences and their properties, Newton's general interpolation.

Unit 3

Curve Fitting: Least-Squares curve fitting procedures, fitting a straight line, nonlinear curve fitting, Curve fitting by a sum of exponentials

Numerical Differentiation and Numerical Integration: Numerical differentiation, Errors in numerical differentiation, Numerical integration, Trapezoidal rule, Simpson's 1/3 –rule, Simpson's 3/8–rule, Boole's and Weddle's rule.

Unit 4

Linear systems of equations, Solution of linear systems – Direct methods, Matrix inversion method, Gaussian elimination method, Method of factorization, Iterative methods: Jacobi's method, Gauss-siedal method,

Numerical solution of ordinary differential equations: Introduction, Solution by Taylor's Series, Picard's method of successive approximations, Euler's method, Modified Euler's method, Runge – Kutta methods.

SUGGESTED READINGS

- Scope as in Introductory Methods of Numerical Analysis by S.S. Sastry, Prentice Hall India (4th Edition.)
- G. Sankar Rao New Age International Publishers, New – Hyderabad.
- 2. Finite Differences and Numerical Analysis by H.C. Saxena S. Chand and Company, New Delhi

6. Linear Algebra (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-II	Linear Algebra	Theory: 06 Total: 06

Course specific outcomes

The course will enable the students to;

- To about types and properties of matrices, inverse of a matrix and Cayley Hamilton theorem.
- Link the fundamental concepts of rank to find the solution of Homogenous and Non-Homogeneous equations.
- Elementary transformation and invariance of rank under elementary transformation.
- Normal form and their application to find rank of a matrix.
- Linearly independent and linearly dependent row(column) vectors and their analogous results.
- Learn Vector spaces along with examples, Subspaces, Basis and dimension of a vector space.
- Know about linear transformations, null space, range, rank and nullity of a linear transformation.

LINEAR ALGEBRA

THEORY

(CREDITS 6)

Unit 1

Types and properties of matrices, Inverse of a square matrix, matrix polynomials, characteristic equation, Cayley-Hamilton Theorem, Eigen values and eigenvectors of matrices and their determination, rank of a matrix, invariance of rank matrix under elementary transformations. Reduction of matrix to normal form, elementary matrices.

Unit 2

Linear dependence and linear independence of row(column) vectors, conditions for columns of a matrix to be linearly dependent, matrix A has rank r iff it has r linearly independent columns, analogous results for rows. Linear homogeneous and non-homogeneous equations, Linear product of two vectors, orthogonal and unitary matrices, determination of orthogonal matrices.

Unit 3

Vector spaces, examples, subspaces, algebra of subspaces, quotient spaces, linear dependence, independence and linear span of vectors, basis and dimensions of vector spaces.

Unit 4

Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, algebra of linear transformations, dual space and dual basis, homomorphism and isomorphism, isomorphism theorems.

SUGGESTED READINGS

- A. Aziz, N. A. Rather and B. A. Zargar, A Text Book of Matrices, KBD.
- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, Linear Algebra, PHI.
- S. Lang, Introduction to Linear Algebra, Springer.
- Shanti Narayan, A Text Book of Matrices.
- Gilbert Strang, Linear Algebra and its Applications, Thomson (2007)

Course Structure and distribution of different courses with their credits for B.Sc. Physics

S.No.	Semester	Course Title	Course Type	Total Credits
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1.	I	Mechanics and Relativity	Core Course	6 credits 4(T)+2(P)
2.	II	Electricity and Magnetism	Core Course	6 credits 4(T)+2(P)
3.	III	Kinetic Theory, Thermodynamics and Statistical Physics	Core Course	6 credits 4(T)+2(P)
4.	III	Renewable Energy	Skill Enhancement Course	4 credits 4(T)+2(P)
5.	IV	Waves and Optics	Core Course	6 credits 4(T)+2(P)
6.	V	Quantum and Nuclear Physics	Discipline Specific Elective	6 credits 4(T)+2(P)
7.	V	Computational Physics	Skill Enhancement Course	4 credits 4(T)+2(P)
8.	VI	Solid State Physics and Electronics	Discipline Specific Elective	6 credits 4(T)+2(P)
9.	VI	Electrical Circuits & Network Skills	Skill Enhancement Course	4 credits 4(T)+2(P)

Course outcomes

A fundamental/systematic or coherent understanding of the academic field of Physics, its different learning areas and applications in basic Physics like Material science, Mechanics, Nuclear and Particle Physics, Atomic and Molecular Physics, Acoustics, Mathematical Physics and its correlation with related disciplinary subjects like Chemistry, Mathematics, Life sciences, etc.

To demonstrate relevant generic skills and global competencies such as (i) problem-solving skills that are required to solve different types of Physics-related problems with well-defined solutions and tackle open-ended problems that belong to the disciplinary-area boundaries (ii) investigative skills, including skills of independent investigation of Physics-related issues and problems; (iii) communication skills involving the ability to listen carefully, to read texts and research papers analytically and to present complex information in a concise manner to different groups/audiences of technical or popular nature (iv) analytical skills involving paying attention to detail and ability to construct logical arguments using correct technical language related to Physics and ability to translate them with popular language when needed (v) ICT skills (vi) personal skills such as the ability to work both independently and in a group.

Demonstrate professional behavior such as being objective, unbiased and truthful in all aspects of work. Students will learn laboratory skills, enabling them to take measurements in a Physics laboratory and analyze the measurements to draw valid conclusions. Students will be capable of oral and written scientific communication and will prove that they can think critically and work independently.

1. Mechanics and Relativity (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Mechanics and Relativity	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- This course would empower the students to acquire engineering skills and practical knowledge that will help the students in their everyday life.
- This syllabus is more or less intended to make the students feel the subject knowledge gained at the higher secondary level and to cater the basic requirements for their higher studies.
- This course will also provide a theoretical basis for doing experiments in related areas.

MECHANICS AND RELATIVITY

THEORY

(CREDITS 4)

Unit 1

Mechanics and Relativity: Coordinate Systems: Cartesian, spherical polar coordinates and Cylindrical coordinate systems. Components of velocity and acceleration in spherical polar and Cylindrical coordinate systems. Inertial and non-inertial frames of references, uniformly rotating frame: centripetal acceleration, Coriolis Force and applications; Galilean Transformations. Conservation of Linear and angular momentum in system of particles, principle and equation of rockets.

Unit 2

Inverse Force fields: Equation of orbits, Kepler's Laws and their derivation, Gravitational law and Field; Potential and Field due to spherical shell, solid sphere and Disc. Rigid Body motion, Rotational motion, moments of inertia and their products, Principle moments and axes, Euler's equations with some applications. Idea of moment of inertia tensor.

Unit 3

Harmonic oscillators: Harmonic oscillators with examples; Damped harmonic oscillator ; Power Dissipation; Quality Factor; driven harmonic oscillator with and without damping force; Anharmonic Oscillator. Superposition: Superposition of two mutually perpendicular simple harmonic vibrations of the same frequency; Lissajous figures; case of different frequencies.

Unit 4

Relativity: Newtonian relativity; Michelson-Morley experiment; Special theory of relativity; Lorentz Transformations and their consequences (Relativity of simultaneity, Lorentz-FitzGerald length contraction , time dilation); Relativistic addition of velocities; Variation of mass with velocity, mass energy relation; Space- time four-dimensional continuum; Four-vectors.

PRACTICAL**(CREDITS 2)**

1. Study of laws of parallel and perpendicular axes for moment of inertia.
2. Study of conservation of momentum in two dimensional collisions.
3. Study of a bar pendulum by graphical method.
4. Determination of value of acceleration due to gravity at a place with Katter's pendulum.
5. Study of oscillations under a bifilar pendulum.
6. Potential energy curves of a 1-d system and oscillations in it for various amplitudes.
7. Study of oscillations of a mass under different combinations of springs.
8. Young's modulus of the material of a rectangular bar by bending.
9. Moment of inertia of an irregular body about an axis through its centre of gravity with a torsion pendulum.
10. Modulus of rigidity of copper by Maxwell's needle.
11. Moment of inertia of a fly wheel.
12. Study of flow of liquids through capillaries.
13. Determination of surface tension of a liquid by different methods.
14. Study of viscosity of a fluid by different methods.
15. Characteristics of a ballistic galvanometer.
16. Use of vibration and deflection magnetometers to study a field.

17. Study of B field due a current.
18. Measurement of low resistance by Carey Foster bridge method.
19. Measurement of inductance using impedance of different frequencies.
20. Study of decay of current in LR and RC circuits.
21. Response curve of LCR circuit and resonance frequency and quality factor.
22. Sensitivity of a cathode ray oscilloscope.
23. Characteristics of a choke.
24. Measurement of inductance.
25. Study of Lorentz force.
26. Study of discrete LC transmission line and a continuous.

SUGGESTED READINGS

- An introduction to Mechanics: Kelpner and Kolenkow (TataMcGraw-Hill).
- Kittel, Knight, Ruderman, Helholz, Moyer Second. Ed. "Berkely Physics Course, Vol. 1, Mechanics", McGraw Hill, New Delhi.
- Theoretical Mechanics: M. Speigel (Schuam's Outline Tata McGraw-Hill)

2. Electricity and Magnetism (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Electricity and Magnetism	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Electricity and Electrodynamics have the key role in the development of modern technological world.
- Without electric power and communication facilities, life on earth might stand still.
- A course in electricity and electrodynamics is thus an essential component of physics program at graduate level.
- This course is expected to provide a sound foundation in electricity and electrodynamics.

ELECTRICITY AND MAGNETISM**THEORY****(CREDITS 4)****Unit 1**

Vector Analysis: Review of vector algebra ; gradient and volume integrals of vectors, divergence, Curl and their significance, vector integration, scalar and vector fields, Gauss-divergence theorem and Stoke Theorem, Electrostatic Field, electric flux, differential form of Gauss Law.

Unit 2

Applications of Gauss Theorem : Electric field due to a point charge, infinite line charge, uniformly charged spherical shell and charged conductor. Electric potential as line integral of electric field , electric dipole, uniformly charged spherical shell and solid sphere ,calculation of electric field from potential. Capacitance of parallel plate, spherical and cylindrical condenser. Energy per unit volume of a condenser.

Unit 3

Magnetostatics : Displacement vector : Gauss's theorem in dielectric, parallel plate capacitor with completely filled with dielectric. Magnetism: Magnetostatics, Applications of Biot Savart law; straight conductor, circular coil, solenoid carrying conductor, Divergence and Curl of

magnetic field, Magnetic vector potential. Ampere's circuital law. Magnetic properties of materials, intensity, magnetic induction, permeability, para, and ferro-magnetic materials.

Unit 4

Electromagnetic Induction: Faraday's Laws of electromagnetic Induction, Lenz's law, self and mutual inductance, L of single coil, M of two coils. Energy stored in a magnetic field, Maxwell's equations and Electromagnetic wave propagation, Equation of continuity of current, Displacement current, Maxwell's equations, Poynting vector, Energy density in electromagnetic field, electromagnetic wave propagation in vacuum, dielectric medium and isotropic, transverse nature of EM waves, Polarization.

PRACTICAL

(CREDITS 2)

1. To use a Multimeter for measuring (a) Resistance Current (b) checking electrical fuses.
2. Ballistic Galvanometer:
 - (i) measurement of charge and current sensitivity
 - (ii) Measurement of Critical Damping Resistance
 - (iii) Determine a high resistance by Leakage
 - (iv) To determine Self Inductance of a Coil by Rayleigh's Method
3. To compare capacitances using De'Sauty's Bridge
4. Measurement of field strength B and its variation in solenoid
5. To study the Characteristics of a Series RC Circuit
6. To study the a series LCR circuit and find its Resonant frequency and Quality Factor
7. To study a parallel LCR circuit and determine Quality factor Q
8. To determine a Low resistance by Carey Foster Bridge
9. To verify the Thevenin and Norton theorem
10. To verify the Superposition, and Maximum Power Transfer Theorem

SUGGESTED READINGS

- Electricity and Magnetism, Edward M. Purcell,
- Electricity and Magnetism, J.H. Fewkes & J. Yarwood, vol.1, 1991, Oxford Univ. Press
- Electricity and Magnetism, D C Tayal, 1988,
- D.J. Griffiths, Introduction to Electrodynamics, Benjamin and Cummings
- Advanced Practical Physics for students, B L Flint, Asia Publishing House.
- A Text Book of Practical Physics, Indu Prakash and Ramakrishna, Kitab Mahal, New Delhi.
- Engineering Practical Physics, S.Panigrahi & B.Mallick, Cengage Learning Pvt. Ltd.
- Advanced level Physics Practicals, Michael Nelson. Reprinted 1985, Heinemann Educational Publications

3. Kinetic Theory, Thermodynamics and Statistical Physics (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	Kinetic Theory, Thermodynamics and Statistical Physics	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- This course is to develop a working knowledge of Statistical Mechanics and to use this knowledge to explore various applications related to topics in material science and the physics of condensed matter.
- Further the knowledge of Statistical Physics has a tremendous application in studying cosmological phenomena like origin of the universe, star formation, etc.

KINETIC THEORY, THERMODYNAMICS AND STATISTICAL PHYSICS**THEORY****(CREDITS 4)****Unit 1**

Basic concepts: Degrees of freedom, Equipartition of energy. Specific heat of monatomic diatomic and tri-atomic gases, behaviour at low temperatures, Maxwell's velocity distribution, distribution of speeds; mean values. Transport phenomena in gases: Molecular collisions, mean free path and collision cross section. Transport Phenomenon: transport of momentum, mass and energy and their inter-relationship. Brownian motion, Einstein's theory.

Unit 2

Deviation from perfect gas behavior: van der Waals' equation of state, nature of Vander Waals forces, comparison with experimental results, the critical constants. Joule expansion of ideal gas and of a Vander Waals gas, Joule coefficient, estimates of J-T cooling. Liquefaction of gases: Boyles temperature and inversion temperature, principle of regenerative cooling and of cascade cooling, Liquefaction of hydrogen and helium, refrigeration cycles, meaning of efficiency. Cooling due to adiabatic demagnetization.

Unit 3

Thermodynamics: Concept of thermal equilibrium, internal energy. Carnot theorem.

Entropy, Principle of increase of entropy, the thermodynamic scale of temperature, its identity with the perfect gas scale, impossibility of attaining the absolute zero, Third law of thermodynamics.

Thermodynamic relationships: Thermodynamic variables ; Extensive and Intensive, Maxwell's general relationship. Clausius-Clapeyron heat equation, thermodynamic potentials and equilibrium of thermodynamical systems, relation with thermodynamical variables.

Unit 4

The Statistical basis of thermodynamics: Probability and Thermodynamic probability, Probability distribution. The expressions for average properties, constraints, accessible and inaccessible states, distribution of particles with a given total energy into discrete set of energy states; microstates and macrostates.

Probability and entropy: Boltzmann Entropy relation, Statistical interpretation of the second law of thermodynamics, Boltzmann Canonical distribution law; partition function, partition function of an ideal monoatomic gas. The rigorous form of Equipartition of energy. Maxwell-Boltzmann, Fermi-Dirac and Bose-Einstein Statistics (Derivation of distribution laws in each case).

PRACTICAL

(CREDITS 2)

1. Study of Brownian motion.
2. Study of adiabatic expansion of a gas.
3. Heating efficiency of electric kettle with varying voltages.
4. Study of temperature dependence of total radiation.
5. Study of temperature dependence of spectral of radiation
6. Resistance thermometry.
7. Thermo-emf of thermometry.
8. Conduction of heat through poor conductors of different geometries.
9. Experimental study of probability distribution for a two-option system using a coloured dice.
10. Study of statistical distribution on nuclear disintegration data (GM counter used as a blackbox)
11. Speed of waves on a stretching string.
12. Studies on torsional waves in a lumped system.
13. Frequency of A. C. supply using electric vibrator.

SUGGESTED READINGS

- F. Reif: "Fundamentals of Statistical and Thermal Physics"
- Berkeley Physics Course Vol 5 "Statistical Physics"
- S C Garg, R M Bansal and C K Ghosh, "Thermal Physics" Tata McGraw Hills.

4. Renewable Energy and Energy Harvesting (Skill Course)

This course provides students with a detailed knowledge of Renewable Energy and Energy Harvesting.

Semester	Core course	Course title	Credit
4 th	SEC	Renewable Energy and Energy Harvesting	Theory: 02; Practical:02 Total:04

Course Specific Outcomes

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. Our country being an energy deficient country and as such even 0.1% increase in efficiency of a device is by any means is appreciated. The curriculum of this course is so designed that it will not only make the students understand the need and importance but may attract them towards the learning of working mechanism and harvesting of different energy sources. Further we believe that if fully involved, students may come out with new designs/modifications of the existing equipments/machines thereby increasing their efficiency.

RENEWABLE ENERGY AND ENERGY HARVESTING

THEORY

CREDITS: 02

UNIT-I

Fossil fuels and Alternate Sources of energy: Fossil fuels and Nuclear Energy, their limitation, need of renewable energy, non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean, Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy, tidal energy, Hydroelectricity. Solar energy: Solar energy, its importance, storage of solar energy, solar pond, non-convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems.

UNIT-II

Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies. Ocean Energy: Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy, Osmotic Power, Ocean Bio-mass. Geothermal Energy: Geothermal Resources,

Geothermal Technologies. Hydro Energy: Hydropower resources, hydropower technologies, environmental impact of hydro power sources. Piezoelectric Energy harvesting: Introduction, Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, piezoelectric parameters and modeling piezoelectric generators, piezoelectric energy harvesting applications. Human power Electromagnetic Energy Harvesting: Linear generators, physics mathematical models, recent applications, Carbon captured technologies, cell, batteries, power consumption. Environmental issues and Renewable sources of energy, sustainability.

PRACTICAL**CREDITS: 02****Demonstrations and Experiments**

1. Demonstration of Training modules on solar energy, wind energy, etc.
2. Conversion of vibration to voltage using piezoelectric materials
3. Conversion of thermal energy into voltage using thermoelectric modules.

SUGGESTED READINGS:

- Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi
- Solar energy - M P Agarwal - S Chand and Co. Ltd.
- Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd.
- Godfrey Boyle, "Renewable Energy, Power for a feustainable future", 2004, Oxford University Press, in association with The Open University.
- Dr. P Jayakumar, Solar Energy: Resource Assesment Handbook, 2009.
- J. Balfour, M.Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).

5. Waves and Optics (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Waves and Optics	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Foundation in optics and photonics is gained by this course and which prepares the students for an intensive study of advanced topics at a later stage.
- This course generates a good attraction for the students while understanding the mechanisms of various practical phenomena like laser optics and fiber communication.

WAVES AND OPTICS**THEORY****(CREDITS 4)****Unit 1**

The wave equation: General solution of one dimensional wave equation; Harmonic waves; Standing waves on a string of fixed length; Energy of a vibrating string The wave equation for longitudinal waves on a thin cylindrical rod; Energy density and energy transmission in waves; Application to Earthquakes. Standing waves on a stretched rectangular membrane: solution by method of separation of variables; normal modes of vibrations.

Unit 2

General Theory of Image Formation: Cardinal Points of an optical system, general relationships, thick lens formula and lens combination, langrange equation of magnification. Abberations: Chromatic and monochromatic abberations and their reductions. Corrector plates.

Unit 3

Review of Interference of light: Interference in thin parallel films; Application to Non-reflecting films, Newton rings; Michelson interferometer and its application for precision determination of wavelength; Multiple beam interference; Fabry-Perot interferometer and etalon; Intensity distribution. Fraunhofer diffraction at a slit; the intensity distribution; Two slit diffraction pattern; The intensity distribution.

Unit 4

Diffraction at N parallel slits: intensity distribution at an N parallel slits. Resolution of images; Rayleigh criterion; Resolving power of a diffraction grating. Fresnel half-period zones; The Zone-Plate; Diffraction at a circular aperture; Diffraction by a straight edge (analysis using halfperiod zones). Polarization by reflection, Malus's law; Double refraction; Refraction in Uniaxial crystals; Optical activity; Rotation of plane of polarization; Origin of optical rotation in liquids and in crystals.

PRACTICAL**(CREDITS 2)**

1. Study of with two coherent sources of sound.
2. Chladni's figures with varying excitations and loading points.
3. Measurement of sound intensities with different situation.
4. Characteristics of microphone loudspeaker system.
5. Designing an optical viewing system.
6. Study of monochromatic defects of image.
7. Determining the principle points of a combination of lenses.
8. Refractive index of the material of a prism using spectrometer.
9. Refractive index of a transparent liquid using hollow prism and spectrometer.

SUGGESTED READINGS

- H.J. Pain "The Physics of Vibrations and Waves", (John Wiley & Sons Ltd.)
- Optics by A. K. Ghatak (TataMcgraw-Hill) References: 1. Jenkins and White, "Fundamentals of Optics", (McGraw Hill)
- Berkley Physics Course, Vol III, "Waves and Oscillations"

6. Quantum and Nuclear Physics (Discipline Specific Elective -I)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-I	Quantum and Nuclear Physics	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Students will learn to discuss and explain the key concepts and principles of quantum physics.
- Solution of Schrödinger equation for various standard systems with both analytical and numerical methods and the afterward interpretation of the results obtained builds up a high level confidence in the students motivating them to work independently with key questions and problems in quantum physics.
- Further, an overview of modern nuclear and particle physics stresses on key concepts and processes.
- Applications within other sciences and technology is given a touch. Also students learn to think about possible nuclear models thereby understanding the behavior of weak and strong interactions.

QUANTUM AND NUCLEAR PHYSICS**THEORY****(CREDITS 4)****Unit 1**

Black body radiation: Planck's radiation law; Photoelectric effect; Compton Effect. Pair Production. De-Broglie's matter wave; The concept of wave packets and group velocities; Heisenberg's uncertainty relation for p and x ; Its extension to energy and time; Applications of uncertainty principle

Unit 2

Schrödinger's wave equation: (Time independent form); linearity and superposition; Expectation values; operators; Particle in a box; Finite potential well; Potential Barrier, Tunnel effect. Quantum numbers (n, l, m) for an electron in hydrogen atom; Space quantization; Electron probability density.

Unit 3

Electron spin: Stern-Gerlach experiment; Pauli's exclusion principle; Symmetric and antisymmetric wave functions; Atomic structures (shells and sub-shells); Spin-orbit coupling; Total angular momentum J, L-S coupling; j-j coupling; Normal and anomalous Zeeman Effect; Lande g-factor. Quantization of rotational energies; Rotational energy levels; Pure rotational spectra; Vibrational energy levels, pure vibrational spectra; Rotation-Vibration spectra of diatomic molecules.

Unit 4

Nuclear composition: Nuclear properties (size, spin, magnetic moment), Stable Nuclei (Nuclear decay, Binding energy), Liquid drop model, Meson theory of nuclear forces. Gamow Theory of Alpha decay (no derivation), Pauli theory of beta-decay, gamma decay, Nuclear Reactions and Cross Section. Interaction and particles; Classification; Leptons and hadrons, Elementary particle quantum numbers; Baryon, lepton and strangeness numbers; Quarks; colour, flavour, Quark confinement.

PRACTICAL**(CREDITS 2)**

1. Determination of Planck's constant.
2. Determination of e/m by Helical method.
3. Determination of e/m by Thomson method.
4. Study of spectra of hydrogen, helium and mercury.
5. Absorption spectrum of iodine vapour.
6. Study of Zeeman effect.
7. Analysis of a given band spectrum.
8. Study of Raman effect using laser as excitation source.
9. Study of absorption of alpha and beta rays.
10. Study of statistics in radioactive measurement

SUGGESTED READINGS

- Concepts of Modern Physics by Arthur Beiser, (Tata McGraw Hill).
- Introductory Nuclear Physics, Kenneth S. Krane, 3rd Ed., Wiley.
- Mani and Mehta, Modern Physics (Tata McGraw-Hill)

7. Computational Physics (Skill Course)

This course provides students with a detailed knowledge of Computational Physics.

Semester	Core Course	Course title	Credit
5th	SEC-I	Computational Physics	Theory: 02; Practical:02 Total:04

Course Specific Outcomes:

- To learn through direct experience the use of scientific workstations in thinking creatively and solving problems in the Physics.
- To learn the basics of scientific, numerical simulation and modeling.
- To learn how to interpret and analyze data visually, both during and after computation.
- To use the graphical capabilities of advanced workstations to visualize numerical solutions into highly interpretable forms.
- To instill attitudes of independence, personal communication, and organization, all of which are essential for mastery of complex systems.
- To understand why hard work and even properly functioning and powerful software and hardware do not guarantee meaningful results. In an experimental science there are limits to accuracy and applicability.

COMPUTATIONAL PHYSICS

THEORY

CREDITS: 02

UNIT-I

Scientific Programming: Some fundamental Linux Commands (Internal and External commands). Development of FORTRAN, Basic elements of FORTRAN: Character Set. Constants and their types, Variables and their types, Keywords, Variable Declaration and, concept of instruction and program. Operators: Arithmetic, Relational, Logical and Assignment Operators. Expressions: Arithmetic, Relational, Logical, Character and Assignment Expressions. Fortran Statements: I/O Statements (unformatted/formatted), Executable and Non—Executable Statements, Layout of Fortran Program, Format of writing Program and concept of coding, Initialization and Replacement Logic. Examples from physics problems.

UNIT-II

Control Statements: Types of Logic (Sequential, Selection, Repetition), Branching Statements (Logical IF, Arithmetic IF, Block IF, Nested Block IF. SELECT CASE and ELSE IF Ladder statements), Looping Statements (DO—CONTINUE, DO- ENDDO, DO- WHILE, Implied. an: Nested DO Loops), Jumping

Statements (Unconditional GOTO. Computed GOTO, Assigned GOTO) Subscripted Variables (Arrays: Types of Arrays,. DIMENSION Statement. Reading and Writing Arrays), Functions and Subroutines (Arithmetic Statement Function. Function Subprogram and Subroutine), RETURN, CALL. COMMON and EQUIVALENCE Statements), Structure, Disk I/O Statements, open.

PRACTICAL**CREDITS: 02**

- 01) Exercise on syntax usage of FORTRAN
- 02) To printout natural even/odd numbers between given limits.
- 03) To find maximum/minimum and range of a given set of numbers.
- 04) To find area of Triangle, Rectangle etc.
- 05) Calculating Eulers number using $\exp(x)$ series evaluated at $x=1$.
- 06) To compile a frequency distribution and evaluate mean standard deviation etc.
- 07) To evaluate sum of finite series and area under a curve.
- 08) To find the sum of two matrices.
- 09) To find the product of two matrices.
- 10) To find the roots of a quadratic equation.
- 11) Motion of a projectile using simulation and plot the output for visualization.
- 12) To find a set of prime numbers and Fibonacci series.

SUGGESTED READINGS:

- 1) Introduction to Numerical Analysis: S. S. Sastry
- 2) Computer Programming in Fortran 77 : V. Rajaraman

8. Solid State Physics and Electronics (Discipline Specific Elective -II)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-II	Solid State Physics and Electronics	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- The course aims to know about the various properties of solids, structure and exposure to deep interactions like Phonons and Quantum Mechanical Free Electron Gas.
- Concepts like electrical properties, specific heats and Brillouin Zones help the learners to peep deeply inside.
- To come out with a tangible outcome the curriculum provides a good chance to study in detail about the semiconductor class of solids and their extended electronic applications including the operating mechanism of certain electronic devices.

SOLID STATE PHYSICS AND ELECTRONICS**THEORY****(CREDITS 4)****Unit 1**

Bravais lattice and seven crystal systems: Reciprocal Lattice. Elastic waves, density of states of continuous medium; Specific heat; Einstein and Debye models; Lattice waves; One-dimensional monoatomic lattice; Density of states of a lattice; The concept of Phonons, Quantum mechanical free electron gas; Electrical conductivity; Electrical resistivity versus temperature; Heat capacity of conduction electrons.

Unit 2

The Fermi surface: Electrical conductivity (effects of the Fermi surface); Thermal conductivity in metals. Electrons in one dimensional periodic potential; Kronig-Penney model; Concept of Brillouin zones; Explanation of energy bands on the basis of Brillouin zones; Metals, insulators and semiconductors. Band structure; Intrinsic semiconductors; Temperature dependence of carrier concentration; Impurity states (acceptor and donor).

Unit 3

Extrinsic semiconductors: The electron-hole concentration product; Electrical conductivity; Temperature dependence; The effect of magnetic field on a semiconductor; The Hall effect. p-n

junction: working (on the basis of energy band diagram); Rectification property; Derivation of rectification equation; The junction transistor, Its working (on the basis of energy band diagram), Tunnel diode.

Unit 4

Transistor load line: Transistor biasing techniques (Voltage divider); bias stability; Thermal runaway. h-parameters; h-parameter equivalent circuit for CE configuration; FET and its characteristics, MOSFET; types and characteristics, applications of MOSFET. Transistor amplifiers, Two-stage RC coupled amplifier; Equivalent circuit at mid- frequency, Gain at mid – frequency; Emitter follower.

PRACTICAL

(CREDITS 2)

1. Goniometric study of crystal faces.
2. Determination of dielectric constant.
3. Hysteresis curve of a ferromagnetic substance.
4. Hall-probe method for measurement of magnetic field.
5. Specific resistance and energy gap of a semiconductor by four probe method.
6. Energy band gap in semiconductor using a PN junction diode.
7. Characteristics of a transistor.
8. Characteristics of a tunnel diode.
9. Characteristics of a JFET
10. Characteristics of a MOSFET.
11. Measurement of h-parameters of a transistor.
12. Study of voltage regulation and ripple factor of a half-wave and full-wave rectifier with L and π filter circuits.
13. Study of Zener diode as voltage regulator.
14. Study of a regulated power supply.
15. Study of Lissajous figure using CRO.
16. Study of VTVM.
17. Study of two stage RC coupled amplifier.
18. Study of AF and RF oscillators

SUGGESTED READINGS

- Elementary Solid State Physics: Principle and applications by M. A. Omar (Pearson Education), 2001.
- Electronic Devices and Circuit Theory by R. Boylestad and L. Nashelsky (Prentice Hall India)
- Integrated Electronics by Millman and Halkias Tata McGraw Hill.
- Introduction to Solid State Physics by Charles Kittel, John Wiley & Sons.

9. Electrical Circuits and Network Skills (Skill Course):

This course provides students with a detailed knowledge of electrical circuits and network skills

Semester	Core course	Course title	Credit
1 st	SEC-I	Electrical Circuits and Network Skills	Theory:04; Practical:02 Total:06

Course specific outcomes:

The aim of this course is to enable the students to design and trouble shoots the electrical circuits, networks and appliances through hands-on mode. To inculcate in students the industrial skills /competency like:

- To check the functionality using the principles of circuit analysis.
- To learn the application and output of various network theorems.
- To determine the various circuit parameters.
- To diagnose the electrical and electronic circuit problems.

ELECTRICAL CIRCUITS AND NETWORK SKILLS

THEORY

CREDITS: 02

UNIT-I

Basic Electricity Principles: Voltage, Current, Resistance and Power. Ohm's law. Series, Parallel and series-parallel combinations. AC electricity and DC electricity. Familiarization with multimeter, voltmeter and ammeter. Understanding Electrical Circuits: Main electric circuit elements and their combination. Rules to analyze DC sourced electrical circuits. Current and voltage drop across the DC circuit elements.

UNIT-II

Generators and Transformers: DC Power sources. AC/DC generators. Inductance. /capacitance, and impedance. Operation of transformers. Electric Motors: Single phase, three—phase & DC motors. Basic design. Interfacing DC or AC sources to control heaters & motors. Speed & power of ac motors. Solid-State Devices: Resistors, inductors capacitors. Diode and rectifiers. Components in Series or in shunt. Response of inductors and capacitors with DC or AC sources. Electrical Protection: Relays. Fuses and disconnect switches. Circuit breakers.

PRACTICAL

CREDITS: 02

- 1) Fabrication of Half Wave rectifier.
- 2) Fabrication of Full wave rectifier.
- 3) Working of Capacitors and Inductors for Voltage regulation.

- 4) Study Zener Diode as Voltage regulator.
- 5) Demonstration of Electrical Dynamo.
- 6) Demonstration and working of Step-up and Step-down transformers.
- 7) Demonstration and working of Invertors and UPS setup.
- 8) Demonstration, Working and Management of Chargeable 6 Volt/12 Volt electrical batteries.
- 9) Demonstration, working & management of Household Appliances like Electric Iron, Oven, Refrigerators etc.
- 10) Study of Electrical Grounding and Electrical Earthing circuits.
- 11) Study of Power Distribution Networks.
- 12) Demonstration of Electrical cabling for house hold requirements.

SUGGESTED READINGS:

- (1) A text book in Electrical Technology: B. L. Theraja - S Chand & Co ,
- (2) A textbook of Electrical Technology: A K Theraja
- (3) Performance and design of AC machines — MG Say ELBS Edn

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**Course Structure and distribution of different courses with their credits for B.A /
B.Sc. Statistics**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Descriptive Statistics	Core Course	6 credits 4(T)+2(P)
2.	II	Probability Theory and Probability Distributions	Core Course	6 credits 4(T)+2(P)
3.	III	Large Sample Tests	Core Course	6 credits 4(T)+2(P)
4.	IV	Sampling Theory	Discipline Specific Elective	4 credits 2(T)+2(P)
5.	V	Operations Research	Discipline Specific Elective	6 credits 4(T)+2(P)
6.	VI	Statistical Inference	Discipline Specific Elective	6 credits 4(T)+2(P)

Course outcomes

A B.Sc. Statistics is a bachelor's degree program encompassing the field of Statistics that equips students with problem-solving skills and mathematical comprehension essential for tackling diverse statistical applications.

Running for a period of 3-4 years, the course imparts extensive knowledge in concepts of Mathematics, Probability, and Statistics along with logic and proofs. This UG degree involves an introduction to highly advanced concepts and theories, mathematical proofs, data analysis and modelling, regression, etc. Statistical software, and programming languages are essential part of the course structure. The knowledge gain at this level will build a strong foundation for advanced courses like M.Sc Statistics.

1. Descriptive Statistics (Core Course-I):

This course provides students knowledge about the descriptive statistics.

Semester	Core Course	Course Title	Credit
I	CC-I	Descriptive Statistics	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will learn to calculate the central value like mean, mode median, geometric mean and harmonic mean.
- Students will learn to evaluate the measures of dispersion like range, quartile deviation, mean deviation and standard deviation.
- This will help the students in identifying whether a given distribution/data set is normally distributed or not.
- Students will learn to evaluate the skewness and kurtosis using different types of formulas.
- Students will learn to evaluate central and non-central moments and their relationship.
- This course will also enable the students to deal with Bi-variate data in terms of finding correlation between the two variables.
- Also, they will be able to predict values for certain variables using regression analysis.

DESCRIPTIVE STATISTICS

THEORY

(CREDITS: 04)

UNIT- I

Concept of Statistical Population and sample from a population. Types of Data-Primary and secondary data, qualitative and quantitative data. Methods of collecting data. Diagrammatic and graphical representation of data-Bar diagram, Histogram, Frequency polygon and ogives.

UNIT- II

Measures of central tendency or location (Arithmetic mean, median, mode, geometric mean and harmonic mean). Characteristics of a good average. Relationship between various measures of location and their applications. Merits and demerits of these measures. Dispersion: Relative and absolute measures (Range, Quartile Deviation, Mean Deviation and standard Deviation). Coefficient of variation and its applications.

UNIT- III

Skewness, Kurtosis and their measures including those based on quartiles. Moments, relation between central moments in terms of raw moments and vice-versa. Effect of change of scale and origin on moments. Sheppard's correction for grouping errors. Coefficients based on moments (α , β & γ coefficients).

UNIT- IV

Bivariate Data: Concept of correlation and its types. Scatter diagram method and product moment method of studying correlation. Properties of a correlation coefficient (limits of the Pearson correlation coefficient, effect of change of origin and scale). Concept of rank correlation, derivation of Spearman's rank correlation coefficient and its limits. Principal of least squares and fitting of first-degree polynomial and parabola. Meaning of regression, derivation of two regression lines. Regression coefficients and their properties.

PRACTICAL

(CREDITS: 02)

1. Diagrammatic and graphical representation of data.
2. Computation of arithmetic mean discrete and continuous data.
3. Computation of median for discrete and continuous data.
4. Computation of mode, for discrete and continuous data.
5. Computation of geometric mean for discrete and continuous data.
6. Computation of harmonic mean for discrete and continuous data.
7. Computation of range, for discrete and continuous data.
8. Computation of mean deviation for discrete and continuous data.
9. Computation of quartile deviation for discrete and continuous data.
10. Computation of standard deviation for discrete and continuous data.
11. Computation of coefficient of variation for discrete and continuous data
12. Computation of measures of skewness and kurtosis.
13. Computation of Karl Pearson's correlation coefficient.
14. Computation of Spearman's rank correlation coefficient.
15. Computation of two regression lines.

SUGGESTED READINGS

- Bhat B.R, Srivenkatramana T and Rao Madhava K.S (1997): Statistics: A Beginner's Text, Vol 1. New Age International (P) Ltd.

- Croxton F. E, Cowden D.J and Kelin S (1973): Applied General Statistic, Prentice Hall of India.
- Spiegel, M.R. (1967): Theory & Problems of Statistics, Schaum's Publishing Series
- S.C Gupta and V.K Kapoor (2007): Fundamentals of Mathematical Statistics.11th edition (reprint) Sultan Chand and sons.
- S.P.Gupta: Statistical Methods. Sultan Chand and sons.
- Anderson T.W and Sclove S.L (1978): An introduction to the Statistical Analysis of Data, Houghton Mifflin /Co.
- Cooke, Cramer and Clarke (1996): Basic Statistical Computing, Chapman and Hall.
- Mood A.M. Graybill F.A and Boes D.C. (1974): Introduction to the Theory of Statistics. McGraw Hill.

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2. Probability Theory and Probability Distributions (Core Course-II):

This course provides students to acquire knowledge of Probability theory and Probability distributions.

Semester	Core Course	Course Title	Credit
II	CC-II	Probability Theory and Probability Distributions	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Ability to distinguish between random and non-random experiments.
- Knowledge to conceptualize the probabilities of events including frequentist and axiomatic approach. Simultaneously, they will learn the notion of conditional probability including the concept of Bayes' Theorem,
- knowledge related to concept of discrete and continuous random variables and their probability distributions including expectation and moments,
- knowledge of important discrete and continuous distributions such as Binomial, Poisson, Geometric, Negative Binomial and Hyper-geometric, normal, uniform, exponential, beta and gamma distributions,
- Probability introduces students to the basic concepts and logic of statistical reasoning and gives the students introductory-level practical ability to choose, generate, and properly interpret appropriate descriptive and inferential methods.
- Students will learn to calculate the chances of happening or non-happening of an event.

STATISTICS: PROBABILITY THEORY AND PROBABILITY

THEORY

(CREDITS: 04)

UNIT- I

Probability: Random Experiment: Trial, sample space, event, operation of events, independent events, exhaustive events and mutually exclusive events. Classical and relative frequency approach to probability with their merits and demerits. Axiomatic approach to probability. Addition and multiplication law of probability. Conditional probability, independence of events, Prior and posterior or revised probabilities, Bayes' theorem, its applications and importance.

UNIT –II

Random Variables: Discrete random variable, probability mass function, continuous random variable, probability density function. Expectation of random variables and their properties. Moment generating functions (mgf), properties and uses.

UNIT –III

Standard univariate discrete distributions: Uniform, Binomial, Poisson, Geometric, and Hyper geometric distribution (their applications and properties mean variance and mgf).

UNIT –IV

Continuous univariate distributions: Uniform, Exponential, Gamma and Normal (their applications and properties, mean, variance and mgf).

PRACTICAL

(CREDITS: 02)

1. Evaluation of Probabilities using Addition law.
2. Evaluation of Probabilities using Multiplication law.
3. Evaluation of Probabilities using Bayes' theorem.
4. Fitting of Binomial distribution.
5. Fitting of Poisson distributions.
6. Fitting of Normal distribution.

REFERENCES

- S.C Gupta and V.K Kapoor (2007): Fundamentals of Mathematical Statistics. 11th edition (reprint) Sultan Chand and sons.
- S. P. Gupta: Statistical Methods. Sultan Chand and sons.
- Bhat B.R Srivenkatramana T and Madhava K.S (1997): Statistics: A Beginner's Text, Vol. New Age International (P) Ltd.
- Edward P.J. Ford J. S and Lin (1974): Probability for statistical Decision- making, Pr Hall.
- Mood A.M Graybill F. A and Boes D.C. (1974): Introducing of Theory of Statistics, McGraw Hill.
- A.Mukhopadhyay: Mathematical Statistics, Calcutta Publication
- Mood A.M. Graybill F.A and Boes D.C. (1974): Introduction to the Theory of Statistics. McGraw Hill.
- Snedecor G.W and Cochran W.G. (1967); Statistical Methods. Iowa State University Press.

- Cooke, Cramer and Clarke (1996): Basis Statistical Computing, Chapman and Hall

3. Statistics: Large Sample tests and Sampling distributions (Core Course-III):

This course provides students to acquire knowledge of sample tests and sampling distributions

Semester	Core Course	Course Title	Credit
III	CC-III	Large Sample Tests and Sampling Distributions	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- (a) Concept of law large numbers and their uses
- (b) Concept of central limit theorem and its uses in statistics
- (c) Concept of random sample from a distribution, sampling distribution of a statistic, standard error of important estimates such as mean and proportions,
- (d) Knowledge about important inferential aspects such as point estimation, test of hypotheses and associated concepts,
- (e) Knowledge about inferences from Binomial, Poisson and Normal distributions as illustrations,
- (f) Knowledge about order statistics and associated distributions,
- (g) Concept about non-parametric method and some important non-parametric tests.

STATISTICS: LARGE SAMPLE TESTS AND SAMPLING DISTRIBUTIONS

THEORY

CREDITS: 04

UNIT- I

Concept of population, sample, Statistic, parameter and sampling distribution. Standard error of sample mean and sample proportion. Statistical hypothesis and its types. One tail and two tail tests. Types of errors, level of significance and critical region. Procedure for testing of hypothesis.

UNIT- II

Large sample tests: Tests of significance for testing of a single mean, single proportion, difference of two means and two proportions.

UNIT- III

Tests of significance based on Chi- square. Conditions for applying Chi-square test. Test for goodness of fit. Contingency table (2 X 2) and tests of independence of attributes in a contingency table. Yates' corrections. Chi-square test for specified value of population variance.

UNIT- IV

Exact sampling distributions: t- Statistics. Test for single mean and difference between two means. Paired t-test for difference between two means. F- Statistics or Variance Ratio Test. Assumptions in F-test. Tests of hypothesis of the variance of two populations.

PRACTICAL (02)

(CREDITS:

1. Tests of significance based on Chi- Square test.
2. Tests of significance based on t-test.
3. Tests of significance based on paired t-test
4. Tests of significance based on F- statistic.
5. Large sample tests for means and proportions.
6. Chi-square test of goodness of fit
7. Chi-square test for independence of attributes in contingency tables.

SUGGESTED READINGS

- Freund J.E (2001): Mathematical Statistics, Prentice Hall of India.
- Goon A.M Gupta M.K., Das Gupta, B. (1991): Fundamentals of Statistics, Vol. - I World Press Calcutta.
- Hodges J.L and Lehman E.L (1964): Basic concepts of probability and Statistics, Holden Day.
- Mood A.M, Graybill F. A and Boes D.C (1974): Introducing to the Theory of Statistics
- S.C Gupta and V.K Kapoor (2007): Fundamentals of Mathematical Statistics. 11th edition (reprint) Sultan Chand and sons.
- Bhat B.R. Srivenkatramana T and Rao Madhava K.S. (1967): Statistics: A Beginner's Text, Vol. II, New Age International (P) Ltd.
- Rohatgi V.K (1967): An Introduction to probability Theory and Mathematical Statistics, John Wiley & Sons.

4. Sampling Theory (Discipline Specific Elective):

This course provides students to acquire knowledge of sampling theory.

Semester	Core Course	Course Title	Credit
IV	DSE	Sampling Theory	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

- (a) Basic knowledge of complete enumeration and sample, sampling frame, sampling distribution, sampling and non-sampling errors, principal steps in sample surveys, limitations of sampling etc.,
- (b) Introduced to various statistical sampling schemes such as simple, stratified and systematic sampling.
- (c) An idea of conducting the sample surveys and selecting appropriate sampling techniques,
- (d) Knowledge about comparing various sampling techniques.
- (e) Carry out one way and two way analysis of variance.

SAMPLING THEORY

THEORY

CREDITS: 04

UNIT- I

Sampling Theory: Need for sampling, Census and sample survey, basic concept in sampling, Principles of sample survey, advantages of sample survey over census. Sampling and non-Sampling errors.

UNIT –II

Simple random sampling (SRS) with and without replacement. Merits and demerits of Simple random sampling (SRS). Methods of selecting SRS. Estimation of mean, its Variance and estimate of its variance. Unbiased estimate of population mean square.

UNIT-III

Stratified random sampling: Need for stratification. Principles of stratification. Advantages of stratified sampling over simple random sampling. Estimation of mean and variance. Proportion and Optimum allocation: Allocation of sample size under proportional and optimum allocation and variance under these allocations. Comparison of stratified sampling over SRS.

UNIT-IV

Systematic sampling: Advantages of systematic sampling over SRS and stratified sampling. Estimation of mean and its variance Comparison of systematic sampling over SRS and stratified sampling.

PRACTICAL

CREDITS: 02

1. Selection of sample and determination of sample size.
2. Estimation of mean and variance under SRSWR
3. Estimation of mean and variance under SRSWOR
4. Estimation of mean and variance under Stratified sampling
5. Allocation of sample size in stratified sampling

SUGGESTED READINGS

- Murthy M.N (1967): Sampling theory and Methods, Statistical Publisher Society, Calcutta.
- Des Raj (2000): sample Survey Theory, Narosa publishing house.
- Sampath S. (2000): Sampling theory and Methods. Narosa Publishing House.
- Sukhatme B.V (1984): Sample Survey methods and its Applications, Indian Society of Agricultural Statistics.
- S.C Gupta and V.K Kapoor: Fundamentals of Applied Statistics.
- Bhat B.R. Srivenkatramana T and Rao Madhava K.S. (1967): Statistics: A Beginner's Text, Vol. II, New Age International (P) Ltd.
- Rohatgi V.K (1967): An Introduction to probability Theory and Mathematical Statistics, John Wiley & Sons.
- Goon A.M. Gupta, M.K. Das Gupta (1986); Fundamentals of Statistics, Vol. II, world Press, Calcutta.

5. Operations Research (Discipline Specific Elective):

This course provides students knowledge of Operations Research.

Semester	Core Course	Course Title	Credit
V	DSE	Operations Research	Theory: 04 ; Practical: 02 Total: 06

Course Specific Outcomes:

Students completing this course will be able to:

- Explain the meaning and scope of operational research
- Explain the idea of convex and its importance in the study of linear programming
- Apply the knowledge of linear programming concepts to formulate real-life problems
- Demonstrate the working of various methods to solve different type of linear programming problems
- Use computer software such as Excel Solver, Lingo, and Octave to solve linear programming problems.

STATISTICS-OPERATIONS RESEARCH

THEORY

CREDITS: 04

Unit-I

Operations Research (OR).Introduction to Operation Research its development, characteristics and scope. Importance of operations research in industry. Limitations of OR.

Unit-II

Linear programming: Introduction to linear programming (LPP), Concepts of convex set, basis Solution, feasible solution, basic feasible solution, optimum solution and slack and surplus variables in linear programming problems (LPP). Mathematical formulations of LPP, Standard form of LPP, graphical method of solving LPP.

UNIT-III

Simplex method: iterative nature of simplex method, Computational details of simplex algorithm and summary. Artificial variable technique (Two phase and Big-M techniques) for solving a general LPP.

Unit-IV

Transportation problem: Mathematical Formulation and tabular representation, concept of feasible, basic feasible and optimum solutions with reference to T.P. Methods of finding initial basic feasible solution: North West corner rule, Lowest cost entry, Vogel's approximation method.

PRACTICAL

CREDITS: 02

1. Formulation of LPPs
2. Solving LPPs by graphical and simplex methods.
3. Solving LPPs by artificial technique.
4. Practical's based on transportation problems.

SUGGESTED READINGS

- Gass S.I (195): Linear Programming Methods and Applications, McGraw Hill.
- S.D. Sharma (1994): Operations Research, Kedarnath Ram Nath & co. Meerut.
- P. K. Gupta and D.S. Hira (2009) Operations research, S. Chand New delhi.
- H.A. Taha (2009): Operation Research: An introduction person Prentice Hall.

6. Statistical Inference & Industrial Statistics (Discipline specific elective):

This course provides students knowledge of inferential statistics & Industrial Statistics.

Semester	Core Course	Course Title	Credit
VI	DSE	Statistical inference and industrial Statistics	Theory: 04; Practical: 02 Total: 06

Course specific outcomes

- Students will be able make inferences about the population parameters.
- Students will be able to make confidence intervals with certain given precession.
- Students will identify the best estimator with the help of certain properties, like unbiased, efficient, consistent and sufficient.
- Students will employ Neyman Pearson's lemma for real life situations.
- Students will be able to estimate different parameters using various measures like MLE, Least square, minimum chi-square etc.
- Students will be able to monitor the inherent variations that are present in all manufacturing processes through SQC.
- They will be able to identify the assignable causes of variations inherent in all manufacturing processes.
- Students will learn how to monitor the production process of various industries, so that they remain active in the present competition.
- Students will not only learn the process control but also product control which will help them develop various technical strategies in order to maximize industrial.

STATISTICAL INFERENCE AND INDUSTRIAL STATISTICS -I

THEORY

CREDITS: 04

UNIT-I

Statistical Inference, parameter, Parameter space, Statistic and its sampling distribution. Types of Estimation (Point and Interval· estimation).Estimate and estimator. Requirements

of a good estimator with examples. Unbiasedness, consistency, efficiency and sufficiency. Statement of Neyman-Factorization theorem with examples.

UNIT-II

Methods of Estimation: Maximum likelihood Estimation (MLE), method of moments, method of minimum chi-square and method of least square. Examples on MLE and method of moments.

UNIT-III

Statistical quality control and its uses. Chance and assignment causes of variation. Process and Product control, 3σ limits. Control charts for variables; Mean Chart (X-chart), Range Chart (R-Chart) and Standard Deviation Chart (S or σ Chart).

UNIT-IV

Control chart for attributes; Control Chart for Fraction Defective (p-chart), Control Chart for number of defectives (np-chart), Control Chart for number of defects per unit (C-chart) for uniform sample size. Introduction to computers. Concept of single sampling plan. Basic set of an electronic computer (CPU, input & output devices). Importance of computers in statistics. Practical 1. Construction of X, R and S- charts. 2. Construction of np, p and c- charts.

PRACTICAL

CREDITS: 02

1. Construction of X, R and S- charts.
2. Construction of np, p and c-charts.

SUGGESTED READINGS:

- S.C Gupta and V.K Kapoor: Fundamentals of Applied Statistics.
- Grant E.L (1964): Statistical Quality control, McGraw Hill.
- Duncan A.J (1974): Quality Control and Industrial Statistics, Tarapolwal and sons.
- Rajaramsn, V (1981): Computer Oriented Numerical Methods, Prentice Hall.
- S.C Gupta and V.K Kapoor: Fundamentals of Mathematical Statistics. S. Chand, New Delhi.
- Brownlee K.A (1960): Statistical Theory and Methodology in Science and Engineering, John Wiley and Sons.
- Gupta and Mukhopadhy P.P: Applied Statistics, Central Book Agency.
- Cowden D.J (1960): Statistics Methods in Quality Control, Asia Publishing Society

Course Structure and distribution of different courses with their credits for
B.Sc. Zoology

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I	Animal Diversity	Core Course	6 credits 4(T)+2(P)
2.	II	Comparative Anatomy & Developmental Biology of Vertebrates	Core Course	6 credits 4(T)+2(P)
3.	III	Physiology & Biochemistry	Core Course	6 credits 4(T)+2(P)
4.	III	Apiculture	Skill Enhancement Course	4 credits 2(T)+2(P)
5.	IV	Genetics & Evolutionary Biology	Core Course	6 credits 4(T)+2(P)
6.	V	Animal Biotechnology	Discipline Specific Elective	6 credits 4(T)+2(P)
7.	V	Sericulture: Post Harvest Technology	Skill Enhancement Course	4 credits 2(T)+2(P)
8.	VI	Immunology	Discipline Specific Elective	6 credits 4(T)+2(P)
9.	VI	Sericulture	Skill Enhancement Course	4 credits 2(T)+2(P)

Course outcomes

Students will be able to learn in-depth knowledge and understanding about the fundamental concepts, principles and processes underlying the academic field of Zoology and its different subfields.

Students will have wide career options including positions in government departments, environmental agencies, education (including universities and colleges) and industry (including consulting firms, agriculture industries and biomedical companies).

Students will be able to startup profitable agri businesses like apiculture, sericulture, fish farming, and vermicompost preparation.

1. Animal Diversity (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Animal Diversity	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Students will learn basics of animal systematics and understand hierarchy of different categories.
- Students will learn diagnostic characteristics of different animal phyla through brief studies of examples.
- Students will be able to classify all the invertebrate and vertebrate phyla up to class.
- Students will be able to identify the major groups of organisms with an emphasis on animals and be able to classify them within a phylogenetic framework.
- Students will be able to compare and contrast the characteristics of animals that differentiate them from other forms of life.

ANIMAL DIVERSITY

THEORY

(CREDITS 4)

Unit 1

1.1 Protista

General characters and classification up to classes; Locomotion in Protozoa

1.2. Porifera

General characters and classification up to classes; Canal System

1.3. Cnidaria

General characters and classification up to classes; Polymorphism in Hydrozoa

1.4. Helminthes

General characters and classification up to classes of platyhelminthes and nemathelminthes; Life history of *Taenia solium* and *Ascaris lumbricoides*; parasitic adaptations

Unit 2

2.1 Annelida

General characters and classification up to classes; Filter feeding in Polychaetes

2.2 Arthropoda

General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects

2.3 Mollusca

General characters and classification up to classes; Torsion in gastropods

2.4 Echinodermata

General characters and classification up to classes; Water-vascular system in Asterozoa

Unit 3

3.1 Urochordates

General features and classification; Phylogeny of Protochordata

3.2 Cephalochordates

General features and classification

3.3 Agnatha

General features of Agnatha and classification of cyclostomes up to classes

3.4 Pisces

General features and Classification up to orders; Osmoregulation

Unit 4

4.1 Amphibia

General features and Classification up to orders; Parental care

4.2 Reptiles

General features and Classification up to orders; Poisonous and non-poisonous snakes

4.3 Aves

General features and Classification up to orders; Flight adaptations

4.4 Mammals

General characters and Classification up to orders; adaptive radiation

PRACTICAL

(CREDITS 2)

1. Study of the museum specimens belonging to all the phyla (available in respective museums).
2. Dissection of following animals to expose different systems:
 - Pheritima
 - Prawn
 - Pila
3. Study of the following permanent slides:
 - T.S. and L.S. of *Sycon*
 - Life history stages of *Taenia*
 - T.S. of Male and female *Ascaris*
4. Key for Identification of poisonous and non-poisonous snakes

SUGGESTED READINGS

- Ruppert and Barnes, R.D. (2006). *Invertebrate Zoology, VIII Edition*. Holt Saunders International Edition.
- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis, III Edition*, Blackwell Science.
- Young, J.Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.
- Pough H. *Vertebrate life*, VIII Edition, Pearson International.
- Hall B.K. and Hallgrimsson B. (2008). *Strickberger's Evolution*. IV Edition. Jones and Bartlett Publishers Inc.
- Jordan, E.L., Verma, P.S., (2013). *Chordate Zoology*. S Chand & Company, New Delhi.

2. Comparative Anatomy & Developmental Biology of Vertebrates (Core Course-II)

Semester	Core Course	Course Title	Credit
II	CC-II	Comparative Anatomy & Developmental Biology of Vertebrates	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Students will be able to describe the vertebrate structures and relate morphology, function and evolution.
- Students will be able to use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on earth.
- Students also gain knowledge about fundamental steps in vertebrate development from fertilization to organogenesis.
- Students will be able to explicate the methodologies specifically used to study the process of embryonic development in animals.
- Students will be able to identify important unsolved problems in cell and developmental biology.

COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES

THEORY

(CREDITS 4)

Unit 1

1.1 Integumentary System

Derivatives of integument

1.2 Skeletal System

Evolution of visceral arches

1.3 Digestive System

Brief account of alimentary canal and digestive glands

1.4 Respiratory System

Brief account of Gills, lungs, air sacs and swim bladder

Unit 2

2.1 Circulatory System

Evolution of heart and aortic arches

2.2 Urinogenital System

Evolution of kidney and urinogenital ducts

2.3 Nervous System

Comparative account of brain

2.4 Sense Organs

Different types of receptors,

Unit 3 Early Embryonic Development

3.1 Gametogenesis and fertilization in mammals

3.2 Types and patterns of cleavage

3.3 Blastulation and gastrulation

3.4 Role of primary organisers

Unit 4 Late Embryonic Development and control

4.1 Extra embryonic membranes

4.2 Types of placenta

4.3 Basic processes in development (gene activation, determination, induction)

4.4 Basic processes in embryonic development (differentiation, intracellular communications, cell movement and cell death)

PRACTICAL

(CREDITS 2)

1. Osteology: Disarticulated skeleton of frog, varanus, fowl and rabbit
2. Study of frog and chick embryology
3. Study of the different types of placenta- histological sections through permanent slides or photomicrographs
4. Dissection of following animals to expose different systems:
 - Scoliodon
 - Frog
 - Rat

SUGGESTED READINGS

- Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution*. IV Edition. McGraw-Hill Higher Education.
- Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates*. IX Edition. The McGraw-Hill Companies.
- Hilderbrand, M and Gaslow G.E. *Analysis of Vertebrate Structure*, John Wiley and Sons.

- Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House.
- Gilbert, S. F. (2006). *Developmental Biology*, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA.
- Balinsky, B.I. (2008). *An introduction to Embryology*, International Thomson Computer Press.
- Carlson, Bruce M (1996). *Patten's Foundations of Embryology*, McGraw Hill, Inc.

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3. Physiology & Biochemistry (Core Course-III)

Semester	Core Course	Course Title	Credit
III	CC-III	Physiology & Biochemistry	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Students will have an enhanced knowledge and appreciation of animal physiology.
- Students will be able to understand the functions of important physiological systems including the digestive, cardio-respiratory, renal, reproductive and metabolic systems.
- Students will be able to outline the basic control processes of the nervous systems and explain how this drives muscle movement and sensory perception.
- Students will develop an understanding of the role of the endocrine system in maintaining homeostasis and health.
- Student will be better able to explicate the integrative workings of the human body by studying the endocrine system.
- Students will be able to understand the synthesis of proteins, lipids, and carbohydrates and their role in metabolic pathways along with their regulation.

PHYSIOLOGY AND BIOCHEMISTRY**THEORY****(CREDITS 4)****Unit 1****1.1 Digestion**

Physiology of digestion; Absorption of carbohydrates, proteins and lipids

1.2 Respiration

Pulmonary respiration, Respiratory volumes and capacities, Transport of Oxygen and carbon dioxide in blood, types of respiratory pigments, oxygen dissociation curves

1.3 Excretion

Formation and excretion of nitrogenous wastes

1.4 Origin and conduction of cardiac impulse**Unit 2****2.1** Different types of potentials, action potential and its propagation in different nerve fibres**2.2** Molecular and chemical basis of muscle contraction

- 2.3 Physiology of vision
- 2.4 Physiology of hearing

Unit 3 Endocrinology

- 3.1 Hormonal control of gametogenesis
- 3.2 Hormonal control of reproductive cycles in mammals
- 3.3 Hormones of pituitary, thyroid and Parathyroid
- 3.4 Hormones of Pancreas, Adrenal and Thymus

Unit 4

4.1 Carbohydrate metabolism

Glycolysis, Krebs Cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogen metabolism, Electron transport chain;

4.2 Lipid metabolism

Biosynthesis and β oxidation of palmitic acid

4.3 Protein metabolism

Transamination, deamination and urea cycle

4.4 Enzymes

Introduction, Mechanism of action, Enzyme Kinetics, Inhibition and Regulation

PRACTICAL

(CREDITS 2)

1. Preparation of hemin and hemochromogen crystals
2. Study of permanent histological sections of mammalian pituitary, thyroid, pancreas, adrenal gland
3. Study of permanent slides of spinal cord, duodenum, liver, lung, kidney, bone, cartilage
4. Qualitative tests for carbohydrates in given solutions (Glucose, Fructose, Sucrose, Lactose)
5. Estimation of total protein in given solutions by Lowry's method
6. Study of activity of salivary amylase under optimum conditions
7. RBC and WBC counting
8. Estimation of haemoglobin

SUGGESTED READINGS

- Tortora, G.J. and Derrickson, B.H. (2009). *Principles of Anatomy and Physiology, XII Edition*. John Wiley & Sons, Inc.
- Widmaier, E.P., Raff, H. and Strang, K.T. (2008). *Vander's Human Physiology, XI Edition*., McGraw Hill.
- Guyton, A.C. and Hall, J.E. (2011). *Textbook of Medical Physiology, XII Edition*. Harcourt Asia Pvt. Ltd/ W.B. Saunders Company.

- Berg, J.M., Tymoczko, J.L. and Stryer, L. (2006). *Biochemistry, VI Edition*. W.H. Freeman and Co.
- Nelson, D.L., Cox, M.M. and Lehninger, A.L. (2009). *Principles of Biochemistry, IV Edition*. W.H. Freeman and Co.
- Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009). *Harper's Illustrated Biochemistry, XXVIII Edition*. Lange Medical Books/Mc Graw & Hill.

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4. Apiculture (Skill Enhancement Course-I)

Semester	Skill Enhancement Course	Course Title	Credit
III	SEC-I	Apiculture	Theory: 02 Practical: 02 Total: 04

Course specific outcomes

- Students will learn the fundamentals of beekeeping and responsibilities of beekeepers.
- Students will be able to use, identify and assemble the beekeeping equipment.
- Students will be able to maintain optimum conditions for particular honeybee species, harvest honey and other products, and manage honeybee diseases on scientific lines.
- Students will be able to name and identify particular honeybee species and their body parts including mouth parts, legs and sting.
- Generation of skilled man power in the field of apiculture.

APICULTURE**THEORY****(CREDITS 2)****Unit 1****Bee Keeping I**

- 1.1 Introduction to Apiculture, honey bee species
- 1.2 Social organization of bee colony
- 1.3 Life cycle of honey bee
- 1.4 Behavioural patterns (bees dance, swarming)

Unit 2**Bee Keeping II**

- 2.1 Methods of bee keeping, beehive and its types
- 2.2 Bee foraging and production of honey
- 2.3 Bee keeping products: honey and bee wax
- 2.4 Enemies and diseases of honey bees

PRACTICAL**(CREDITS 2)**

1. Specimen study of different castes of honey bee species
2. Collection and identification of different honey bee species viz. *Apis indica*, *A. dorsata*, *A. mellifera*, *A. florea*
3. Life cycle study of honey bees
4. Study of leg modification in workers
5. Temporary mount preparation of mouth parts of honey bees
6. Temporary mount preparation of sting apparatus of honey bees
7. Demonstration of honey testing methods like blot method, burning method and alkali method etc.
8. Study of different bee hives and allied implements used in bee keeping

SUGGESTED READINGS

- Prost, P. J. (1962). *Apiculture*. Oxford and IBH, New Delhi.
- Bisht D.S., *Apiculture*, ICAR Publication.
- Singh S., *Beekeeping in India*, Indian council of Agricultural Research, New Delhi

5. Genetics & Evolutionary Biology (Core Course-IV)

Semester	Core Course	Course Title	Credit
IV	CC-IV	Genetics & Evolutionary Biology	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Students will have a detailed understanding of the Mendelian genetics, chemical basis of heredity, and how quantification of heritable traits provides insight into cellular and molecular mechanisms.
- Students will be able to explain how organisms function at the level of the gene, genome, cell, tissue, organ and organ-system.
- Students will understand natural selection as key to the natural world; how natural selection produces adaptation; the origins of genetic variation and fitness.
- Students will be able to use specific examples to explicate how descent with modification has shaped animal morphology, physiology, life history, and behavior.
- Students will be able to understand what is a species; how new species arise and the history of life and major extinctions.

GENETICS AND EVOLUTIONARY BIOLOGY**THEORY****(CREDITS 4)****Unit 1**

- 1.1 Mendalian genetics, Linkage, Linkage maps and crossing over
- 1.2 Nature of heterochromatin
- 1.3 Organisation of genetic material in prokaryotes and eukaryotes
- 1.4 Multiple alleles, Letahlity, Epistasis, Sex linked inheritance, extra chromosomal Inheritance

Unit 2**2.1 Mutations**

Structural and numerical changes in chromosomes; Gene mutations

2.2 Replication

Replication in prokaryotes and eukaryotes

2.3 Transcription and translation

Transcription and post transcriptional modifications, translation

2.4 Sex Determination

Chromosomal mechanisms, dosage compensation

Unit 3

3.1 Introduction to Evolutionary Theories

Lamarckism, Darwinism, Neo-Darwinism

3.2 Evidences of Evolution

Types of fossils, Dating of fossils, Phylogeny of horse

3.3 Processes of Evolutionary Change

Organic variations; Isolating Mechanisms; Natural selection, Industrial melanism

3.4 Natural Selection

Directional, Stabilizing and Disruptive selection, Artificial selection

Unit 4

4.1 Species Concept

Biological species concept; Modes of speciation (Allopatric, Sympatric)

4.2 Macro-evolution

Macro-evolutionary Principles (example: Darwin's Finches)

4.3 Extinction

Mass extinction, Causes and Role of extinction in evolution

4.4 Major extinctions

K-T extinction

PRACTICAL

(CREDITS 2)

1. Study of Human Karyotypes (normal and abnormal).
2. Study of fossil evidences from pictures
3. Study of homology and analogy from suitable specimens/ pictures
4. Charts:
 - a) Phylogeny of horse with diagrams
 - b) Darwin's Finches with diagrams/ cut outs of beaks of different species
5. Visit to Natural History Museum and to national parks within and outside state and submission of report

SUGGESTED READINGS

- Gardner, E.J., Simmons, M.J. and Snustad, D.P. (2008). *Principles of Genetics, VII Edition*. Wiley, India.
- Snustad, D.P. and Simmons, M.J. (2008). *Principles of Genetics, V Edition*. John Wiley and Sons Inc.
- Gupta, P.K. (2018). *Genetics*. Rastogi Publications, New Delhi.
- Ridley, M. (2004). *Evolution, III Edition*. Blackwell Publishing.
- Barton, N.H., Briggs, D.E.G., Eisen, J.A., Goldstein, D.B. and Patel, N.H. (2007). *Evolution*. Cold Spring, Harbour Laboratory Press.

- Hall, B.K. and Hallgrímsson, B. (2008). *Evolution, IV Edition*. Jones and Bartlett Publishers.
- Campbell, N.A. and Reece, J.B. (2011). *Biology, IX Edition*. Pearson, Benjamin, Cummings.
- Douglas, J. Futuyma (1997). *Evolutionary Biology*. Sinauer Associates.

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6. Animal Biotechnology (Discipline Specific Elective-I)

Semester	Discipline Specific Elective	Course Title	Credit
V	DSE-I	Animal Biotechnology	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Students will be able to understand the concept, tools and techniques associated with recombinant DNA technology.
- Students will have a detailed understanding of DNA manipulative enzymes, isolation of gene of interest, cloning and expression vectors, construction of genomic DNA library and cDNA library, blotting, PCR, sequencing, transfection, and transgenic techniques.
- Students will be able to explicate the role of biotechnology to laboratory animal models for human and animal disease and production of transgenic animals.
- Students will be familiarized with the concept, types and management of microbial culture and production of pharmaceuticals, growth hormones and vaccines.
- Students will be able to demonstrate use of molecular biology techniques to genetically engineer the animals for pharmaceuticals, molecular diagnosis, disease control and gene therapy.

ANIMAL BIOTECHNOLOGY**THEORY****(CREDITS 4)****Unit 1****Introduction****1.1** Concept and scope of biotechnology**1.2** Cloning vectors: plasmids, cosmids, phagemids, lambda bacteriophage, and expression vectors (characters)**1.3** Restriction enzymes: nomenclature, detailed study of type II**1.4** Transformation techniques: calcium chloride method and electroporation**Unit 2****Gene manipulation****2.1** Construction of genomic and CDNA libraries and screening by colony and plaque hybridization

- 2.2 Southern, Northern and Western blotting
- 2.3 DNA sequencing: Sanger method
- 2.4 Polymerase Chain Reaction, DNA Fingerprinting and DNA microarray

Unit 3

Genetically modified organisms

- 3.1 Production of cloned and transgenic animals: Nuclear transplantation, Retroviral method, DNA microinjection
- 3.2 Transgenic animals (mice, cattle, sheep, goat, birds, fishes)
- 3.3 Applications of transgenic animals
- 3.4 Production of pharmaceuticals, production of donor organs, knockout mice.

Unit 4

Culture techniques and applications

- 4.1 Preparation of growth media
- 4.2 Microbial culture techniques and management
- 4.3 Molecular diagnosis of genetic diseases
- 4.4 Recombinant DNA in medicine (recombinant insulin and human growth hormone), gene therapy

PRACTICAL

(CREDITS 2)

1. Restriction digestion of plasmid DNA
2. To study following techniques through photographs
 - a) Southern blotting
 - b) Northern blotting
 - c) Western blotting
 - d) DNA sequencing (Sanger's method)
 - e) PCR
 - f) DNA fingerprinting
3. Project report on animal cell culture

SUGGESTED READINGS

- Brown, T.A. (1988). *Molecular Biology Labfax II: Gene Cloning and DNA Analysis, II Edition*. Academic Press, California, USA.
- Glick, B.R. and Pasternak, J.J. (2009). *Molecular Biotechnology – Principles and Applications of Recombinant DNA, IV Edition*. ASM Press, Washington, USA.

- Griffiths, A.J.F., Miller, J.H., Suzuki, D.T., Lewontin, R.c. and Gelbart, W.M. (2009). *An introduction to Genetic Analysis, IX Edition*. Freeman and Co., New York, USA.
- Snustad, D.P. and Simmons, M.J. (2008). *Principles of Genetics, V Edition*. John Wiley and Sons Inc.
- Watson, J.D., Myers, R.M., Caudy, A. and Witkowski, J.K. (2007). *Recombinant DNA Genes and Genomes – A Short Course, III Edition*. Freeman and Co., New York, USA.
- Beauchamp, T.I. and Childress, J.F. (2008). *Principles of Biomedical Ethics, VI Edition*. Oxford University Press.

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7. Sericulture: Post Harvest Technology (Skill Enhancement Course-II)

Semester	Skill Enhancement Course	Course Title	Credit
V	SEC-II	Sericulture: Post Harvest Technology	Theory: 02 Practical: 02 Total: 04

Course specific outcomes

- Students will be able to understand the concept, methods, appliances and industrialized options associated with raw silk processing technology.
- Students will have a detailed understanding of storage, sorting, deflossing, cooking, brushing and reeling of cocoons.
- Students will be familiarized with the industrial aspects of bleaching, dyeing, printing, finishing and production of silk garments to bring about the choicest colours and shades on silk leading to value addition of the silk materials.
- Students will be imparted hands on training in post cocoon technology.

SERICULTURE-POST HARVEST TECHNOLOGY**THEORY****(CREDITS 2)****Unit 1****Silk Processing Technology I**

1.1 Present status of raw silk processing technology in India, technological options

1.2 Storage, sorting, deflossing and cooking of cocoons

1.3 Cocoon brushing and reeling

1.4 Reeling appliances-charaka, cottage basin, multi-end silk reeling machine

Unit 2**Silk Processing Technology II**

2.1 Processing of reeled silk (general account)

2.2 Bleaching and dyeing of silk

2.3 Methods of printing and finishing

2.4 Spinning and production of silk garments

PRACTICAL

(CREDITS 2)

1. Study of cocoons of different silkworm races
2. Demonstration of cocoon cooking and brushing
3. Demonstration of reeling of cocoons
4. Filament length of different races of *Bombyx mori*
5. Determination of denier of mulberry silk
6. Methods of dyeing of silk
7. Visit to any reeling station

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8. Immunology (Discipline Specific Elective-II)

Semester	Discipline Specific Elective	Course Title	Credit
VI	DSE-II	Immunology	Theory: 04 Practical: 02 Total: 06

Course specific outcomes

- Students will be able to demonstrate the basic knowledge of immunological processes at a cellular and molecular level, and define central immunological principles and concepts.
- Students will be able to outline, compare and contrast the key mechanisms and cellular players of innate and adaptive immunity and how they relate.
- Students will be able to outline key events and cellular players in antigen processing and presentation, and how the nature of the antigen will shape resulting effector responses.
- Students will be able to understand and explain the basis of allergy, immunodeficiency, autoimmunity and transplantation.
- Students will be able to understand the principles governing vaccination and the mechanisms of protection against infectious diseases.

IMMUNOLOGY**THEORY****(CREDITS 4)****Unit 1****Overview of the Immune System****1.1** Introduction to basic concepts in immunology**1.2** Components of immune system**1.3** Principles of innate and adaptive immune system; Haematopoiesis**1.4** Cells and organs of immune system**Unit 2****Antigens and antibodies****2.1** Basic properties of antigens**2.2** B and T cell epitopes, haptens and adjuvants

2.3 Structure, classes and function of antibodies, monoclonal antibodies

2.4 Antigen antibody interactions as tools for research and diagnosis

Unit 3

Working of the Immune System

3.1 Structure and functions of MHC

3.2 Exogenous and endogenous pathways of antigen presentation and processing

3.3 Basic properties and functions of cytokines

3.4 Complement system: components and pathways

Unit 4

Working of the Immune System

4.1 Gell and Coombs

4.2 Classification and brief description of various types of hypersensitivities

4.3 Introduction to concepts of autoimmunity and immunodeficiency

4.4 Introduction to vaccines

PRACTICAL

(CREDITS 2)

1. Demonstration of lymphoid organs
2. Histological study of spleen, thymus and lymph nodes through slides/photographs
3. Preparation of stained blood film to study various types of blood cells
4. Ouchterlony's double immune-diffusion method
5. ABO blood group determination
6. Demonstration of
 - a) ELISA
 - b) Immunoelectrophoresis

SUGGESTED READINGS

- Kindt, T.J., Goldsby, R.A., Osborne, B.A. and Kuby, J. (2006). *Immunology, VI Edition*. W.H. Freeman and Company.
- David, M., Jonathan, B., David, R.B. and Ivan, R. (2006). *Immunology, VII Edition*. Mosby, Elsevier Publication.
- Abbas K. Abul and Lechtman H. Andrew (2003). *Cellular and Molecular Immunology, V Edition*. Saunders Publication.

9. Sericulture (Skill Enhancement Course-III)

Semester	Skill Enhancement Course	Course Title	Credit
VI	SEC-III	Sericulture	Theory: 02 Practical: 02 Total: 04

Course specific outcomes

- Students will be able to understand the life cycle of mulberry and non-mulberry silkworms.
- Students will be imparted training to rear silkworms, harvest silk and byproducts and manage silkworm diseases on scientific lines.
- Students will be able to name and identify mulberry and non-mulberry silkworms.
- Students will be able to demonstrate proficiency in reeling, mother moth and seed examination.
- Generation of skilled man power in the field of sericulture.

SERICULTURE**THEORY****(CREDITS 2)****Unit 1****Sericulture I**

- 1.1 Past, present and future of sericulture in J & K
- 1.2 Sericulture and its components
- 1.3 Life cycle of mulberry silk moth-Bombyx mori
- 1.4 Life cycle of non-mulberry silk moths-Tasar, Muga and Eri

Unit 2**Sericulture II**

- 2.1 Rearing of silk worms- mulberry and non-mulberry silk worms
- 2.2 Harvesting and post harvest processing of cocoons
- 2.3 By-products of sericulture
- 2.4 Silkworm diseases- viral, bacterial, protozoan and fungal

PRACTICAL**(CREDITS 2)**

1. Specimen study of mulberry and non-mulberry silk moths
2. Life cycle study/laboratory rearing of *Bombyx mori*
3. Study of silk gland of *Bombyx mori* through the dissection of 5th instar silkworm
4. Demonstration of cocoon reeling and determination of filament length of cocoons
5. Mother moth and seed examination
6. Visit to any sericultural research institution

SUGGESTED READINGS

- Handbook of Practical Sericulture: S.R. Ullal and M.N. Narasimhanna CSB, Bangalore
- Appropriate Sericultural Techniques; Ed. M. S. Jolly, Director, CSR & TI, Mysore.
- Handbook of Silkworm Rearing: Agriculture and Technical Manual-1, Fuzi Pub. Co. Ltd., Tokyo, Japan 1972
- Manual of Silkworm Egg Production; M. N. Narasimhanna, CSB, Bangalore 1988
- Silkworm Rearing; Wupang—Chun and Chen Da-Chung, Pub. By FAO, Rome 1988
- Improved Method of Rearing Young age silkworm; S. Krishnaswamy, reprinted CSB, Bangalore, 1986

**Course Structure and distribution of different courses with their credits for Bachelor in
Commerce (General)**

S.No	Semester	Course Title	Course Type	Total Credits
1.	I	Financial Accounting	Core Course	6 credits 4(T)+2(P)
2.	I	Business Law	Core Course	6 credits 4(T)+2(P)
3.	II	Corporate Accounting	Core Course	6 credits 4(T)+2(P)
4.	II	Corporate Laws	Core Course	6 credits 4(T)+2(P)
5.	III	Human Resource Management	Core Course	6 credits 4(T)+2(P)
6.	III	Business Mathematics	Core Course	6 credits 4(T)+2(P)
7.	III	Management Principles & Applications	Core Course	6 credits 4(T)+2(P)
8.	III	E-Commerce/Personal Selling & Salesmanship/Financial Economics/Personal Tax Planning/Elementary Computer Applications	Skill Enhancement Elective Course (SEC) -I	4 Credits: 2(T)+2(P)
9.	IV	Cost Accounting	Core Course	6 credits 4(T)+2(P)
10.	IV	Goods & Services Tax (GST)	Core Course	6 credits 4(T)+2(P)
11.	IV	Computer Applications in Business	Core Course	6 credits 4(T)+2(P)
12.	V	Principles of Marketing	Core Course	6 credits 4(T)+2(P)
13.	V	Fundamentals of Financial Management	Core Course	6 credits 4(T)+2(P)
14.	V	Banking & Insurance/Computerized Accounting System/Advertising	(DSE) -I	6 credits 4(T)+2(P)
15.	V	Corporate Tax Planning/Management Accounting/ Financial Markets	(DSE) -II	6 credits 4(T)+2(P)

16.	VI	Auditing & Corporate Governance	Core Course	6 credits 4(T)+2(P)
17.	VI	Income Tax Law & Practice	Core Course	5 credits 4(T)+2(P)
18	VI	Fundamentals of Investment/International Business/ New Venture Planning	(DSE) -III	6 credits 4(T)+2(P)
19	VI	Business Research Methods & Project Work/Financial Reporting & Analysis/Consumer Affairs & Customer Care	(DSE) -IV	6 credits 4(T)+2(P)

Course Outcomes

Programme learning outcomes for B. Com include various subject specific skills and generic skills like mind management, creativity and innovation of competencies in diverse areas of Commerce and Business, the achievement of which will be demonstrated by the students of B. Com. The programme learning outcomes of B. Com enables a student to prepare for further study, employment, and good citizenship. Further, the difference in the level of achievement of programme outreach provides for comparing of learning levels and standards across different college/institution. The various learning outcomes of the programme are mentioned below:

1. Bachelor's Degree in Commerce results in giving comprehensive knowledge of Marketing, Human Resource Management, Business and Corporate Law, Economics, Finance, Accounting, Management, Tax and several other branches of Commerce that includes Investment, Insurance, and Banking. Thus, this programme helps students in building a concrete footing for advanced studies in Commerce and to stand with the requirement of business sector, insurance, banking seeking youth fit for employment.
2. Students undergoing this programme will be equipped to the world of work, particularly, work of the future. The student will get a first-hand exposure of working in the real world.
3. Students completing this programme will be able to develop managerial knowledge and tactical dexterity, with a broader skill set and encourages them to seek out audacious, innovative solutions for today's business.
4. Completion of this programme will also enable the students to formulate business

problems and provide innovative solutions thus, molding them into future visionaries, management leaders that are compassionate yet efficient.

5. The course provides an extreme and rigorous base for teaching, research, and allied businessadministrations.

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1. Financial Accounting (Core Course-I)

Semester	Core Course	Course Title	Credit
I	CC-I	Financial Accounting	Theory: 04; Internal: 02 Total: 06

Course Specific outcomes

1. This course will equip students with fundamental accounting skill and applications.
2. The course will make students aware about partnership business and key accounting skills needed to manage partnership business affairs.

FINANCIAL ACCOUNTING**THEORY****(CREDITS 4)****Unit – 1****(a) Theoretical Framework**

- i. Accounting as an information system, the users of financial accounting information and their needs. Qualitative characteristics of accounting, information. Functions, advantages and limitations of accounting. Branches of accounting. Bases of accounting; cash basis and accrual basis.
- ii. The nature of financial accounting principles - Basic concepts and conventions: entity, money measurement, going concern, cost, realization, accruals, periodicity, consistency, prudence (conservatism), materiality and full disclosures.
- iii. Financial accounting standards: Concept, benefits, procedure for issuing accounting standards in India. Salient features of First-Time Adoption of Indian Accounting Standard (Ind-AS) 101. International Financial Reporting Standards (IFRS): - Need and procedures.

(b) Accounting Process

From recording of a business transaction to preparation of trial balance including adjustments.

Unit – 2

(a) **Depreciation: Methods and Computation**

The nature of depreciation. The accounting concept of depreciation. Factors in the measurement of depreciation. Methods of computing depreciation: straight line method and diminishing balance method; Disposal of depreciable assets-change of method.

(b) Final Accounts

Capital and revenue expenditures and receipts: general introduction only. Preparation of financial statements of non- corporate business entities.

Unit – 3

Accounting for Hire-Purchase and Installment Systems, Consignment, and Joint Venture

i) **Accounting for Hire-Purchase** Transactions, Journal entries and ledger accounts in the books of Hire Vendors and Hire purchaser for large value items including Default and repossession.

ii) **Consignment:** Features, Accounting treatment in the books of the consignor and consignee.

iii) **Joint Venture:** Accounting procedures: Joint Bank Account, Records Maintained by Co-venturer of (a) all transactions (b) only his own transactions. (Memorandum joint venture account).

Unit - 4

(a) **Accounting for Inland Branches**

Concept of dependent branches; accounting aspects; debtors system, stock and debtors system, branch final accounts system and whole sale basis system. Independent branches: concept- accounting treatment: important adjustment entries and preparation of consolidated profit and loss account and balance sheet.

(b) Accounting for Dissolution of Partnership Firm

Accounting of Dissolution of the Partnership Firm Including Insolvency of

partners, sale to a limited company and piecemeal distribution.

UNIT - 5 AND UNIT – 6 (FOR INTERNAL ASSESSMENT) CREDITS: 02

Computerized Accounting Systems

- i. Tally: Creating a Company; Configure and Features settings; Creating Accounting Ledgers and Groups; Creating Stock Items and Groups; Vouchers Entry
- ii. Generating Reports - Cash Book, Ledger Accounts, Trial Balance, Profit and Loss Account, Balance Sheet, Funds Flow Statement, Cash Flow Statement
- iii. Selecting and shutting a Company; Backup and Restore data of a Company

Note: Each student will have a choice to select one of the above and submit report as an assignment for evaluation by the concerned teacher

Note:

1. The relevant Indian Accounting Standards in line with the IFRS for all the above topics should be covered.
2. Any revision of relevant Indian Accounting Standard would become applicable immediately.

SUGGESTED READINGS:

1. Robert N Anthony, David Hawkins, Kenneth A. Merchant, *Accounting: Text and Cases*. McGraw- Hill Education, 13 Ed. 2013.
2. Charles T. Horngren and Donna Philbrick, *Introduction to Financial Accounting*, Pearson Education.
3. J.R. Monga, *Financial Accounting: Concepts and Applications*. Mayur Paper Backs, New Delhi.
4. M.C.Shukla, T.S. Grewal and S.C.Gupta. *Advanced Accounts. Vol.-I*. S. Chand & Co., New Delhi.
5. S.N. Maheshwari, and. S. K. Maheshwari. *Financial Accounting*. Vikas Publishing House, New Delhi.

6. Deepak Sehgal. *Financial Accounting*. Vikas Publishing H House, New Delhi.
7. Bhushan Kumar Goyal and HN Tiwari, *Financial Accounting*, International Book House
8. Goldwin, Alderman and Sanyal, *Financial Accounting*, Cengage Learning.
9. Tulsian, P.C. *Financial Accounting*, Pearson Education.
10. *Compendium of Statements and Standards of Accounting*. The Institute of Chartered Accountants of India, New Delhi

Note: Latest edition of text books may be used

Govt. Model Degree College Shopian

2. Business Law (Core Course-II)

Semester	Core Course	Course Title	Credit
I	CC-II	Business Law	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

1. A student can learn and practice legality of contracts and their validity.
2. Learners of the course will be able to understand the basics of cheque system, endorsement and business process involved.

BUSINESS LAW**THEORY****(CREDITS 4)****Unit – 1****The Indian Contract Act, 1872: General Principles of Contract**

Contract - meaning, characteristics and kinds, Essentials of a valid contract - Offer and acceptance, consideration, contractual capacity, free consent, legality of objects. Void agreements. Discharge of a contract - modes of discharge, breach and remedies against breach of contract. Contingent contracts. Quasi - contracts

Unit – 2**The Indian Contract Act, 1872: Specific Contracts**

Contract of Indemnity and Guarantee: Meaning and Characteristics. Contract of Bailment: Meaning and Characteristics, Rights and duties of Bailor and Bailee. Contract of Agency: Meaning of Agency, Types of Agents, Rights and Duties of Principal and Agent.

Unit – 3**The Sale of Goods Act, 1930**

Contract of sale, meaning and difference between sale and agreement to sell. Conditions and warranties. Transfer of ownership in goods including sale by a non-

owner. Performance of contract of sale. Unpaid seller - meaning, rights of an unpaid seller against the goods and the buyer.

Unit – 4

The Negotiable Instrument Act 1881 and The Limited Liability Partnership Act, 2008

Salient Features of LLP. Differences between LLP and Partnership, LLP and Company. Incorporation Document. Incorporation by Registration.

Meaning, Characteristics, and Types of Negotiable Instruments: Promissory Note, Bill of Exchange, Cheque, Holder in Due Course, Negotiation: Types of Endorsement, Crossing of Cheque, Bouncing of Cheque.

UNIT – 5 AND UNIT – 6 (FOR INTERNAL ASSESSMENT) CREDITS: 02

Identification, analysis and discussion of leading cases related to any one of the following:

3. *The Indian contract Act 1872.*
4. *Sale of Goods Act 1930.*
5. *Negotiable instruments Act 1881.*

Note: *Each student is required to submit the Case Study Report to the concerned teacher for evaluation purposes.*

SUGGESTED READINGS:

1. M.C. Kuchhal, and Vivek Kuchhal, Business Law, Vikas Publishing House, New Delhi. Avtar Singh, Business Law, Eastern Book Company, Lucknow.
2. Ravinder Kumar, Legal Aspects of Business, Cengage Learning
3. SN Maheshwari and SK Maheshwari, Business Law, National Publishing House, New Delhi.
4. Aggarwal S K, Business Law, Galgotia Publishers Company, New Delhi.
5. Bhushan Kumar Goyal and Jain Kinneri, Business Laws, International Book House
6. Sushma Arora, Business Laws, Taxmann Publications.
7. Akhileshwar Pathak, Legal Aspects of Business, McGraw Hill Education, 6thed.

3. Corporate Accounting (Core Course-III)

Semester	Core Course	Course Title	Credit
I	CC-III	Corporate Accounting	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

1. Students of this course can understand the concepts and applications of shares and debentures.
2. Understanding business combinations and mergers are essential part of this course. Students can use these concepts in practice using computers while being a part of an organization.

CORPORATE ACCOUNTING**THEORY****(CREDITS 4)****Unit – 1****(a) Accounting for Share Capital & Debentures**

Issue, forfeiture and reissue of forfeited shares: concept & process of book building; Issue of rights and bonus shares;

Buy back of shares; Redemption of preference shares; Issue and Redemption of Debentures

(b) Valuation of Goodwill and Valuation of Shares

Concepts and calculation: simple problem only

*Unit – 2***(a) Final Accounts of Companies**

Preparation of profit and loss account and balance sheet of corporate entities, excluding calculation of managerial remuneration, Disposal of company profits.

(b) *Cash Flow Statement*

Concept of Funds, Preparation of Cash Flow Statement as per Indian Accounting Standard (Ind – AS:7)

Unit – 3

Amalgamation of Companies

Concepts and accounting treatment as per Accounting Standard: 14 (ICAI) (excluding inter- company holdings). Internal reconstruction: concepts and accounting treatment excluding scheme of reconstruction.

Unit – 4

Accounts of Holding Companies/Parent Companies

Preparation of consolidated balance sheet with one subsidiary company; Relevant provisions of Accounting Standard: 21 (ICAI).

UNIT – 5 and UNIT – 6 (FOR INTERNAL ASSESSMENT)

CREDITS: 02

Collection of Data for the preparation of Final Accounts of any Corporate/Organisation to be identified by concerned teacher.

Analysis of the collected data by using Common Size Statements, Comparative Statements and Ratio Analysis (Liquidity, Solvency and Profitability).

Note: Each Student is required to submit an analyzed report to the concerned teacher for evaluation.

Note:

- 1. The relevant Indian Accounting Standards in line with the IFRS for all the above topics should be covered.**
- 2. Any revision of relevant Indian Accounting Standard would become applicable immediately.**

SUGGESTED READINGS:

1. J.R. Monga, Fundamentals of Corporate Accounting. Mayur Paper Backs, New Delhi.
2. M.C. Shukla, T.S. Grewal, and S.C. Gupta. Advanced Accounts. Vol.-II. S. Chand & Co., New Delhi.
3. S.N. Maheshwari, and S. K. Maheshwari. Corporate Accounting. Vikas Publishing House, New Delhi.
4. Ashok Sehgal, Fundamentals of Corporate Accounting. Taxman Publication, New Delhi.
5. V.K. Goyal and Ruchi Goyal, Corporate Accounting. PHI Learning.
6. Jain, S.P. and K.L. Narang. Corporate Accounting. Kalyani Publishers, New Delhi.
7. Bhushan Kumar Goyal, Fundamentals of Corporate Accounting, International Book House
8. P. C. Tulsian and Bharat Tulsian, Corporate Accounting, S.Chand
9. Amitabha Mukherjee, Mohammed Hanif, Corporate Accounting, McGraw Hill Education
10. Compendium of Statements and Standards of Accounting. The Institute of Chartered Accountants of India, New Delhi.

4. Corporate Laws (Core Course-IV)

.Semester	Core Course	Course Title	Credit
II	CC-IV	Corporate Laws	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

1. Students can apply the knowledge about the formation of a joint stock company.
2. The learners can understand the administration of corporate legal structure, key players and methods of winding up of a company.

CORPORATE LAWS**THEORY****(CREDITS: 04)****Unit - 1**

Introduction - Meaning and Characteristics of a company; lifting of corporate veil; types of companies including one-person company, small company and dormant company; association not for profit; illegal association; formation of company, promoters, their legal position, pre-incorporation contract;. Administration of Company Law [including National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT), Special Courts].

Unit - 2

Documents - Memorandum of association: Clauses, Articles of association: Contents of Articles of Association. Doctrine of constructive notice and indoor management prospectus: shelf and red herring prospectus, Misstatement in prospectus.

Dividends, and Audit: Provisions relating to payment of Dividend, Provisions relating to Audit, Auditors' Appointment and duties. Auditors' Report: types and contents.

Unit - 3

Management: Director: Qualifications, Disqualifications, types, powers and duties,

appointment and removal, director identity number. Key managerial personnel. Types of meeting: Statutory meeting, AGM, Extraordinary General Meeting, BODs meeting, Class meeting. Committees of Board of Directors - Audit Committee, Corporate Social Responsibility Committee: Constitution and purpose.

Unit – 4

Winding Up - Concept and modes of Winding Up.

Insider-Trading, Whistle-Blowing - Insider-Trading; meaning and legal provisions; Whistle- blowing: Concept and Mechanism.

Depositories Law: The depositories Act 1996: Meaning, features, rights and obligations of depositories; participants, issuers and beneficial owners.

Unit – 5 and Unit – 6 (For Internal Assessment)

(Credits:02)

1. Practical on Online registration of a company and demonstration thereof by each student individually
- or
2. Case studies of winding up of a select company and submission of report thereof by each student individually

SUGGESTED READINGS:

1. MC Kuchhal, Modern Indian Company Law, Shri Mahaveer Book Depot (Publishers), Delhi.
2. GK Kapoor and Sanjay Dhamija, Company Law, Bharat Law House, Delhi.
3. Anil Kumar, Corporate Laws, Indian Book House, Delhi
4. Reena Chadha and Sumant Chadha, Corporate Laws, Scholar Tech Press, Delhi.
5. Avtar Singh, Introduction to Company Law, Eastern Book Company
6. Ramaiya, A Guide to Companies Act, LexisNexis, Wadhwa and Buttersworth.
7. Manual of Companies Act, Corporate Laws and SEBI Guideline, Bharat Law House, New Delhi,.
8. A Compendium of Companies Act 2013, along with Rules, by Taxmann Publications.
9. Gower and Davies, Principles of Modern Company Law, Sweet & Maxwell

10. Sharma, J.P., An Easy Approach to Corporate Laws, Ane Books Pvt. Ltd., New Delhi

5. Human Resource Management (Core Course-V)

Semester	Core Course	Course Title	Credit
II	AECC	Human Resource Management	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

1. Learners of this course will be able to practice human resource management practices in the organization they are placed in.
2. Students can practice various leadership styles and can make a dent in the rank and file of an organization.

HUMAN RESOURCE MANAGEMENT

THEORY

(CREDITS: 04)

Unit - 1

Introduction

Human Resource Management: Concept and Functions, Role, Evolution of HRM, HRM v/s HRD; HR Policies, Emerging Challenges of Human Resource Management; Concept of Human Resource Information System

Unit - 2

Acquisition of Human Resource

Human Resource Planning: Concept and Process; Job Analysis – Job Description and Job Specification; Recruitment: Concept and Sources (Internal and External); Selection: Concept and Process

Unit - 3

Training and Development

Concept and Importance; Identifying Training and Development Needs; Designing Training Programmes; Role- Specific and Competency-Based

Training; Techniques of Evaluating Training Effectiveness; Methods of Training; Concept of Management Development

Unit - 4

Performance Appraisal and Employee Compensation

Performance Appraisal: Nature, objectives and importance; Modern techniques of performance appraisal; potential appraisal; job changes - transfers and promotions; Compensation: concept and policies; job evaluation; methods of wage payments and incentive plans; fringe benefits; performance linked compensation.

Unit – 5 and Unit – 6 (For Internal Assessment)

(Credits: 02)

Concerned Teacher to identify a case study from Unit – 2, Unit – 3 and Unit – 4. Students, at the instructions of the concerned teacher, to opt at least one case and submit an assignment and make a presentation on the case opted.

Suggested Readings:

1. Gary Dessler. A Framework for Human Resource Management. Pearson Education.
2. DeCenzo, D.A. and S.P. Robbins, Personnel/Human Resource Management, Pearson Education.
3. Bohlendar and Snell, Principles of Human Resource Management, Cengage Learning
4. Ivancevich, John M. Human Resource Management. McGraw Hill.
5. Wreather and Davis. Human Resource Management. Pearson Education.
6. Robert L. Mathis and John H. Jackson. Human Resource Management. Cengage Learning.
7. TN Chhabra, Human Resource Management, Dhanpat Rai & Co., Delhi
8. Biswajeet Pattanayak, Human Resource Management, PHI Learning

Note: Latest edition of text books may be used

6. Business Mathematics (Core Course-VI)

Semester	Core Course	Course Title	Credit
III	CC-VI	Business Mathematics	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

1. Learners of this course can add credibility to business decisions with the application of mathematics.
2. The subject can equip the students with various financial operations related to banking and insurance.

BUSINESS MATHEMATICS**THEORY****(CREDITS: 04)****Unit - 1****Matrices and Determinants**

Algebra of matrices. Inverse of a matrix, Matrix Operation – Business Application. Solution of system of linear equations (having unique solution and involving not more than three variables) using matrix inversion Method and Cremer's Rule.

Unit - 2**Calculus I**

Mathematical functions and their types- linear, quadratic, polynomial, exponential, Logarithmic function. Concepts of limit, and continuity of a function. Concept and rules of differentiation, Maxima and Minima involving second or higher order derivatives. Concept of Marginal Analysis, Concept of Elasticity, Applied Maximum and Minimum Problems including effect of Tax on Monopolist's optimum price and quantity, Economic Order Quantity.

Unit - 3**Calculus II**

Partial Differentiation: Partial derivatives up to second order; Euler's theorem on Homogenous functions. Total differentiation, differentiation of implicit functions With the help of total differentiation. Integration: Standard forms. Methods of integration – by substitution, by parts, and by use of partial fractions; Definite integration; Finding areas in simple cases. Application of Integration to marginal analysis. Consumer's and Producer's Surplus, Rate of Sales and the Learning Curve.

Unit - 4

Mathematics of Finance

Rates of interest-nominal, effective and their inter-relationships in different compounding situations. Compounding and discounting of a sum using different types of rates. Types of annuities, like ordinary, due, deferred, continuous, perpetual, and their future and present values using different types of rates of interest. Depreciation of Assets.

Unit – 5 and Unit – 6 (For Internal Assessment)

(Credits: 02)

Tutorials / Assignment / Presentation based.

SUGGESTED READINGS:

1. Mizrahi and Sullivan. Mathematics for Business and Social Sciences. Wiley and Sons.
2. Budnick, P. Applied Mathematics. McGraw Hill Education.
3. R.G.D. Allen, Mathematical Analysis For Economists
4. Ayres, Frank Jr. Schaum's Outlines Series: Theory and Problems of Mathematics of Finance. McGraw Hill Education.
5. Dowling, E.T., Mathematics for Economics, Schaum's Outlines Series. McGraw Hill Education.
6. Wikes, F.M., Mathematics for Business, Finance and Economics. Thomson Learning.
7. Thukral, J.K., Mathematics for Business Studies.
8. Vohra, N.D., Quantitative Techniques in Management. McGraw Hill Education.

9. Soni, R.S., Business Mathematics. Ane Books, New Delhi.
10. Singh J. K., Business Mathematics. Himalaya Publishing House.

Note: Latest edition of text books may be used.

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7. Management Principles & Applications (Core Course-VII)

Semester	Core Course	Course Title	Credit
III	CC-VII	Management Principles & Applications	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

1. Learners of the course can practice the management principles in the organizations there are placed effectively.
2. Issues related to employee motivation and leadership can be practiced in wide organizational setups and cultures.

MANAGEMENT PRINCIPLES & APPLICATIONS**THEORY****(CREDITS: 04)****Unit – 1****Management Thought**

Evolution of the Management Thought, Classical Approach – Taylor, Fayol, Neo-Classical and Human Relations Approaches – Mayo, Hawthorne Experiments, Behavioural Approach, Systems Approach; Contingency Approach – Lawrence & Lorsch, MBO - Peter F. Drucker, Michael Porter – Five-force analysis; Value-Chain, Analysis; ‘Fortune at the Bottom of the Pyramid’ – C.K. Prahalad.

Unit - 2**Planning**

Concept, Process, Importance and Limitations; Types of Plans

Strategic Planning — Definition, Importance and Techniques; Environmental Analysis and Diagnosis (Internal and external environment) –SWOT/TOWS/WOTS-UP, BCG Matrix, Competitor Analysis

*Unit - 3***Organising and Staffing**

Concept and process of organising – An overview, Span of management, Different types of authority (line, staff and functional), Decentralisation, Delegation of authority
Formal and Informal Structure; Principles of Organising; Network Organisation
Structure Staffing: Concept of staffing, staffing process

*Unit - 4***Directing and Controlling**

Motivation: Concept, Importance; Major Motivation theories - Maslow's Need-Hierarchy Theory; Herzberg's Two-factor Theory, Vroom's Expectation Theory.

Leadership: Concept, Importance, Major theories of Leadership (Likert's scale theory, Blake and Mouten's Managerial Grid theory, Transactional leadership, Transformational Leadership, Transforming Leadership).

Communication: Concept, Process and Types; Barriers to Effective Communication

Control: Concept, Process, Limitations, Principles of Effective Control, Major Techniques of control - Ratio Analysis, ROI, Budgetary Control, EVA

Unit – 5 and Unit – 6 (For Internal Assessment)**(Credits: 02)**

Concerned Teacher to identify a case study from Unit – 2, Unit – 3 and Unit – 4.

Students, at the instructions of the concerned teacher, to opt at least one case and submit an assignment and make a presentation on the case opted.

SUGGESTED READINGS:

1. Harold Koontz and Heinz Weihrich, Essentials of Management: An International and Leadership Perspective, McGraw Hill Education.
2. Stephen P Robbins and Madhushree Nanda Agrawal, Fundamentals of Management: Essential Concepts and Applications, Pearson Education.
3. George Terry, Principles of Management, Richard D. Irwin

4. Newman, Summer, and Gilbert, Management, PHI
5. James H. Donnelly, Fundamentals of Management, Pearson Education.
6. B.P. Singh and A.K.Singh, Essentials of Management, Excel Books
7. Griffin, Management Principles and Application, Cengage Learning
8. Robert Kreitner, Management Theory and Application, Cengage Learning
9. TN Chhabra, Management Concepts and Practice, Dhanpat Rai & Co. (Pvt. Ltd.),
New Delhi

Note: Latest edition of text books may be used

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8. E-Commerce (Core Course-VII)

Semester	Core Course	Course Title	Credit
III	CC-VII	E-Commerce	Theory: 02; Practical: 02 Total: 04

Course specific outcomes:

1. This course entails the practical knowledge about business operation in e- marketplace setups.
2. Students can find convenient to manage banking related issues at the end of this course.

E-COMMERCE**THEORY****(CREDITS: 04)****Unit-1**

Introduction: Meaning, Nature, concepts, advantages, disadvantages and reasons for transacting online, types of E- Commerce, E- commerce business models (Introduction, key elements of a business model and categorizing major E- commerce business models), forces behind e- commerce.

Technology used in E- Commerce: The dynamics of World Wide Web and internet (meaning, evolution and features), Designing, building and launching e-commerce website (A systematic approach involving decisions regarding selection of hardware, software, outsourcing Vs in- house development of a website)

Unit- 2

E-payment System: Models and methods of e-payments (Debt Card, Credit Card, Smart Cards, e- money). Digital Signatures (Procedure, working and legal position), payment gateways, online banking, risks involved in e-payment.

On-line Business Transactions

Meaning, purpose, advantages and disadvantages of transacting online, E-commerce applications in various industries like banking, insurance payment of utility bills, online marketing.

Part-II: Practical/Tutorials: Credits: 02

Unit – 3 & 4

1. Development of website.
2. Surfing of different search engines.
3. Learning of HTML/Front Page.
4. Establishing of internet connection.
5. E-shopping.
6. Using of different electronic payments system such as credit card, debit card, electronic fund transfer, internet banking, mobile banking, UPI, NEFT, RTGS.

SUGGESTED READINGS:

1. Kenneth C. Laudon, E- Commerce: Business, Technology, Society, 4th Edition, Pearson
2. Joseph PT. E-Commerce: An Indian Perspective, Prentice hall of India Pvt Ltd. New Delhi.
3. David Whitely (2010), E-commerce, Strategy, technologies and Applications, Tata McGraw Hill Publishing Company Limited, New Delhi.
4. Dr.K.Abirami Devi &Dr. M. Alagammai, E-Commerce, Margham Publications, Chennai
5. Kamalesh N. Agarwala Business on the net, an introduction to the 'Whats' and 'Hows' of e-commerce Macmilan India Limited, New Delhi.

8a. Personal Selling and Salesmanship (SEC-I)

The purpose of this course is to familiarize the students with the fundamentals of personal selling and the selling process; to understand selling as a career option and how to be a successful salesman.

Semester	Course	Course Title	Credit
III	SEC-I	Personal Selling and Salesmanship	Theory: 02; Practical: 02 Total: 04

Course specific outcomes:

1. Learners of this course can be effective salesman with key skills to identify and address the need of a customer.
2. The students can help retain the customer and make sales consistent to enhance the graph of business profitability.

PERSONAL SELLING AND SALESMANSHIP**THEORY****(CREDITS: 02)****Unit -1**

Introduction to Personal Selling: Nature and importance of personal selling, myths of selling, Difference Between Personal Selling, Salesmanship and Sales Management, Characteristics of a good salesman, types of selling situations, types of salespersons, Career opportunities in selling, Measures for making selling an attractive career.

Unit -2

Buying Motives: Concept of motivation, Maslow's theory of need hierarchy; Dynamic nature of motivation; Buying motives and their uses in personal selling.

Selling Process: Prospecting and qualifying; Pre-approach; Approach; Presentation and demonstration; Handling of objections; Closing the sale; Post sales activities.

TUTORIALS;**CREDITS: 02****Unit- 3 & Unit-4**

1. Preparation of:
 - a. Sales Report & Documents
 - b. Sales Manual
 - c. Order Book/Sales Book
 - d. After sale services report
2. Demonstration of product; handling of customer complaints and closing of sale.

SUGGESTED READINGS:

- *Spiro, Stanton, and Rich, Management of the Sales force*, McGraw Hill.
- *Rusell, F. A. Beach and Richard H. Buskirk, Selling: Principles and Practices*, McGraw Hill
- *Futrell, Charles, Sales Management: Behaviour, Practices and Cases*, The Dryden Press.
- *Still, Richard R., Edward W. Cundiff and Norman A. P. Govoni, Sales Management: Decision.*
- *Strategies and Cases*, Prentice Hall of India Ltd., New Delhi.
- *Johnson, Kurtz and Schueing, Sales Management*, McGraw Hill.
- *Kapoor Neeru, Advertising and personal Selling*, Pinnacle, New Delhi.

8b. FINANCIAL ECONOMICS

Semester	Course	Course Title	Credit
III	SEC-I	Financial Economics	Theory: 02; Practical: 02 Total: 04

Course specific outcomes:

- The basic outcome of the course is to expose the students to the nuances of financial markets especially money and capital markets.
- Students of this course can understand and practice the basics capital markets, price determination, demand and supply and how fundamentals tools can be used for long term investing.

FINANCIAL ECONOMICS**THEORY****(CREDITS: 02)****Unit 1****Introduction**

Patterns of corporate financing: Common stock; Debt; Preferences; Basic theory of interest; Discounting and present value; NPV and Internal Rate of Return; Fixed-income securities; bond prices and yields; interest rate sensitivity and duration; Term structure of interest rates; yield curves; spot rates and forward rates; Introduction to Options and Derivatives – forwards and futures; Hedging.

Unit-2**Mean-Variance Portfolio Theory**

Single-period random cash flows; Random asset returns; Portfolio mean and variance; Feasible combinations of mean and variance; Mean-Variance Portfolio analysis: the Markowitz model and the two-fund theorem; Risk-free assets and the one-fund theorem. Capital Asset Pricing Model (CAPM); Capital Market Line; Estimation of beta of an asset and of a portfolio; Security Market Line; use of the CAPM model in investment analysis and as a pricing formula.

Unit-3 &4 (Internal Assessment)

Presentation and submission of report on any of the topics included in Unit-1 and Unit-2.

Note: Each student shall be required to prepare and submit an assignment and give a class presentation on any of the topics as included in Unit-1 to Unit-2. The teacher shall evaluate the student accordingly.

SUGGESTED READINGS:

- *David G. Luenberger, Investment Science, Oxford University Press, USA, 1997.*
- *Hull, John C., Options, Futures and Other Derivatives, Pearson Education, 6th edition, 2005.*
- *Thomas E. Copeland, J. Fred Weston and Kuldeep Shastri, Financial Theory and Corporate Policy, Prentice Hall, 4th edition, 2003.*
- *Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw-Hill, 7th edition, 2002.*
- *Stephen A. Ross, Randolph W. Westerfield and Bradford D. Jordan, Fundamentals of Corporate Finance. McGraw-Hill, 7th edition, 2005.*
- *Burton G. Malkiel, A Random Walk Down Wall Street, W.W. Norton & Company, 2003.*
- *William Sharpe, Gordon Alexander and Jeffery Bailey, Investments, Prentice Hall*

Note: Latest edition of text books may be used.

8c. PERSONAL TAX PLANNING

Semester	Course	Course Title	Credit
III	SEC-I	Financial Economics	Theory: 02; Practical: 02 Total: 04

Course specific objectives

1. Students of this course can understand and practice tax related matters like calculation and filing of income tax.
2. Tax implication of various allowances, deductions, rebates and reliefs can be implemented by the students in real life situations.

PERSONAL TAX PLANNING**THEORY****(CREDITS: 02)****Unit – 1**

Meaning of tax planning, tax avoidance and tax evasion; Objective of tax planning. Basic framework of income tax law; Basic Concepts: Person, Assesse, Previous year, Assessment year, Gross total income, Total Income

Tax planning with reference to residential status, Determination of residential status of an individual, Relationship between residential status and incidence of tax.

Unit – 2**Tax Planning with Reference to Salary Income**

Summarized provisions relating to computation of income under the head salary, Taxation of present benefits: Bonus, Fees and commission, Meaning, Types and tax implications of allowances, Meaning, Types, Valuation and tax implication of perquisites and Allowances, Terminal benefits like gratuity, Leave encashment, Commuted pension.

Unit – 3

Concerned Teacher to identify Case Study based on Syllabi of Unit – 1 and Unit – 2

Assignments based on field survey/Quiz Programs/classroom presentations/seminars/Group Discussions.

SUGGESTED READINGS:

- Singhanian, Vinod K., Singhanian, Kapil and Monica Singhanian, Direct Tax Planning and Management, taxman Publications, Pvt. Ltd., New Delhi.
- Ahuja, Girish and Gupta, Ravi, Corporate Tax Planning and Management, Bharat Law House, Delhi.
- Goyal, S. P., Direct Tax Planning, SahityaBhawan Publication, Agra.
- Acharya, Shuklendra and Gurha, M. G., Tax Planning under Direct Taxes, Modern Law Publication, Allahabad.

Note: *Latest edition of text books may be used.*

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8d. ELEMENTARY COMPUTER APPLICATIONS

Semester	Course	Course Title	Credit
III	SEC-I	Elementary Computer applications	Theory: 02; Practical: 02 Total: 04

Course specific objectives

1. Learners can create documents in the MS word and produce seamless DTP skills.
2. Specific mathematical/statistical operations learnt from Excel can be useful to work on large database in the organizations.

ELEMENTARY COMPUTER APPLICATIONS**THEORY****(CREDITS: 02)****Part I: Theory: 30 Marks Unit-1**

Word Processing : Introduction to word Processing, Word processing concepts, Use of Templates, Working with word document: Editing text, Find and replace text, Formatting, spell check, Autocorrect, Auto text; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, Tables: Inserting, filling and formatting a table; Inserting Pictures and Video; Mail Merge: including linking with Database; Printing documents.

Unit-2

Spreadsheet and its Business:, Managing worksheets; Formatting, Entering data, Editing, and Printing a worksheet; Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs.

Generally used Spreadsheet functions: Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Database, and Text functions.

Part II: Practical/Tutorials: 02 Credits

1. *Creation of word document.*

2. Usage of different templates.
3. Using of mail merge option.
4. Formula usage in MS Excel.
5. Preparation of charts; bar charts, pie charts; line charts.

SUGGESTED READINGS:

- PK Sinha, Computer Fundamentals, BPB Publications, Delhi.
- Lallit Mali, Micro soft Office- 2016, Notion Press, Delhi.
- Bittu Kumar, Mastering Ms Office, BPB Publications, Delhi.
- G. Manjunath, Computer Basics, Vasan's Publications, Chennai.
- Ritu Arora, Advance Excel 2016, Training Guide, BPB Publications, Delhi.

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9. COST ACCOUNTING

Semester	Core Course	Course Title	Credit
IV	CC-VIII	Cost Accounting	Theory: 04; Practical: 02 Total: 06

Course specific objectives

1. The students can demonstrably help the organization create cost sheet, prepare tender quotations and ascertain specific cost items.
2. Process and service costing are important aspects of a cost accounting and are students possessing these skills are sought after by the corporate houses.

COST ACCOUNTING**THEORY****(CREDITS: 04)****Unit – 1****Introduction**

- (a) Meaning, objectives and advantages of cost accounting; Difference between cost accounting and financial accounting;
- (b) Cost concepts and cost, installation of a costing system; Elements of Cost; Role of a cost accountant in an organization.

Unit – 2**Elements of Cost: Material and Labour**

- a. Materials:** Material/inventory control techniques. Accounting and control of purchases, storage and issue of materials. Methods of pricing of materials issues — FIFO, LIFO, Simple Average, Weighted Average, Replacement, Standard Cost. Treatment of Material Losses.
- b. Labour:** Accounting and Control of labour cost. Time keeping and time booking. Concept and treatment of idle time, over time, labour turnover and fringe benefits.

- c. **Overheads:** Classification, allocation, apportionment and absorption of overheads; Under and over-absorption.

Unit – 3

Methods of Costing

Unit costing, Job costing, Contract costing

Unit – 4

Process costing (process losses, valuation of work-in-progress, joint and by-products), Service costing (only transport); Reconciliation of cost and financial accounts.

Unit – 5 and Unit – 6 (For Internal Assessment)

(02 Credits)

Collection of Cost Data and preparation of Comparative Cost Sheet of two manufacturing units of a industry to be identified by concerned teacher. While comparing the data so collected each student will do the analysis stage-wise

(Prime Cost, Works Cost, Cost of Production, Cost of Goods Sold, Cost of Sales and Profits) of select manufacturing units of an industry and offering suggestions and submit the report to the concerned teach for evaluation.

SUGGESTED READING:

1. Charles T. Horngren, Srikant M. Datar, Madhav V. Rajan , Cost Accounting: A Managerial Emphasis, Pearson Education.
2. JawaharLal, Cost Accounting. McGraw Hill Education
3. Nigam, B.M. Lall and I.C. Jain. Cost Accounting: Principles and Practice. PHI Learning
4. Rajiv Goel, Cost Accounting. International Book House
5. Singh, Surender. Cost Accounting, Scholar Tech Press, New Delhi.
6. Jain, S.P. and K.L. Narang. Cost Accounting: Principles and Methods. Kalyani

Publishers Arora, M.N.

7. Cost Accounting - Principles and Practice. Vikas Publishing House, New Delhi.
Maheshwari, S.N. and S.N. Mittal.
8. Cost Accounting: Theory and Problems. Shri Mahavir Book Depot, New Delhi.

Note: Latest edition of text books may be used

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10. GOODS & SERVICES TAX (GST)

Semester	Course	Course Title	Credit
IV	SEC-IX	GOODS & SERVICES TAX (GST)	Theory: 04; Practical: 02 Total: 06

Course specific objectives:

1. The students can vividly address the corporate needs in the new tax regime.
2. The students will be equipped with the administration, implementation and transition of new regime for hassle free absorption in the corporate houses.

GOODS & SERVICES TAX (GST)**THEORY****(CREDITS: 04)****Unit - 1****Introduction**

Defects of Indian Indirect Tax System; Concept of VAT: Meaning, Variants & Methods, Rationale for GST, Structure of GST (SGST, CGST, UTGST & IGST), State Compensation Mechanism, Registration. Difference between GST and VAT

Unit - 2**Administration, Levy & Collection of GST**

GST: Structure, Council and Powers; GST Network; Objectives, Registration for GST; Taxable Event: "Supply" of Goods & Services, Place of Supply: Within state, Interstate, Import & Export, Time of supply, Valuation for GST- Valuation rules, taxability of reimbursement of expenses., Exemption from GST: Small supplies & Composition Scheme, Classification of Goods & Services: Composite & Mixed Supplies.

Unit – 3**Input Tax Credit**

Concept, Computation of GST Liability; Order of Adjustment of Input tax credit against output CGST, SGST, IGST. Eligibility & Ineligibility for Input Tax Credit, Tax Credit in respect of Capital Goods, Recovery of Excess Tax Credit, Availability of Tax Credit in special circumstances, Transfer of Input Credit (Input Service Distribution)

Unit - 4**Procedures & Special Provisions**

Tax Invoice, Credit & Debit Notes, Returns, Audit in GST, Assessment: Self Assessment, Best Judgment, Offences, Penalties and Appeals, Impact of GST on Wholesale and Retail Business, Treatment of Imports and Exports, GST

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Unit – 5 and Unit – 6 (For Internal Assessment**(02 Credits)**

Concerned Teacher to elaborate e-filing of various GST returns using hypothetical figures.

Each student, at the instructions of the concerned teacher, to submit an assignment on various types of returns and make a presentation on the same.

SUGGESTED READINGS:

- The Central Goods and Services Tax, 2017
- The Integrated Goods and Services Tax, 2017
- The Union Territory Goods and Services Tax, 2017
- The Goods and Services Tax (Compensation to States), 2017
- The Constitution (One hundred and First Amendment) Act, 2016
- Gupta, S.S., GST- How to meet your obligations (April 2017), Taxmann Publications
- Halakandhi, S., G.S.T (Vastu and Sevakar) (Hindi) Vol-1, 2017
- Gupta, S.S., Vastu and Sevakar, Taxmann Publications, 2017
- Vastu and Sevakar Vidhan by Government of India

Note: Latest edition of text book may be used.

Journals

- *Income Tax Reports*. Company Law Institute of India Pvt. Ltd., Chennai.
- *Taxman*. Taxman Allied Services Pvt. Ltd., New Delhi.
- *Current Tax Reporter*. Current Tax Reporter, Jodhpur.

Software

1. Vinod Kumar Singhania, *e-filing of Income Tax Returns and Computation of Tax*, Taxmann Publication Pvt. Ltd, New Delhi. Latest version
2. 'Excel Utility' available at *income tax India e-filing.gov.in*

11. COMPUTER APPLICATIONS IN BUSINESS

Semester	Core Course	Course Title	Credit
IV	CC-X	COMPUTER APPLICATIONS IN BUSINESS	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives

1. To provide students computer skills and knowledge to enhance usefulness of information technology tools for business operations.
2. Help make students independent to transverse through IT tools and techniques to create ecosystems for gainful employment.

THEORY

(CREDITS: 04)

Unit -1

Basic Concepts

Characteristics of a Computer; Advantages of Computers; Limitation of Computers; Types of Computers; Applications of computers, Computers in Business, Facilities Available in Computerised System, Indian Computing Environment, Office Automation, Components of a Computer System, Hardware Components of Micro Computer, Classification of Software, Generation of Computers, Computer Languages, Language Translators, Hardware, Firmware, Live-ware; Software; System Software: Operating system, Translators, interpreter, compiler; Overview of operating system, function of operating system; Application software: General Purpose Packaged Software and tailor-made software.

Unit - 2

Internet

Meaning of Internet; Growth of internet, Owner of Internet, Anatomy of Internet, Net Etiquette; World Wide Web; Internet Protocols, Usage of Internet to society, Search Engines, Data Communication and Networking: Introduction, Data Communication, Multiplexing, Components of Computer Network, Local Area Network (LAN), Uses of a Network, Topology, Networking Cables.

Unit – 3

PC-Software Packages

Introduction, Disk Operating System (DOS), Windows, Word Processor, Starting Word 2010. Editing Documents in Word 2010, Formatting Documents, Clip Gallery, Page Setting, Application of a Word Processor in Corporate Sector, Database Management Packages, Starting Access 2010, Working with Tables, Working with Forms, Working with Reports, Spreadsheet Packages, Starting Excel 2010, Working with Documents, Data Entry and Editing, Types of Cell Entries, Commonly Used Functions, Absolute and Relative Cell Referencing, Number Format, Charting with Excel, Macros, Importing and Exporting Files, Printing a Workbook, Application of a Spreadsheet in Corporate Sector.

Unit - 4

Data Processing

Introduction, Modes of Data Processing, Basic of Data Processing, Data Hierarchy, Data Structure, Application Portfolio Development, Management of Data Processing Systems in Business Organizations, Computerised Financial Accounting System (FAS), Computerised Inventory Control System, Computerised Payroll System, Computerised Invoicing System.

Unit – 5 and Unit – 6 (For Internal Assessment)

(Credits: 02)

1. **Use of word processing package/ List some key features supported by modern word processing packages.**
2. **Cut and paste and copy and paste facilities in Ms-word**
3. **Use of Style Sheet in Ms-word**
4. **Use of font size and style in Ms-word**
5. **Use of grammar and Spell Checker in Ms-Word**
6. **Word Wrap Features**
7. **Use of Work book and Worksheet in Ms-Excel**
8. **Concept of cell in Ms-Excel**
9. **Use of Formulas in Ms-Excel**

Each student is required to demonstrate the use of above and the concerned teacher shall evaluate the students individually.

12. PRINCIPLES OF MARKETING

Semester	Course	Course Title	Credit
V	Core-XI	PRINCIPLES OF MARKETING	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives

1. The objective of this course is to provide to students basic knowledge of concepts, principles, tools and techniques of marketing and their implementation in the real life scenario.
2. Students can translate the skills learnt in the course in different trades of life and can visually appeal the target customers.

PRINCIPLES OF MARKETING

THEORY

(CREDITS: 04)

Unit – 1

Marketing: Nature, Scope and Importance; Marketing Concepts; Selling v/s Marketing; Concept of Marketing mix.

Consumer Behaviour: Nature and Importance, Consumer buying decision process; Factors influencing consumer buying behaviour.

Market segmentation: Concept, Importance and Bases.

Unit – 2

Product: Concept and importance, Product classifications; Concept of product mix; Branding, packaging and labeling; Product life-cycle; New Product Development Process;

Pricing: Significance; Factors affecting price of a product; Pricing policies and strategies.

Unit – 3

Distribution Channels: Meaning and Importance; Types of distribution channels; Factors affecting choice of distribution channel; Wholesaling and retailing; Types of Retailers;

Unit - 4

Promotion: Nature and importance of promotion; Communication process; Types of promotion: advertising, personal selling, public relations & sales promotion; Factors affecting promotion mix decisions.

Unit – 5 and Unit – 6 (For Internal Assessment)

(02 Credits)

Concerned Teacher to identify a case study from Unit – 1, Unit – 3 and Unit – 4.

Each student, at the instructions of the concerned teacher, will submit an assignment and deliver a presentation on the case assigned to him/her.

SUGGESTED READINGS:

- Kotler, Philip, Gary Armstrong, Prafulla Agnihotri and Ehsanul Haque. Principles of Marketing. 13th edition. Pearson Education.
- Michael, J. Etzel, Bruce J. Walker, William J Stanton and Ajay Pandit. Marketing: Concepts and Cases. (Special Indian Edition)., McGraw Hill Education
- William D. Perreault, and McCarthy, E. Jerome., Basic Marketing. Pearson Education.
- Majaro, Simon. The Essence of Marketing. Pearson Education, New Delhi.
- The Consumer Protection Act 1986.
- Iacobucci and Kapoor, Marketing Management: A South Asian Perspective. Cengage Learning.
- Dhruv Grewal and Michael Levy, Marketing, McGraw Hill Education.
- Chhabra, T.N., and S. K. Grover. Marketing Management. Fourth Edition. Dhanpat Rai & Company.
- Neeru Kapoor, Principles of Marketing, PHI Learning
- RajendraMaheshwari, Principles of Marketing, International Book House

13.FUNDAMENTALS OF FINANCIAL MANAGEMENT

Semester	Course	Course Title	Credit
V	Core-XII	FUNDAMENTALS OF FINANCIAL MANAGEMENT	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives

1. The students can practice four important functions of financial management and relate them with the financial structure of various organizations.
2. Students can be assets to organizations dealing with compounding and discounting of money.

FUNDAMENTALS OF FINANCIAL MANAGEMENT**THEORY****(CREDITS: 04)****Unit - 1****Introduction**

Nature, scope and objective of Financial Management, Time value of money, Concept of Present Value and Future Value (Lumpsum and Annuity); Risk and Return Analysis: Computation of Beta and Standard Deviation (Individual Securities)

Unit - 2**Capital Budgeting**

The Capital Budgeting Process, Techniques: Payback Period Method, Accounting Rate of Return, Net Present Value (NPV), Net Terminal Value, Internal Rate of Return (IRR), Profitability Index

Unit - 3**Cost of Capital**

Cost of Capital and Financing Decision: Sources of long-term financing Estimation of Cost of Capital. Methods for Calculating cost of equity capital, Cost of Retained Earnings, Cost of Debt and Cost of Preference Capital, Weighted Average cost of capital (WACC); Capital Structure: Concept and Determinants of Capital Structure.

Unit - 4**Dividend and Working Capital Decisions**

Concept of Dividend: Determinants and Types

Concepts of Working Capital, Factors affecting Working Capital requirements

Unit – 5 and Unit – 6 (For Internal Assessment)**(Credits: 02)**

Concerned Teacher to identify any particular stock of a company and show practical demonstration of risk-return analysis. Based on the practical demonstration by the concerned teacher, each students shall submit an assignment and make presentation thereof.

SUGGESTED READINGS:

- James C. Van Horne and Sanjay Dhamija, Financial Management and Policy, Pearson Education.
- Levy H. and M. Sarnat . Principles of Financial Management. Pearson Education
- Brigham and Houston, Fundamentals of Financial Management, Cengage Learning
- Khan and Jain. Basic Financial Management, McGraw Hill Education.
- Prasanna Chandra, Fundamentals of Financial Management. McGraw Hill Education.
- Singh, J.K. Financial Management- text and Problems. Dhanpat Rai and Company, Delhi.
- Rustagi, R.P. Fundamentals of Financial Management. Taxmann Publication Pvt. Ltd.
- Singh, Surender and Kaur, Rajeev. Fundamentals of Financial Management. Mayur Paperback, New Delhi.
- Pandey, I.M. Financial Management. Vikas Publications.
- Bhabatosh Banerjee, Fundamentals of Financial Management, PHI Learning

14a.BANKING AND INSURANCE

Semester	Course	Course Title	Credit
V	DSE – 1	BANKING AND INSURANCE	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives

1. The core skills learned can be implemented in the BFSI sectors by the students to act as an important corporate member to introduce innovation.
2. To impart knowledge about the basic principles of the banking and insurance and practice the nuances of banking in the real life scenario.

BANKING AND INSURANCE**THEORY****(CREDITS: 04)****Unit – 1****Introduction:**

Origin of banking: definition, banker and customer relationship, General and special types of customers, Origin and growth of commercial banks in India. Financial Services offered by banks, changing role of commercial banks, types of banks.

Unit – 2**Bank Deposits and Advances**

Deposits: Concept, significance and classification (time and demand deposits). Advances: Concept, significance and classification, principles of sound lending.

Unit – 3**Insurance**

Concept of risk, Types of business risk, Assessment and transfer, Basic principles of insurance: utmost good faith, Indemnity, Economic function, Proximate cause, Subrogation and contribution, Types of insurance: Life and Non- life, Re-insurance.

Unit – 4

Insurance Regulatory and Development Authority of India, Organizational structure and

powers, Role and functions, Emerging dimensions of Insurance.

Unit – 5 and Unit – 6 (For Internal Assessment)

(Credits: 02)

Demonstration of E-Banking

Fund transfer using Internet banking, Debit cards, Credit cards, mPay, NEFT, RTGS.
(Invitation of bank official for practical demonstration).

Evaluation: Viva voce by internal Team(Concerned teacher and a senior faculty to be nominated by the concerned college principal)

SUGGESTED READINGS:

- Gupta Anil, Mir M Amin and Amin Umar., Banking and Insurance, Himalaya Publishing House
- Agarwal, O.P., Banking and Insurance, Himalaya Publishing House
- Satyadevi, C., Financial Services Banking and Insurance, S.Chand
- Suneja, H.R., Practical and Law of Banking, Himalya Publishing House
- Chabra, T.N., Elements of Banking Law, Dhanpat Rai and Sons
- Arthur, C. and C. William Jr., Risk Management and Insurance, McGraw Hill
- Saxena, G.S; Legal Aspects of Banking Operations, Sultan Chand and Sons
- Varshney, P.N., Banking Law and Practice, Sultan Chand and Sons
- Jyotsna Sethi and Nishwan Bhatia, Elements of Banking and Insurance, PHI Learning

Note: Latest edition of text books may be used.

14b.COMPUTERIZED ACCOUNTING SYSTEM

Semester	Course	Course Title	Credit
V	DSE – 1	Computerized accounting system	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives:

1. This course will enhance the skills needed for computerized accounting system and to enable the students to develop simple accounting applications.
2. Using tally ERP the students can master the fastest accounting processes without much effort.

COMPUTERIZED ACCOUNTING SYSTEM**THEORY****(CREDITS: 04)****Unit - 1**

Basics: Review basic spreadsheet concepts, Review and apply basic accounting concepts, Prepare spreadsheets and charts for financial statements, financial analyses, and supporting schedules, including a complete accounting worksheet and financial statement project. Learn appropriate use of spreadsheet formulas and functions as required, such as specialized functions, databases, pivot tables/charts and what if analysis.

Unit - 2**MAINTAINING CHART OF ACCOUNTS IN ERP:**

Introduction-Getting Started with ERP - Mouse/Keyboard Conventions-Company Creation-Shuta Company-Select a Company-Alter Company Details-Company Features and Configurations-F11: Company Features-F12: Configuration-Chart of Accounts-Ledger-Group-Ledger Creation-Single Ledger Creation-Multi Ledger Creation-Altering and Displaying Ledgers-Group Creation-Single Group Creation-Multiple Group Creation-Displaying Groups and Ledgers-Displaying Groups-Display of Ledgers-Deletion of Groups and Ledgers – P2P procure to page.

Unit - 3**MAINTAINING STOCK KEEPING UNITS (SKU):**

Introduction-Inventory Masters in ERP - Creating Inventory Masters-Creation of Stock Group-Creation of Units of Measure-Creation of Stock Item-Creation of Godown-Defining of Stock Opening Balance in ERP Stock Category-Reports.

Unit - 4**RECORDING DAY-TO-DAY TRANSACTIONS IN ERP:**

Introduction-Business Transactions-Source Document for Voucher-Recording Transactions in ERP - Accounting Vouchers-Receipt Voucher (F6)- Contra Voucher (F4)-Payment Voucher (F5)-Purchase Voucher (F9)-Sales Voucher (F8)-Debit Note Voucher-Credit Note (Ctrl+F8)-Journal Voucher (F7).

Unit – 5 and Unit – 6 (For Internal Assessment)***(Credits: 02)***

Using of Tally Software to prepare the following of a notional company:-

1. Journal and ledger.
2. Subsidiary books.
3. Income statement.
4. Balance sheet

Each student is required to demonstrate the use of Tally Software of the above and the concerned teacher shall evaluate the students individually.

14c.ADVERTISING

Semester	Course	Course Title	Credit
V	DSE – 1	ADVERTISING	Theory: 04; Practical: 02 Total: 06

Course Specific Objective:

1. The objective of this course is to familiarize the students with the basic concepts, tools and techniques of advertising used in marketing and how such skills can be translated in real life scenario.
2. The course will enhance the marketing abilities of the students to become independent from different channels.

ADVERTISING**THEORY****(CREDITS: 04)****Unit - 1****Introduction**

Advertising: Meaning, Nature and Objectives; DAGMAR approach; Pros & Cons of Advertising; Types of advertising; Advertising as a communication process; Advertising as a marketing tool; Audience analysis; Setting of Advertising Budget: Determinants and Major Methods.

Unit - 2**Media Decisions**

Media: Role, Types – their characteristics, merits and demerits; Media selection, Factors influencing media choice; Media scheduling; Internet as an advertising media,

Unit - 3**Message Development and Advertising Agency**

Advertising Creativity, Advertising appeals; Advertising copy, its qualities and elements, Preparing ads for different media. Advertising Agency: Role, Types and Selection.

Unit - 4**Evaluation and Recent Trends**

Evaluating communication and sales effects; Pre- and Post-testing techniques. Social, ethical and legal aspects of advertising in India. Recent developments and issues in advertising.

Unit – 5 and Unit – 6 (For Internal Assessment)**(Credits: 02)**

Case Studies of different companies on various aspects on advertising – advertising strategies, ad wars, morality Vs money etc.

Presentation and written assignment of the case so studied.

Note: Each student shall be required to prepare and submit an assignment and give a class presentation of the case so assigned by the teacher. The teacher shall evaluate the student accordingly.

SUGGESTED READINGS:

- George E Belch, Michael A Belch, KeyoorPurani, Advertising and Promotion : An Integrated Marketing Communications Perspective (SIE), McGraw Hill Education.
- S. Wats Dunn, and Arnold M. Barban. Advertising: Its Role in Marketing. Dryden Press.
- Burnett, Wells, and Moriatty. Advertising: Principles and Practice. 5th ed. Prentice Hall of India, New Delhi.
- Batra, Myers and Aakers. Advertising Management. PHI Learning.
- Terence A. Shimp. Advertising and Promotion: An IMC Approach. Cengage Learning.
- Sharma, Kavita. Advertising: Planning and Decision Making, Taxmann Publications.
- JaishreeJethwaney and Shruti Jain, Advertising Management, Oxford University Press, 2012
- Chunawala and Sethia, Advertising, Himalaya Publishing House.
- Ruchi Gupta, Advertising, S. Chand & Co.
- O’Guinn, Advertising and Promotion: An Integrated Brand Approach, Cengage Learning.

15a.CORPORATE TAX PLANNING

Semester	Course	Course Title	Credit
V	DSE – 2	CORPORATE TAX PLANNING	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives:

1. The course will help develop knowledge of corporate tax planning and its impact on decision-making.
2. Students can become tax consultants at the local level and can address the critical tax issues of the small and medium corporate houses.

CORPORATE TAX PLANNING**THEORY****(CREDITS: 04)****Unit - 1****Introduction**

Tax planning, tax management, tax evasion, tax avoidance; corporate tax in India; Residential status of companies and tax incidence; Tax liability and minimum alternate tax; Tax on distributed profits

Unit - 2**Tax Planning-1**

Tax planning with reference to setting up of a new business: Locational aspect, nature of business, form of organization; Tax planning with reference to financial management decision - Capital structure, dividend including deemed dividend and bonus shares

Unit - 3**Tax Planning-2**

Tax planning with reference to specific management decisions - Make or buy; own or lease; repair or replace. Tax planning with reference to employees' remuneration. Tax planning with reference to receipt of insurance compensation. Tax planning with reference to distribution of assets at the time of liquidation.

Unit - 4**Special provisions relating to non-residents**

Double taxation relief; Provisions regulating transfer pricing; Advance rulings; Advance pricing agreement

Unit – 5 and Unit – 6 (For Internal Assessment)**(Credits: 02)**

Concerned Teacher to identify Case Study based on Syllabi of Unit – 1 to Unit – 4 and presentation thereof

Assignments based on field survey/Quiz Programs/ classroom presentations/seminars/Group Discussions.

SUGGESTED READINGS:

- Vinod K. Singhania and Monica Singhania, Corporate Tax Planning. Taxmann Publications Pvt. Ltd., New Delhi.
- Girish Ahuja and Ravi Gupta. Corporate Tax Planning and Management. Bharat Law House, Delhi.
- Shuklendra Acharya and M.G. Gurha. Tax Planning under Direct Taxes. Modern Law Publication, Allahabad.
- D.P. Mittal, Law of Transfer Pricing. Taxmann Publications Pvt. Ltd., New Delhi.
- IAS – 12 and AS – 22.
- T.P. Ghosh, IFRS, Taxmann Publications Pvt. Ltd. New Delhi.

Journals:

- Income Tax Reports, Company Law Institute of India Pvt. Ltd., Chennai.
- Taxman, Taxman Allied Services Pvt. Ltd., New Delhi.
- Current Tax Reporter, Current Tax Reporter, Jodhpur.

Note: Latest edition of text books may be used

15b.MANAGEMENT ACCOUNTING

Semester	Course	Course Title	Credit
V	DSE – 2	MANAGEMENT ACCOUNTING	Theory: 04; Practical: 02 Total: 06

Course Specific Outcomes:

1. The course will impart the students, knowledge about the use of financial, cost and other data for the purpose of managerial planning, control and decision making.
2. Students can learn how management accounting system is implemented in the organization as a vehicle for various decision making.

MANAGEMENT ACCOUNTING**THEORY****(CREDITS: 04)****Unit – 1**

Introduction(6 Lectures) Meaning, Objectives, Nature and Scope of management accounting, Difference between cost accounting and management accounting, Cost control and Cost reduction, Cost management.

Unit - 2 Budgetary Control

Budgeting and Budgetary Control: Concept of budget, budgeting and budgetary control, objectives, merits, and limitations. Budget administration. Functional budgets. Fixed and flexible budgets. Zero base budgeting. Programme and performance budgeting.

Unit - 3 Standard Costing

Standard Costing and Variance Analysis: Meaning of standard cost and standard costing, advantages, limitations and applications. Variance Analysis – material, labour, overheads and sales variances. Disposition of Variances, Control Ratios.

Unit - Marginal Costing

Absorption versus Variable Costing: Distinctive features and income determination. Cost- Volume-Profit Analysis, Profit/Volume ratio. Break-even analysis-algebraic and graphic methods. Angle of incidence, margin of safety, Key factor,

Decision Making

Decision making situations – profitable product mix, Acceptance or Rejection of special/export offers, Make or buy, Addition or Elimination of a product line, sell or process further, operate or shut down.

Unit – 5 and Unit – 6 (For Internal Assessment)**(Credits: 02)**

Preparation of budget on any functional area of an organization viz: Production, Sales, Cash etc.

Submission of report and Presentation of the budget in the class room by each individual student. The concerned teacher shall evaluate each student individually based on the performance.

SUGGESTED READINGS:

- Charles T. Horngren, Gary L. Sundem, Dave Burgstahler, Jeff O. Schatzberg. Introduction to Management Accounting, Pearson Education.
- Anthony A. Atkinson, Robert S. Kaplan, Ella Mae Matsumura, S. Mark Young. Management Accounting. Dorling Kindersley(India) Pvt. Ltd.
- Ronald W. Hilton and David E. Platt. Managerial Accounting: Creating Value in a Global Business Environment, Mc Graw Hill Education.
- Singh, Surender. Management Accounting, Scholar Tech Press, New Delhi.
- Goel, Rajiv, Management Accounting. International Book House,
- Arora, M.N. Management Accounting. Vikas Publishing House, New Delhi.
- Maheshwari, S.N. and S.N. Mittal. Management Accounting. Shree Mahavir Book Depot, New Delhi.
- Singh, S. K. and Gupta Lovleen. Management Accounting – Theory and Practice. Pinnacle Publishing House.
- Khan, M.Y. and Jain, P.K. Management Accounting. McGraw Hill Education
- H.V. Jhamb, Fundamentals of Management Accounting, Ane Books Pvt. Ltd.

15c.FINANCIAL MARKETS

Semester	Course	Course Title	Credit
V	DSE – 2	FINANCIAL MARKETS	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives:

1. The students of this course will understand and practice the basic knowledge of financial markets and institutions and familiarize themselves with major financial services in India.
2. The students can understand and practice the functioning of stock markets with the understanding of primary and secondary markets.

FINANCIAL MARKETS**THEORY****(CREDITS: 04)****Unit - 1****Introduction**

Financial System and its Components – financial markets and institutions; Financial intermediation; Flow of funds matrix; Financial system and economic development; An overview of Indian financial system

Unit - 2**Financial Markets**

Money market – functions, organisation and instruments. Role of central bank in money market; Indian money market – An overview, Capital Markets – functions, organisation and instruments. Indian debt market; Indian equity market – primary and secondary markets; Role of stock exchanges in India

Unit - 3**Financial Institutions**

Commercial banking – introduction, its role in project finance and working capital finance; Development Financial institutions (DFIs) – An overview and role in Indian

economy; Life and non-life insurance companies in India; Mutual Funds – Introduction and their role in capital market development. Non-banking financial companies (NBFCs).

Unit - 4

Financial Services

Overview of financial services industry: Merchant banking – pre and post issue management, underwriting. Regulatory framework relating to merchant banking in India

Unit – 5 and Unit – 6 (For Internal Assessment) (Credits: 02)

Presentation and Submission of report on the basis of Case Study of leading Financial Market Scams (E.g., Harshad Mehta, Ketan Parekh, Satyam scam or any foreign case of Financial or banking scam etc.).

Evaluation: Students shall be evaluated on the basis of report of the selected case.

SUGGESTED READINGS:

- L M Bhole, and Jitendra Mahakud. Financial Institution and Markets, McGraw-Hill Education
- Khan, M.Y. Indian Financial System, McGraw-Hill Education.
- Dhanekar. Pricing of Securities. New Delhi: Bharat Publishing House.
- Prasanna, Chandra. Financial Management: Theory and Practice. McGraw-Hill Education.
- Clifford Gomez, Financial Markets, Institutions and Financial Services, PHI Learning
- MY Khan and PK Jain. Financial Services. McGraw Hill Education.
- Singh, J.K. Venture Capital Financing in India. Dhanpat Rai and Company, New Delhi.
- Annual Reports of Major Financial Institutions in India.

Note: Latest edition of text books may be used.

16.AUDITING & CORPORATE GOVERNANCE

Semester	Course	Course Title	Credit
VI	Core	AUDITING & CORPORATE GOVERNANCE	Theory: 04; Practical: 02 Total: 06

Course Specific outcomes:

1. The course will help students provide knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards
2. Students can learn and practice the principles of Corporate Governance and Corporate Social Responsibility in the organizational setting.

AUDITING & CORPORATE GOVERNANCE**THEORY****(CREDITS: 04)****Unit – 1****Auditing**

Meaning, Objectives, Auditing Standards; Classification of Audit; Audit Planning, Internal Control – Internal Check and Internal Audit; Audit Procedure – Vouching and verification of Assets & Liabilities.

Unit - 2**Audit of Companies**

Audit of Limited Companies: Company Auditor- Qualifications and disqualifications, Appointment, Rotation, Removal, Remuneration, Rights and Duties; Auditor's Report- Contents and Types. Liabilities of Statutory Auditors under the Companies Act 2013

Unit - 3**Special Areas of Audit**

Features of Cost audit, Tax audit, and Management audit;

Recent Trends in Auditing: Basic considerations of audit in EDP Environment;

Computer aided audit techniques and tools

Unit - 4**Corporate Governance and CSR**

Conceptual framework of Corporate Governance: Theories & Models, Broad Committees; Corporate Governance Reforms; Codes & Standards on Corporate Governance;

Concept of CSR; Strategic Planning and Corporate Social Responsibility; CSR and Business Ethics, CSR and Corporate Governance; CSR provisions under the Companies Act 2013; CSR Committee; Standards on CSR

Unit – 5 and Unit – 6 (For Internal Assessment)**(Credits: 02)**

I. The students in groups (each group comprising of maximum of three students) shall be required to design the audit program/chalk out the internal check system of selected commercial/industrial concerns.

OR

II. Study of major Corporate Scandals in India and Abroad. Students, at the instructions of the concerned teacher, to opt at least one case and submit an assignment and make a presentation on the case opted.

SUGGESTED READINGS:

- Ravinder Kumar and Virender Sharma, Auditing Principles and Practice, PHI Learning.
- ArunaJha, Auditing. Taxmann Publication.
- K. Singh, and Gupta Lovleen. Auditing Theory and Practice. Galgotia Publishing Company.
- Anil Kumar, Corporate Governance: Theory and Practice, Indian Book House, New Delhi
- MC Kuchhal, Modern Indian Company Law, Shri Mahaveer Book Depot. (Publishers). (Relevant Chapters).
- KV Bhanumurthy and Usha Krishna, Politics, Ethics and Social Responsibility of Business, Pearson Education.

- Erik Banks, Corporate Governance: Financial Responsibility, Controls and Ethics, Palgrave Macmillan.
- N Balasubramanian, A Casebook on Corporate Governance and Stewardship, McGraw Hill Education.
- B.N. Ghosh, Business Ethics and Corporate Governance, McGraw Hill Education.
- S K Mandal, Ethics in Business and Corporate Governance, McGraw Hill Education.
- Bob Tricker, Corporate Governance-Principles, Policies, and Practice (Indian Edition), Oxford University Press.
- Christine Mallin, Corporate Governance (Indian Edition), Oxford University Press.
- Relevant Publications of ICAI on Auditing (CARO).
- Sharma, J.P., Corporate Governance, Business Ethics, and CSR, Ane Books Pvt Ltd, New Delhi.

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17.INCOME TAX LAW & PRACTICE

Semester	Course	Course Title	Credit
VI	Core	INCOME TAX LAW & PRACTICE	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives:

1. The knowledge gained in this course will equip students with application of principles and provisions of Income-tax Act, 1961 and the relevant Rules.
2. Students can help tax payers in e-filing and can therefore earn a livelihood out of it.

INCOME TAX LAW & PRACTICE**THEORY****(CREDITS: 04)****Unit – 1****Introduction**

Basic concepts: Income, agricultural income, person, assessee, assessment year, previous year, gross total income, total income, maximum marginal rate of tax; Permanent Account Number (PAN)

Residential status; Scope of total income on the basis of residential status Exempted income under section 10

Unit – 2**Computation of Income under different heads-1**

Income from Salaries; Income from house property

Unit – 3**Computation of Income under different heads-2**

Profits and gains of business or profession; Capital gains; Income from other sources

Unit – 4**Computation of Total Income and Tax Liability**

Income of other persons included in assessee's total income; Aggregation of income and set-off and carry forward of losses; Deductions from gross total income; Rebates and reliefs

Computation of total income of individuals and firms; Tax liability of an individual and a firm; Five leading cases decided by the Supreme Court

Unit – 5 and Unit – 6 (For Internal Assessment)***(Credits: 02)***

There shall be a practical examination on E-filing of Income Tax Returns using a software utility tool. The student is required to fill appropriate Form and generate the XML file for submission to the concerned teacher for evaluation.

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18a.FUNDAMENTALS OF INVESTMENT

Semester	Course	Course Title	Credit
V	DSE-III	FUNDAMENTALS OF INVESTMENT	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives:

1. The Course will familiarize the students with different investment alternatives, introduce them to the framework of their analysis and valuation and highlight the role of investor protection.
2. The students can venture in stock market and can thus earn a decent livelihood.

FUNDAMENTALS OF INVESTMENT**THEORY****(CREDITS:04)****Unit - 1****Introduction**

Investment: Concept, Features, Importance, Objectives and Types, Investment Decision Process, Indian Securities Market: Market Participants and Trading of Securities, Security Market Indices, Sources of Financial Information, Concept of Return and Risk

Unit - 2**Fixed Income Securities**

Bond: Concept, Features and Types; Types of Bond Risks, Default Risk and Credit Rating.

Unit - 3**Approaches to Equity Analysis**

Fundamental Analysis: Concept, Objectives, Approaches, Advantages and Limitations.

Technical Analysis: Concept, Assumptions, Theories (Dow Theory, Elliott Wave, Random Walk), Difference between Fundamental Analysis and Technical Analysis

Concept of Efficient Market Hypothesis

Unit - 4

Investor Protection

SEBI: Functions and Role; Investor Grievances and their Redressal System, Insider Trading, Investors'

Unit – 5 and Unit – 6 (For Internal Assessment)

(Credits: 02)

Concerned Teacher to identify Case Study based on Syllabi of Units –1 to Unit – 4

Preparation of case study report, presentation and submission of the same to the concerned teacher for evaluation.

SUGGESTED READINGS:

- C.P. Jones, Investments Analysis and Management, Wiley, 8thed.
- Prasanna Chandra, Investment Analysis and Portfolio Management, McGraw Hill Education
- R.P. Rustogi, Fundamentals of Investment, Sultan Chand & Sons, New Delhi.
- N.D. Vohra and B.R. Bagri, Futures and Options, McGraw Hill Education
- Mayo, An Introduction to Investment, Cengage Learning.
- Ahmad Javed, Mir M Amin and Khan Imran., Fundamentals of Investment., Himalaya Publishing House

18b.INTERNATIONAL BUSINESS

Semester	Course	Course Title	Credit
VI	DSE-III	INTERNATIONAL BUSINESS	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives:

1. The objective of the course is to familiarise the students with the concepts, importance and dynamics of international business and India's involvement with global business.
2. The course also seeks to provide theoretical foundations of international business to the extent these are relevant to the global business operations and developments.

INTERNATIONAL BUSINESS**THEORY****(CREDITS:04)****Unit - 1**

Introduction to International Business: *Globalisation and its importance in world economy; Impact of globalization; Modes of entry into international business.*

- a. *International Business Environment*: economic, cultural and political-legal environments.

Unit-2

Theories of International Trade - *an overview (Classical Theories, Product Life Cycle theory, Theory of National Competitive Advantage); types of tariff and non tariff barriers (Subsidy, Quota and Embargo in detail).*

- a. *World trade organization (WTO)* - Its objectives, principles, organizational structure and functioning; GAAT. Balance of payment account and its components.

Unit - 3

Regional Economic Co-operation: *Types of RTAs: FTAs, customs union, common Market, Economic union. (NAFTA and SAARC).*

- a. *International Financial Environment*: International financial system and institutions (IMF and World Bank - Objectives and Functions); Foreign exchange markets; Foreign investments - types and flows; Determinants of Exchange rate.

Unit-4

Foreign Trade Promotional Measures and Organizations in India; Special Economic Zones (SEZs): Features; Measures for promoting foreign investments into and from India; Indian joint ventures and acquisitions abroad.

- a. Financing of foreign trade and payment terms - sources of trade finance (Banks, factoring, forfeiting, Banker's Acceptance and Corporate Guarantee) and forms of payment
- b. (Cash in advance, Letter of Credit, Documentary Collection, Open Account).

Unit – 5 and Unit – 6 (For Internal Assessment) (Credits: 02)

Case Study on Balance of Payments(BOP) position of India in comparison with B.O.P position of any advanced country in Western Europe, North America or Japan. A three year data usage is quite desirable. Preparation of assignment and presentation of the same. (in groups of maximum of three students).

OR

Case Study on any one of the Regional Trade Agreements: SAARC, ASEAN, NAFTA or EU. Preparation of assignment and presentation of the same (in groups of maximum of three students).

OR

Case Study on How Foreign Trade of Kashmiri Exports/handicrafts is affected? Preparation of assignment and presentation of the same (in groups of maximum of three students).

SUGGESTED READINGS:

- Charles W.L. Hill and Arun Kumar Jain, International Business. New Delhi: McGraw Hill Education.
- Daniels John, D. Lee H. Radenbaugh and David P. Sullivan. International Business. Pearson Education.
- Johnson, Derbe., and Colin Turner. International Business - Themes & Issues in the Modern Global Economy. London: Roultdedge.

- Bennett, Roger. International Business. Pearson Education.
- Peng and Srivastav, Global Business, Cengage Learning

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18c.NEW VENTURE PLANNING

Semester	Course	Course Title	Credit
VI	DSE-III	New venture planning	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives:

1. The curriculum aims at giving exposure to students regarding different aspects of setting up a new business. After completing the course student should be able to develop an understanding of the process of identifying various sources of new business ideas of products and services.
2. The understanding of this paper will help them to examine, evaluate and approach different sources of finance, the nature of marketing effort required and to develop a comprehensive business plan.

NEW VENTURE PLANNING**THEORY****(CREDITS: 04)****Unit - 1****Starting New Venture**

Opportunity identification; Sources of innovative ideas; Techniques for generating ideas; Entrepreneurial imagination and creativity; Role of creative thinking; Impediments to creativity.

Pathways to new ventures – Creating new ventures, Acquiring an established venture: Advantages and Examination of key issues, Franchising: How a franchise works, Evaluating the franchising opportunities.

Unit – 2**Form of Organisation & Legal Challenges in Setting up Business**

Form of organization: Sole proprietorship, Partnership, Limited liability partnership and Company.

Intellectual Property Protection: Patents, Trademarks and Copyrights; Requirements and Procedures for filing a patent, trademark and copyright; Legal Acts governing business in India,

Unit – 3**Finance & Marketing Aspects of New Ventures**

Source of finance: Venture Capital market; Stages of Venture Capital Financing; Alternate sources of financing for Indian entrepreneurs: Bank funding, Government policy packages, State Financial Corporation (SFCs), Business Incubators and Facilitators, Informal Risk capital, Angel investors.

Developing a marketing plan; Customer analysis, Sales analysis and Competition analysis; Market Research.; Sales Forecasting & Evaluation; Pricing decision.

Unit – 4**Business Plan Preparation for New Ventures**

Business Plan: Concept, Benefits and Elements; Developing a well-conceived business plan, Pitfalls to avoid in business plan; Executive summary of Business Plan, Business description, Marketing: market niche and market share, Research design and development. Operations Management, Finances, Critical-Risk. Harvest strategy. Milestone schedule.

Unit – 5 and Unit – 6 (For Internal Assessment)**(Credits: 02)**

Case Studies: Case studies related to business or start-ups in social networking, e-commerce, services, retailing, travel and hospitality. e.g. Facebook, Amazon India, Flipkart, Myntra, Indigo Airlines, Infosys, Fab India, Jabong, make my trip, etc.

Presentation and submission of written assignment by each student on the case opted.

SUGGESTED READINGS:

- Kuratko, D. F., and Rao, T. V., Entrepreneurship: A South Asia Perspective, Cengage Learning.
- Robert, H. M., manimala, M. Peters., and D. Shepherd, Entrepreneurship, Tata McGraw Hill, India.
- Barringer, B. R., and Ireland, R. D., Entrepreneurship: Successfully Launching New Ventures, Pearson Education, India.
- Allen, K. R., Launching New Ventures: An Entrepreneurial Approach, Cengage

Learning.

- Ramachandran, K, Entrepreneurship Development, Tata McGraw Hill, India.
- Roy, Rajeev, Entrepreneurship, Oxford University Press.
- Kumar, Arya, Entrepreneurship: Creating and Leading and Entrepreneurial Organization, Pearson Education, India.
- Holt, David H., Entrepreneurship: New Venture Creation. PHI Learning.

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19a.BUSINESS RESEARCH METHODS & PROJECT WORK

Semester	Course	Course Title	Credit
VI	DSE-IV	BUSINESS RESEARCH METHODS & PROJECT WORK	Theory: 04; Practical: 02 Total: 06

Course Specific Objective:

1. This course aims at providing the general understanding of business research and the methods of business research.
2. The course will impart learning about how to collect, analyze, present and interpret data.

BUSINESS RESEARCH METHODS & PROJECT WORK**THEORY****(CREDITS:04)****Unit - 1****Introduction**

Meaning, Scope and Purpose of Research; Scope of Business Research; Purpose of Research; Unit of Analysis – Individual, Organization, Groups; Concept of Construct, Attributes and Variables

Unit - 2**Research Process**

Problem Identification and Definition; Basic Research Methods: Field Study, Laboratory Study, Survey Method, Observational Method

Unit - 3**Scale Measurement and Hypothesis Testing**

Measurement Scales: Nominal, Ordinal, Interval and Ratio; Sampling: Methods, Sample Size Determination

Hypothesis Testing: Concept, Tests concerning means and proportions

Unit - 4**Report Preparation**

Research Report: Meaning, Types and Layout; Steps in Report Writing; Citations, Bibliography and Annexure in Report; JEL Classification

Unit – 5 and Unit – 6 (Internal Assessment)

(Credits: 02)

Students are required to prepare and submit a Project Report to be assigned by the concerned teacher on any specific topic based on the contents of the syllabi of Unit-1 to Unit-IV.

SUGGESTED READINGS:

- D.N Elhance, VeenaElhance and B.M Agarwal ,Fundamentals of Statistics, Kitab Mahal Publications
- C.R Kothari, Research Methodology—Methods and Techniques, New Age International Publishers
- Naresh K Malhotra and Satya Bhushan Dash, Marketing Research—An Applied Orientation, Pearson Publication
- S.C Gupta, Fundamentals of Statistics, Himalaya Publishing House

19b.FINANCIAL REPORTING & ANALYSIS

Semester	Course	Course Title	Credit
VI	DSE-IV	FINANCIAL REPORTING & ANALYSIS	Theory: 04; Practical: 02 Total: 06

Course Specific Objectives:

1. The students will be able to understand, analyze and interpret the basic framework of financial reporting and with examples how such reports are produced in corporate setting.
2. The reports will help the students to visualize the data in a rather different manner and they can enhance their standing in the corporate ladder.

FINANCIAL REPORTING & ANALYSIS**THEORY****(CREDITS: 04)****Unit – 1****Accounting Process**

Journalizing, preparation of Ledger and Posting, balancing of accounts, Preparation of Trial balance, Accounting errors and rectification.

Unit - 2**Financial Statements**

Structure of financial statement: Introduction, Position statement, Income statement and Cash flow statement.

Additional Disclosure Statements: Need for additional statements, auditor's report and Director's report.

Unit – 3**Analysis & Interpretation of Financial Statements**

Ration Analysis – Liquidity, Solvency, Activity & profitability analysis, Comparative & common size analysis (vertical & horizontal analysis), DuPont analysis, Financial management's use of financial analysis, Graphing financial information.

Unit – 4**Basics of Financial Reporting**

Conceptual framework for financial reporting, Purpose of financial reporting, Users of financial reports. Concept of IFRS. IFRS convergence with Indian Accounting Standards.

Unit – 5 and Unit – 6 (Internal Assessment)**(Credits: 02)**

Analysis of Financial Statements of select companies by computing various accounting ratios. Evaluation: Submission of assignments by the students individually.

SUGGESTED READINGS:

1. Lal, Jawahar, Corporate Financial Reporting: Theory & Practice, Taxman Applied Services, New Delhi.
2. Raiyani, J. R. and Lodha, G., International Financial Reporting Standard (IFRS) and Indian Accounting Practices, New Century Publications.
3. Singh, N. T. and Agarwal. P., Corporate Financial Reporting in India, Raj Publishing, Jaipur.
4. Hennie, V. G., International Financial Reporting Standards: A Practical Guide, Washington, World bank.
5. Alexander, D., Britton, A., and Jorissen, A., Global Financial Reporting and Analysis, Cengage Learning, Indian Edition.

Note: *Latest edition of text books may be used.*

19c.CONSUMER AFFAIRS & CUSTOMER CARE

Semester	Course	Course Title	Credit
VI	DSE-IV	CONSUMER AFFAIRS & CUSTOMER CARE	Theory: 04; Practical: 02 Total: 06

Course Specific Objective:

1. This paper seeks to familiarize the students with of their rights as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights.
2. It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards.
3. The student should be able to comprehend the business firms' interface with consumers and the consumer related regulatory and business environment.

CONSUMER AFFAIRS & CUSTOMER CARE**THEORY****(CREDITS:04)****Unit – 1****Conceptual Framework**

Consumer and Markets: Concept of Consumer, Nature of markets, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP) and Local Taxes, Fair Price, labeling and packaging. Experiencing and Voicing Dissatisfaction: Consumer Satisfaction/dissatisfaction-Grievances-Complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Internal and External Complaint handling: Corporate Redress Systems and Public Redress Systems

Unit - 2**The Consumer Protection Act, 1986 (CPA)**

Objectives and Basic Concepts: Consumer, goods, service, defect in goods, deficiency in

service, spurious goods and services, unfair trade practice, restrictive trade practice. Organizational set- up under the Consumer Protection Act: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels, Basic Consumer Rights; Adjudicatory Bodies: District Forums, State Commissions, National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of Supreme Court under the CPA.

Unit – 3

Grievance Redress Mechanism under the Consumer Protection Act, 1986

Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy to be provided; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.

Unit – 4

Industry Regulators (Consumer Complaint Redressal Mechanism) and Quality/Standardization

Banking: RBI and Banking Ombudsman; Insurance: IRDA and Insurance Ombudsman; Telecommunication: TRAI; Food Products: FSSAI; Electricity Supply: Electricity Regulatory Commission; Advertising: ASCI.

Quality and Standardization: Voluntary and Mandatory standards; Role of BIS, Indian Standards Mark (ISI), Ag- mark, Hallmarking, Licensing and Surveillance; ISO: An overview

Unit – 5 and Unit – 6 (For Internal Assessment)

(Credits: 02)

Concerned Teacher to identify Leading Cases decided under Consumer Protection Act: Medical Negligence; Banking; Insurance; Housing & Real Estate; Electricity, Water, and Telecom Services; Education; Unfair Trade Practice.

The students are required to prepare, present and submit the report on any one of the case opted.

SUGGESTED READINGS:

- Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. Consumer Affairs” (2007) Delhi University Publication. 334 pp.
- Aggarwal, V. K. (2003). Consumer Protection: Law and Practice. 5th ed. Bharat Law House, Delhi, or latest edition.
- Girimaji, Pushpa (2002). Consumer Right for Everyone Penguin Books.
- Nader, Ralph (1973). The Consumer and Corporate Accountability. USA, Harcourt Brace Jovanovich, Inc.
- Sharma, Deepa (2011). Consumer Protection and Grievance-Redress in India: A Study of Insurance Industry (LAP LAMBERT Academic Publishing GmbH & Co.KG, Saarbrucken, Germany. 263 pp.
- Empowering Consumers e-book, www.consumeraffairs.nic.in
- eBook, www.bis.org.
- The Consumer Protection Act, 1986.

ARTICLES:

- Verma, D. P. S. (2002). Developments in Consumer Protection in India. Journal of Consumer Policy. Vol. 25. No. pp 107 –123.
- Verma, D.P.S. (2002). Regulating Misleading Advertisements, Legal Provisions and Institutional Framework. Vikalpa. Vol. 26. No. 2. pp. 51-57.
- Ralph L. Day and Laird E. Landon, Jr. (1997). Towards a Theory of Consumer Complaining Behaviour. Ag Woodside, et al. (eds.). Consumer and Industrial Buying Behaviour. New York; North Holland pp. 425-37.
- George, S. Day and A. Aaker (1970). A Guide to consumerism. Journal of Marketing. Vol. 34. pp 12-19.
- Sharma, Deepa (2003). New measures for Consumer Protection in India. The Indian Journal of Commerce. Vol.56. No.4. pp. 96-106
- Sharma, Deepa (2011). Consumer Grievance Redress by Insurance Ombudsman. BIMAQUEST. Vol.11. pp.29-47.

PERIODICALS:

- Consumer Protection Judgments (CPJ) (Relevant cases reported in various issues)

- Recent issues of magazines: Insight, published by CERC, Ahmedabad ‘Consumer Voice’, Published by VOICE Society, New Delhi.
- Upbhokta Jagran, Ministry of Consumer Affairs, Govt., of Indi. New Delhi.

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**Course Structure and distribution of different courses with their credits for Bachelor in
Business Administration (General)**

S. No.	Semester	Course Title	Course Code
01.	I	Communicative English	BBA 101
02.	I	Management Process And Practices	BBA 102
03.	I	Business Economics	BBA 103
04.	I	Fundamentals Of Accounting	BBA 104
05.	I	Computer Applications In Business	BBA 105
06.	II	Business Communication	BBA 201
07.	II	Financial Accounting	BBA 202
08.	II	Organizational Behaviour	BBA 203
09.	II	Macro Economics	BBA 204
10.	II	Business Statistics	BBA 205
11.	III	Indian Financial System	BBA 301
12.	III	Management Accounting	BBA 302
13.	III	Quantitative Techniques Management	BBA 303
14.	III	Business Environment	BBA 304
15.	III	Entrepreneurship Development	BBA 305
16.	IV	Marketing Management	BBA 401
17.	IV	Financial Management	BBA 402
18.	IV	Human Resource Management	BBA 403
19.	IV	Production Operations Management	BBA 404
20.	IV	Business Laws	BBA 405
21.	V	Strategic Management	BBA 501
22.	V	Industrial Relations	BBA 502
23.	V	E-Commerce	BBA 503
24.	V	Operations Research	BBA 504
25.	V	Project Management	BBA 505
26.	VI	Business Taxation	BBA 601

27.	VI	Services Marketing	BBA 602
28.	VI	International Business	BBA 603
29.	VI	Public Administration	BBA 604
30.	VI	Tourism Management	BBA 605

Course Outcomes:

The Bachelor of Business Administration (BBA) program is designed to equip graduate students to display the much needed and holistic attributes including:

- Knowledge of Business, Management and Emerging Technologies
- Research and Business Intelligence
- Problem Solving and Decision Making
- Creativity and Innovation
- Intercultural Competence/Communication
- Teamwork
- Global Citizenship/Ethics (Collaborate, Negotiate and Resolve Conflicts)

1. COMMUNICATIVE ENGLISH

The aim of this course is to enable students to express different meanings with the help of appropriate structures.

Semester	Course Code	Course Title	Credit
I	BBA101	Communicative English	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

- This course will enable students to write coherently.
- The course will make students aware about technical and professional communication process.

COMMUNICATIVE ENGLISH

Unit I

Definite and indefinite meaning: the, a/an, zero articles (in context only). Expressing PAST, PRESENT and FUTURE time, tense and aspect (in context only). The Passive (in narration; direct and indirect).

Unit II

Doing things: Request, Obligations, Permission, Ability, Advice, suggestions etc. (In contexts and situations). Relative; prepositions.

Unit III

Coordination and subordination. Cohesive Devices: Although, Even, Though, however, in short, in spite of, etc. (in context). Contracted Forms. Fax; E-mail, Telephone, Telex as means of communication: structure and presentation.

Unit IV

Paragraph writing; Parallel writing based on given text and clues. Reordering scrambled paragraphs. Developing a paragraph from given topic sentences.

SUGGESTED READINGS

- Lesikar R V And Petit J D, Business Communication-Theory And Application Richard.D.Irwin.Inc, Housewood, Illinois.
- Pradhan H Bhende D S and Thakur V Business Communication. Himalayapublishing House
- Rai And Rai, Business Communication, Himalaya Publishing House
- Effective Business Communication: Krizan, Merrier, Logan,Williams Cengage Learning .

2. MANAGEMENT PROCESS AND PRACTICES

The course objective of this paper is to make the learner understand the process of management.

Semester	Course Code	Course Title	Credit
I	BBA 102	Management process & practices	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

- The course will enable students to apply the acquired concepts in the contemporary business.
- Learners of this course will be able to understand is to provide a conceptual framework and broad Understanding of the various concepts and dimensions in general management and their relevance in the current business scenario.

MANAGEMENT PROCESS AND PRACTICES

UNIT – I

Nature, Meaning, and Significance of Management, Principles of Management, Evolution of Management Thoughts-Traditional, Behavioural, Systems, Contingency, Managerial functions.

UNIT – II

Nature & Elements of Planning, Planning Types and Models, Decision making process– Approaches to decision making, Management by Objectives (MBO), SWOT Analysis.

UNIT – III

Organizing, basic issues in organizing – Work Specialization, Delegation, Centralization and Decentralization, Span of Management, Line-staff Authority and Decentralization, Staffing Decisions – Authority and Responsibility Relationships.

UNIT – IV

Directing, Co-ordinating and Reporting, Control Process, Quantitative and Qualitative measures of Control, Feedback Management, Social Corporate Responsibility of Business.

SUGGESTED READINGS:

- Robbins, S.P., Management Concepts, Pearson Education India, New Delhi.
- Koontz, Weilhrich & Cannice, Management: A Global and Entrepreneurial Perspective., 13th Edition, McGraw Hill.
- Jones and George, Contemporary Mangement , McGraw Hill.
- Richard L. Draft, The New Era of Management, Cengage India
- Stoner, Jetal, Management, Prentice Hall of India., New Delhi
- Chandan, J.S., Management Concepts and Strategies, Vikas Publishing House.

3. BUSINESS ECONOMICS

The objective of this course is to expose students to basic microeconomic concepts.

Semester	Course Code	Course Title	Credit
I	BBA 103	Business economics	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The basic outcome of the course is to expose students to economic concepts so that they can apply economic analysis in the formulation of business policies and use economic reasoning to problems of business.
- Students of this course can understand and practice economic concepts and use them in managerial decision making

BUSINESS ECONOMICS

UNIT – I

Meaning, Nature and Scope of Business Economics – Micro and Macro-economic concepts. Basic Economic Problems, Market forces in solving economic problems, Circular Flow of Income and Expenditure.

UNIT-II

Demand: - Concept and Classification. Law of Demand, Elasticity of Demand and their types, Revenue Concepts - Total Revenue, Marginal Revenue, Average Revenue and their relationship.

UNIT-III

Production function, Total, Average and Marginal Product, Law of variable proportions. Production iso-quants, marginal rate of technical substitution – optimal combination of resources - return to scale - cost of production - long run and short run cost of production - Economics and diseconomies of scale.

UNIT-IV

Perfect Competition - Equilibrium of Firm and Industry under Perfect Competition, Monopoly – Price Determination under Monopoly, Monopolistic Competition and Oligopoly.

SUGGESTED READINGS:

1. Joel Dean: Managerial Economics, Heritage Publishers.
2. Sanpat Mukerjee: Managerial Economics, New central book agency.
3. Suma Damodarann: Managerial Economics, Oxford Publishers.
4. Jhingan M. L. Micro Economics: Vrinda Publications.

4. FUNDAMENTALS OF ACCOUNTING

The objective of this course is to enable the students to acquire knowledge of the financial accounting principles and practices.

Semester	Course Code	Course Title	Credit
I	BBA 104	Fundamentals of accounting	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The aim of this paper is to equip the students with skills for recording various kinds of business transactions.
- The students can use the techniques of accounting in preparation of required financial statements in business organisations.

FUNDAMENTALS OF ACCOUNTING

UNIT-I

Accounting-Concept, objectives, Accounting v/s Book Keeping, Accounting as source of information, internal and external users of Accounting information and their needs. Generally Accepted Accounting principles - Accounting concepts and conventions.

UNIT-II

Accounting Cycle; double entry systems of accounting and usage of debit/credit in accounts; Recording of transactions; Books of original entry, Journal: Subsidiary books - Cash Book, Purchases book, Sales Book; Ledger: Meaning, utility format; posting from journal and Subsidiary books; balance of accounts. Trial Balance: Meaning, Objectives and Preparation.

UNIT-III

Depreciation – Concept and Causes- objects of providing for depreciation –Factors affecting depreciation - Accounting Treatment Methods of providing depreciation -Straight line method – Diminishing Balance Method. Depreciation of replacement cost; Depreciation policy as per Accounting Standard, Provisions and Reserves.

UNIT-IV

Final Accounts: Meaning, features, uses and preparation of Manufacturing Account, Trading Account, Profit & Loss Account and Balance Sheet - Adjusting and Closing entries. Classification of Expenditures.

SUGGESTED READINGS:

- S.Kr. Paul: Fundamentals of Accounting, New central Book Agency (P) Ltd.
- P.C. Tulsan: Fundamentals of Accounting, Tata McGraw Hill Education Pvt. Ltd.
- A.N. Agarwala, Kamlesh N. Agarwala: Fundamentals of Accounting, KitabMahal.
- Juneja, Chawla, Seksana: Fundamental of Accounting, Kalyani Publishers.

5. COMPUTER APPLICATIONS IN BUSINESS

The objective of the paper is to familiarize the students with computer.

Semester	Course Code	Course Title	Credit
I	BBA 105	Computer applications in business	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- After successful completion of the subject students will be able to apply the knowledge in the relevant fields.
- To acquaint management students with the information technology concepts, technologies, products and I.T business environment with special emphasis on Indian I.T Scenario.

COMPUTER APPLICATIONS IN BUSINESS

UNIT- I

Computer Basics: Introduction, Advantages and Disadvantages of computers, Evolution(Generations) and classification of computers(Mini, Micro etc.), Block diagram and working, Primary and secondary memory: RAM and ROM, Hard Disk, Magnetic Tape and Optical devices, Common I/O devices.

UNIT- II

Computer software: Classification and Types, Operating System: Functions, types Multiprogramming, Multiprocessing, Timesharing, Real time, Online and Batch Systems, Booting process, DOS: Internal and External commands, Batch and System files.

UNIT- III

Windows Basics: The Desktop, My Computer, Working with files and Folders, Windows Explorer, Windows Help and Support centre, Searching in Windows and System utilities, Start Menu, Accessories like Notepad, Paint and Wordpad.

UNIT- IV

MS Office: Working with Word documents, Working with Text- fonts, size, formatting etc., Working with tables, checking spelling and grammar, Adding Graphics to documents and printing a document, preparing power point presentations, Working with Excel workbook and worksheets, Formulas and functions, inserting charts, Printing in Excel

Note: Lab will be based on Units III and IV

SUGGESTED READINGS:

- ITLES , "Introduction to Information Technology", Pearson Education.
- Peter Norton , "Introduction to Computers", PHI.
- Sanders M, "Computers in Business: An introduction" Mcgraw Hill
- Leon and Leon: Introduction to Information Technology, Leon Tech World

6. BUSINESS COMMUNICATION

The objective of this course is to understand the concept, process and importance of communication, gain knowledge of media of communication, develop skills of effective communication.

Semester	Course Code	Course Title	Credit
II	BBA 201	Business Communication	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- This course will enable students to write coherently.
- The course will make students aware about technical and professional communication process.

BUSINESS COMMUNICATION

UNIT-1

Meaning and Definition - Process - Functions - Objectives - Importance – Essentials of good communication - Communication barriers - Overcoming communication barriers, Grapevine, Written - Oral - Face-to-face - Silence - Merits and limitations of each type.

UNIT-II

Meaning, nature and scope of oral communication - Techniques of effective speech – Media of oral communication (Face-to-face conversation - Teleconferences – Press Conference – Demonstration - Radio Recording - Dictaphone – Meetings - Rumor - Demonstration and Dramatisation - Public address system - Group Discussion – Oral report - Closed circuit TV). The art of listening - Principles of good listening.

UNIT-III

Need and functions of business letters - Planning & layout of business letter – Kinds of business letters - Essentials of effective correspondence - Enquiries and replies - Placing and fulfilling orders - Complaints and follow-up, Resume Formation.

UNIT-IV

Group Decision-Making - Conflict and Negotiations - Presentation and Interviews - Speeches - Customer Care/Customers Relations - Public Relations (Concept, Principles, Do's and Don'ts etc. to be studied for each type).

SUGGESTED READINGS:

- Sinha K. K.: Business Communication, Galgotia Publishing Company.
- Rayudu C. S.: Media and Communication Management, Himalaya Publishing House.
- Pal Rajendra and Korhalli J. S: Essentials of Business Communication, Sultan Chand & Sons.

7. FINANCIAL ACCOUNTING

The objective of the paper is to familiarise students with preparation of financial statements in accordance with the Companies Act.

Semester	Course Code	Course Title	Credit
II	BBA 202	Financial Accounting	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The aim of this paper is to acquaint students with the Accounting Practices to be followed in the Business Industry.
- The course will expose students to higher science of accountancy and dealing with different kinds of businesses.

FINANCIAL ACCOUNTING

UNIT-I

Financial accounting standards -Object of accounting standards – Accounting Standard Board of India and Indian Accounting Standards Preparation and presentation of financial statements as per Companies Act.

UNIT- II

Accounting for Hire Purchase and Instalment System -Meaning - Features of hire purchase agreement - Distinction between hire purchase and sale -Interest calculation – Recording of transaction in the books of both parties - Default and repossession - Instalment system - Features - Distinction between hire purchase and instalment.

UNIT- III

Departmental Accounts - Meaning - Objects - Advantages - Accounting procedure - Allocation of expenses and incomes - Interdepartmental transfers - Provision for unrealized profit.

Branch Accounts - Features - Objects- Types of branches - Dependent branches - Account Systems -Stock and Debtors System -Independent branch - Features - Preparation of consolidated Profit and Loss Account and Balance Sheet

UNIT- IV

Consignment and Joint Venture Accounts: Meaning and features of Joint Venture and Consignment, Consignment expenses and Over-riding Commission, Difference between Consignment and Joint Venture, Methods of recording Consignment and Joint Venture transactions.

SUGGESTED READINGS:

- Shukla, M.C., T.S. Grewal and S.C. Gupta: Advanced Accounts S. Chand & Co.
- Naseem A., Nawab A. K. and M.L. Gupta: Fundamentals of Financial Accounting, Ane Books Pvt. Ltd.
- Goyal V.K: Financial Accounting, Excel Books.

8. ORGANISATIONAL BEHAVIOUR

The objective of this course is familiarizing the students about the behavioural aspects of an individual and organisation.

Semester	Course Code	Course Title	Credit
II	BBA 203	Organizational Behaviour	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- To familiarize the students to understand the change process in the management context.
- To provide a solid, foundation of organizational behaviour understanding for use in managerial decision making.

ORGANISATIONAL BEHAVIOUR

UNIT- I: SCOPE AND SIGNIFICANCE

Concept, Need and Importance of Organizational Behaviour; Nature and Scope of Organizational Behaviour; Organizational Behaviour Models; Emerging Trends.

UNIT - II: INDIVIDUAL BEHAVIOUR

Personality - Types - Factors influencing personality; Learning - Types of Learners - The Learning Process - Learning Theories; Attitudes - Characteristics - Components; Perception - Importance - Factors influencing perception - Interpersonal perception.

UNIT- III: GROUP BEHAVIOUR

Group Dynamics, Types of Groups; Conflict - nature, types and sources, resolution. Power and politics; Definition, bases of power, implications of power.

UNIT- IV: ORGANIZATIONAL CLIMATE

Organisational Culture and Change - Types, forms; forces for change, resistance to change; Motivation - Types - Process - Theories.

SUGGESTED READINGS:

- Stephen P. Robbins, Organisational Behavior, Prentice Hall of India, 9th Edition.
- Hellriegel, Slocum and Woodman, Organisational Behavior, South-Western, Thomson. Learning, 9th edition.
- Schermerhorn, Hunt and Osborn, Organisational Behavior, John Wiley, 7th edition,.
- Fred Luthans, Organisational Behavior, Mc Graw Hill Book Co.

9. MACRO ECONOMICS

The objective of this paper is to develop the concepts on Macro-economic variables, working of an economy, and how business decisions are affected with the influence of macro variables in business.

Semester	Course Code	Course Title	Credit
II	BBA 204	Macroeconomics	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The basic outcome of the course is to expose students to economic concepts so that they can apply economic analysis in the formulation of business policies and use economic reasoning to problems of business.
- Students of this course can understand and practice macroeconomic concepts and use them in business decisions.

MACRO ECONOMICS

UNIT - I

Macro Economics - concept importance and limitations. Macro-economic variables. Circular flow of income; relation between leakages and injections in circular flow. National Income: Concepts, definition, methods of measurement, National income in India, problems in measurement of national income & precautions in estimation of national income.

UNIT - II

Theory of full employment and income: classical, modern (Keynesian) approach, consumption function, relationship between saving and consumption. Investment function, concept of marginal efficiency of capital and marginal efficiency of investment.

UNIT - III

Demand for money-classical, Keynesian and Friedmanian approach, measures of money supply, quantity theory of money: Fisher's Transaction Approach and Cambridge Cash-Balance Approach.

UNIT - IV

Equilibrium of Product and Money Market: The IS-LM model, product market and money market, derivation, shift. Equilibrium of IS-LM curve, Application of IS-LM model in monetary and fiscal policy.

SUGGESTED READINGS:

- Chaturvedi, D. D and Anand Mittal: Business-Economics II, Brijwasi Book Distributors.
- Dwivedi, D. N: Macro Economics, Tata McGraw Hill.
- Mishra, S. K. and V. K. Puri: Modern Macro-Economic Theory, Himalaya Publishing house.
- Edward Shapiro: Macro-Economic Analysis, Tata McGraw Hill

10. BUSINESS STATISTICS

The major objective of this course is to expose and help students understand the fundamentals concept of statistical tools and techniques used for decision making.

Semester	Course Code	Course Title	Credit
II	BBA 205	Business Statistics	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The students will be able to apply mathematics and statistics tools and techniques in business decisions.
- The course will impart learning about how to collect, analyse, present and interpret data.

BUSINESS STATISTICS

UNIT-I

Introduction to Statistics: Concept, Nature, Importance, Limitations, Scope, Functions, Distrust of Statistics. Collection of data - Primary and secondary sources: Data collection tools; Designing of questionnaire. Sampling - concept and objectives; Census Vs Sampling; Sampling techniques:- probability and non-probability sampling techniques.

UNIT-II

Measures of Central Tendency - Concept, Criteria for good measure of Central Tendency, Types of averages Arithmetic Mean, Weighted Mean, median and Mode. Measures of Dispersion: Concept of dispersion, absolute and relative measure of dispersion - Range, Mean Deviation, Quartile Deviation, Standard deviation and variance, Measure of Skewness and Kurtosis: Meaning, Importance and application.

UNIT-III

Correlation: Concept, positive & negative correlation, Karl Pearson's Coefficient of correlation, Rank correlation and concurrent deviations (ungrouped data only). Regression, Concept, Regression equations, Regression coefficients and properties.

UNIT-IV

Interpolation and extrapolation- Concept, assumptions, importance, Methods of interpolation - Newton's method of finite difference, Hypothesis Testing - Chi- Square test of significance.

SUGGESTED READINGS:

- Elhance D. L.: Fundamentals of Statistics, Kitab Mahal
- Gupta, S. P and Gupta M. P: Business Statistics. Sultan Chand.
- Gupta C. B: An Introduction to Statistical Methods, Vikas Publishers.
- Richard I. Levin and David S. Rubin: Statistics for Management, Prentice Hall of India.
- Chandan. J.S: Statistics for Business and Economics, Vikas Publishing House Pvt. Ltd.
- Hooda, R.P: Statistics for Business and Economics, Macmillan India Ltd.

11. INDIAN FINANCIAL SYSTEM

To enable the students to acquire basic understanding of the structure, organization and functioning of the financial system in India.

Semester	Course Code	Course Title	Credit
III	BBA 301	Indian Financial System	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The course aims to exposing the students to new financial instruments and their implications in the existing regulatory framework.
- The students will also be able to understand the working of Indian financial system.

INDIAN FINANCIAL SYSTEM

UNIT-I

Financial System: Meaning, Role and functions of a financial system, Organized and unorganized financial system. Components: Financial assets, financial intermediaries, financial markets in India, Regulatory framework.

UNIT-II

Financial Institutions and Regulatory bodies - Commercial banks: Meaning and functions. Industrial Development Bank of India, Industrial Finance Corporation of India, Small Industries Development Bank of India, State Finance Corporation- Objectives and functions. Security Exchange board of India (SEBI): Powers and functions, Reserve Bank of India: Meaning and Role

UNIT-III

Money Market: Definition, features, Importance, composition Call Money market, Commercial bill market, discount market, Capital Market: Meaning, Objectives, importance, functions, structure, New Issues market, Secondary Market: Characteristics, functions of stock exchanges

UNIT-IV

Financial Services: Venture capital financing, Leasing, Money and capital Market Instruments.

SUGGESTED READINGS:

- Khan M.Y.: Financial Services, Tata McGraw Hill.
- Machiraji: Indian Financial System, Vikas Publishers.
- Mark Grinblatt, Sheridan Titman: Financial markets and corporate strategy, Tata McGraw Hill.
- Bhatia B.S., Bhatra G.S.: Management of Capital Markets, Financial services and institutions, Deep & Deep Publishers.

12. MANAGEMENT ACCOUNTING

The course is designed to acquaint the students with a good knowledge of various accounting concepts and techniques used for managerial decision making.

Semester	Course Code	Course Title	Credit
III	BBA 302	Management Accounting	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The course will build the capacity of the students for better decision making in the practical business settings.
- The students will also be able to interpret and make meaningful decisions based on financial statements.

MANAGEMENT ACCOUNTING

UNIT-1

Management Accounting: - Nature, Scope and Objectives of management accounting. Management accounting Vs Financial accounting and Cost accounting. Management Accounting Information System; Role of management accountant in Decision making.

UNIT- II

Financial Statement Analysis: - Meaning, objectives, limitations. Techniques of Financial Statement analysis, Comparative financial Statements, Common size financial Statements, Trend Analysis, Ratio Analysis-Uses and application of different ratios (Liquidity, Solvency and Profitability ratios). Preparation of Funds Flow and Cash Flow Statements.

UNIT - III

Marginal Costing:- Characteristics, Advantages and Limitations, Application of Marginal Costing for Managerial Decisions. Absorption Costing - concept and importance; Marginal vs. Absorption Costing. Cost-Volume- Profit (CVP), Methods of Segregation of Semi-Variable Costs, Break Even Analysis:- Assumptions and Practical Application of Break-Even Analysis.

UNIT- IV

Standard Costing - Concept nature and scope, Process of standard costing, Managerial Application of Standard Costing, Variance Analysis - Material, labour, and overhead variances. Variances and their reporting.

SUGGESTED READINGS

- Horgen, Foster, M. Datar: Cost Accounting, A Managerial Emphasis, Prentice -Hall of India.

- Saravanavel P.: Management Control System, Principles and Practice, Himalaya Publishing House.
- Paul S.Kr.: Management Accounting, New Central Book Agency (P) Ltd.
- Gupta S.K., R.K. Sharma: Management Accounting, Kalyani Publishers.

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13. QUANTITATIVE TECHNIQUES MANAGEMENT

The objective of the course is to make the students familiar with some selected quantitative tools and techniques that could be used by management graduates.

Semester	Course Code	Course Title	Credit
III	BBA 303	Quantitative Techniques Management	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The students will be able to use selective quantitative tools and techniques for effective business decisions.
- The learners can understand the effective utilisation of resources and use a particular resource where it is needed the most.

QUANTITATIVE TECHNIQUES MANAGEMENT

UNIT-I

Mathematical basis of Managerial Decisions: An overview; Nature, Scope and Significance of Quantitative Techniques in Management, Model Building in Quantitative Techniques. Functions: Concept of Linear and Quadratic functions, Dependent and Independent variable, formulation of demand, cost, revenue and profit functions, finding maxima and minima for quadratic functions (through formulae only).

UNIT-II

Matrices and Determinants: Multivariable data, Definition of a Matrix, Types of Matrices, Algebra of Matrices, Determinants, Adjoint of a Matrix, Inverse of a Matrix via adjoint Matrix, Homogeneous System of Linear equations, Condition for Uniqueness for the homogeneous system, Solution of Non-homogeneous System of Linear equations (not more than three variables). Condition for existence and uniqueness of solution, Solution using inverse of the coefficient matrix, Problems.

UNIT-III

Probability: Basic concepts, Applications of Addition rule and multiplication rule of probability-simple situation problems; Application of Baeye's theorem as a special case of multiplication rule of probability. Elementary characteristics and simple situation application of discrete and continuous probability distribution; Binomial, Poisson and Normal distribution only.

UNIT-IV

Game Theory: Conceptual Framework, Two-person zero sum games, pure strategy (saddle point), mixed strategy, dominance rule - games reducible to 2*2 matrix only Decision Theory: Criteria for decisions under uncertain and probabilistic kinds of decision making environments, EMV and EOL criterion, Expected Value of perfect information (EVP1)

SUGGESTED READINGS:

- Sharma: Fundamentals of Operations Research, Macmillan.
- Vohra, N.D: Quantitative Techniques in Management, Tata McGraw Hills.
- Gupta & Khana: Quantitative Techniques of Decision Making, Prentice Hall of India
- Kothari C R: Quantitative Techniques, Vikas Publishers.

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14. BUSINESS ENVIRONMENT

This course aims at acquainting the students with the emerging issues in business at the national and international level in the light of the policies of liberalization and globalization.

Semester	Course Code	Course Title	Credit
III	BBA 304	Business Environment	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The course will impart students with skills and knowledge to be used in functional areas and develop a holistic perspective of enterprise, critical from the point of view of the top executives.
- The students can apply the knowledge about business and legal environment in the country and take future decisions accordingly.

BUSINESS ENVIRONMENT

UNIT-1

Indian Business Environment: Concept, components, and importance. Economic Trends (overview): Income; Savings and investment; Industry; Trade and balance of payments, Money; Finance; Prices.

UNIT-II

Problems of Growth: Unemployment; Poverty; Regional imbalances; Social injustice; Inflation; Parallel economy; Industrial sickness.

UNIT-III

Role of Government: Monetary and fiscal policy; Industrial policy; Industrial licensing, Privatization; Devaluation; Export-Import policy; Regulation of foreign investment.

UNIT-IV

International Environment: International trading environment (overview); Trends in world trade and the problems of developing countries; foreign trade and economic growth.

SUGGESTED READINGS:

- Sundaram & Black: The International Business Environment; Prentice Hall
- Agarwal A.N.: Indian Economy; Vikas Publishing House.
- Khan Farooq A: Business and Society; S. Chand.
- Dutt R. and Sundharam K.P.M: Indian Economy; S.Chand.
- Misra S.K and Puri V.K: Indian Economy; Himalaya Publishing House.
- Dutt Ruddar: Economic Reforms in India - A Critique: S. Chand.

15. ENTREPRENEURSHIP DEVELOPMENT

The objective of this course is to equip students with the basic understanding of entrepreneurship development and to enable them to provide an insight into the entrepreneurship development and new venture management.

Semester	Course Code	Course Title	Credit
III	BBA 305	Entrepreneurship Development	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- The curriculum aims at giving exposure to students regarding different aspects of setting up a new business. After completing the course student should be able to develop an understanding of the process of identifying various sources of new business ideas of products and services.
- The understanding of this paper will help them to examine, evaluate and approach different sources of finance, the nature of marketing effort required and to develop a comprehensive business plan.

ENTREPRENEURSHIP DEVELOPMENT

UNIT -1

Concept and development of entrepreneurship; Challenges of entrepreneurship, Functions of an Entrepreneur; Classification of entrepreneurs; Characteristic of successful entrepreneurs; Entrepreneurial opportunities; Innovations and Entrepreneurship, Women Entrepreneurship.

UNIT-II

Entrepreneurial growth in India; sources of entrepreneurship in India; Entrepreneurship Development Programmes (EDP) in India- concept, need and phases; Institutions conducting entrepreneurial development programmes in India with special reference to J & K.

UNIT-III

Role of an entrepreneur in economic growth as an innovator; Generation of employment opportunities; Role in export promotion and Import Substitution; Forex earning and augmenting & meeting local demand.

UNIT-IV

Nature and characteristic of small business; steps for starting a small industry; Forms of ownership-Sole proprietorship, partnership, company and cooperative society; Factors influencing the choice; Procedure and formalities for registration; incentives and subsidies -need and problems.

SUGGESTED READINGS:

- David A.Kirby: Entrepreneurship, Tata McGRaw Hills.
- Jasmer Singh Sain: Entrepreneurship and small Business, Deep and Deep publication.
- Holt: Entrepreneurship: New Venture Creation, Prentice-Hall.
- Singh P and Bhandekar A: Winning the Corporate Olympiad: The Renaissance Paradigm, Vikas Publishers.
- Bridge S et al: Understanding Enterprise: Entrepreneurship and Small Busine Palgrave.

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16. MARKETING MANAGEMENT

The objective of this Course is to provide Basic Knowledge of Concepts, Principles, Tools and Techniques of Marketing.

Semester	Course Code	Course Title	Credit
IV	BBA 401	Marketing Management	Theory: 04; Internal: 02 Total: 06

Course Specific Objectives

- The objective of this course is to provide to students basic knowledge of concepts, principles, tools and techniques of marketing and their implementation in the real life scenario.
- Students can translate the skills learnt in the course in different trades of life and can visually appeal the target customers.

MARKETING MANAGEMENT

UNIT-I

Introduction: Nature and Scope of Marketing; Marketing Concepts-Traditional and Modern; Selling Vs Marketing; Marketing environment-micro and macro components.

UNIT-II

Consumer Behaviour and Market Segmentation: Nature and Scope; Factors affecting Consumer behaviour; Consumer decision making process. Market segmentation-concept and importance; Bases for Market Segmentation. Target Marketing.

UNIT-III

Product: Concept and Classification; product planning and development; Product Life Cycle, Branding, Nature and significance, Distribution Channels, Nature, types and significance. Channel design and management decisions.

UNIT-IV

Price- factors affecting price of a product/service; price setting methods.

Promotion: Concept and importance; Promotional Mix. Advertising media. Personal Selling-Importance; Sales promotion methods.

SUGGESTED READINGS:

- Kotler P. and Armstrong G: Principles of Marketing, Prentice Hall of India.
- Kotler P: Marketing Management: Analysis, Planning and Control”, Prentice Hall of India.
- Santoki & Bansal: Marketing Management, Kalyani Publishers.
- Ramaswamy V.S. and Namakumari S: Marketing Management: Planning, Implementation and Control, Prentice Hall of India.
- Stanton W.J: Fundamentals of Marketing, McGraw Hill

17. FINANCIAL MANAGEMENT

To acquaint students to the fundamental concepts of managerial finance.

Semester	Course Code	Course Title	Credit
IV	BBA 402	Financial Management	Theory: 04; Internal: 02 Total: 06

Course Specific Objectives

3. The students can practice four important functions of financial management and relate them with the financial structure of various organizations.
4. Students can be assets to organizations dealing with compounding and discounting of money.

FINANCIAL MANAGEMENT

Unit - I

Introduction to Finance: concept, scope, nature and objectives of financial management; overview of key finance decisions and principles that form the basics in financial management, role of finance function in an organization; Time value of money- conceptual frame work of time value of money and its significance in financial decisions, computation of future value and present value, valuing perpetuities. Risk and Return- concept.

Unit: II

Cost of Capital-concept, significance, determining cost of specific sources of capital, weighted average cost of capital. Shares and their Valuation-Meaning, features and types of shares; Methods of Valuation of Equity Shares; Dividend Decision-Relevance and Irrelevance of dividend decisions.

Unit: III

Capital Investment Decisions: concept and types of capital expenditures, capital budgeting process, Estimation of Cash Flows for investment analysis, Capital budgeting decision criteria:- pay-back period and post pay-back method, accounting rate of return, present value and net present value method, internal rate of return.

Unit - IV

Working Capital Management-concept, need, importance of working capital management, concept of operating cycle and its relevance in the management of working capital, techniques to

reduce the operating cycle, principles underlying the management of current assets, estimation / computation of working capital requirement;

SUGGESTED READING:

- Copeland, T.E “Financial theory and corporate policy”, Pearson Education, New Delhi.
- James, Van Horne, “Financial management policy”, Pearson Education, New Delhi
- Keown A.J. “Financial Management” Prentice Hall Of India
- Pandey I.M., “Financial Management” Vikas Publishing House Pvt. Ltd.
- Khan and Jain, “Financial Management” Tata Mcgraw Hill

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18. HUMAN RESOURCE MANAGEMENT

The main aim of this course is to acquaint the students with the basic concept of management of human resource in an organisation, its dynamic and indispensable role in the evolution of an organisation and career progression of an employee.

Semester	Course Code	Course Title	Credit
IV	BBA 403	Human Resource Management	Theory: 04; Internal: 02 Total: 06

Course specific outcomes

- Learners of this course will be able to practice human resource management practices in the organization they are placed in.
- Students can practice various leadership styles and can make a dent in the rank and file of an organization.

HUMAN RESOURCE MANAGEMENT

UNIT – I

Human Resource Management- Concept and Scope, Functions, Significance and Objectives of HRM, Comparison between Human Resource Management and personnel Management, Competencies of HR Manager, Challenges of HRM.

UNIT - II

Acquisition of Human Resource (HR):- Job Analysis, Job Description, Job Specification and Job Evaluation. Human Resource Planning - Concept, Objectives, Functions and various steps involved in HR Planning Process. Recruitment- Concept, objectives and various sources of Recruitment. Selection: concept, Objectives, Process, tests and interviews, Placement and induction.

UNIT - III

Performance Appraisal-Nature and Objectives, process of Performance Appraisal, Techniques of Performance Appraisal, Problems with Performance Appraisal. Job Change- transfer, Promotion, Demotion. Separation: Voluntary Retirement, Retrenchment and Layoff.

UNIT - IV

Training and Development- Concept and importance, Objectives, Need for training and development, types of training, training methods, evaluation of Training and Development Programmes.

SUGGESTED READINGS:

- Dessler Gary: A Framework for Human Resource Management, Pearson Publication.
- Chhabra, T.N: Essentials of Human Resource Management, Sun India publication.
- Robert L. Mathis and John H. Jackson: Human Resource Management, Cengage Learning.

- Rao Subba, P: Essential of Human Resource Management and Industrial Relations, Himalaya Publishers.
- Blandchard P. Nick, Thaker James W.: Effective Training - Systems, Strategies, and Practices, Pearson Education.

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19. PRODUCTION OPERATIONS MANAGEMENT

The course is designed to acquaint the students with decision making in Planning, scheduling and control of Production and Operations function, productivity improvement in operations through layout engineering and quality management etc; effective and efficient flow, control of materials with reference to both manufacturing and services organisations.

Semester	Course Code	Course Title	Credit
IV	BBA 404	Production Operations Management	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

- The students would understand the importance of production management in modern day organization.
- The students will be equipped with the knowledge about Planning, scheduling and control of Production and Operations function.

PRODUCTION OPERATIONS MANAGEMENT

UNIT I

Production and Operations Management- an overview; Nature and scope of Production/ Operations Management; Historical perspective of Operations Management; Operations as a System: Continuous and Intermittent production system, flow, batch and job type of production; Operations strategy and elements of operations strategy.

UNIT II

Facility location: Factors affecting plant location, Brown and Gibson Model of plant location: concept and significance, Manufacturing systems and layouts: Product, Process and cellular layouts, layout planning and Analysis; Production Process Planning and Design: factors affecting process design; Concept of Line Balancing.

UNIT III

Production Planning and Control - An overview; types of Production Planning and Control; Aggregate planning:- Concept, strategies and costs, Master Production Scheduling (MPS): objectives and procedure for developing master production schedule; Materials Management: An overview.

UNIT IV

Material Planning and Inventory Control; Inventory Control: Costs and objectives; Inventory control techniques; ABC Analysis: Just in Time(JIT); Materials Requirement Planning (MRP);

Economic Order Quantity Model (E.O.Q with deterministic Demand) and practical problems on EOQ. Quality Management and Quality Assurance: Statistical process control-Control Charts for Attributes and Variables; Total Quality Management (TQM); Quality Assurance, Significance; Concept of Six Sigma.

SUGGESTED READINGS:

- Adam, E.E. & Ebert, R.J: Production and Operations Management., Prentice Hall.
- Amrine Harold T: Manufacturing Organizations and Management. Englewood Cliffs, Prentice Hall Inc..
- Buffa, E.S: Modern Production Management, John Wiley.
- Chary, S.N: Production and Operations Management, Tata McGraw Hill.

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20. BUSINESS LAWS

The objective of the course is to impart basic knowledge of the important business laws along with relevant case law.

Semester	Course Code	Course Title	Credit
IV	BBA 405	Business laws	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

- A student can learn and practice legality of contracts and their validity.
- Learners of the course will be able to understand the basics of cheque system, endorsement and business process involved.

BUSINESS LAWS

UNIT-I

Law of Contract: Nature of the Contract, Classification of the contracts, Offer and Acceptance, consideration. Discharge of Contract- Modes of discharge, breach and its remedies.

UNIT-II

Negotiable instruments: Definition, types. Parties to Negotiable instrument. Dishonour and discharge of Negotiable instruments.

UNIT-III

Contract of sale, meaning and difference between sale and agreement to sell, Conditions and warranties, Transfer of ownership in goods including sale by non-owners, Performance of contract of sale, Unpaid seller - meaning and rights of an unpaid seller against the goods and the buyer .

UNIT-IV

Salient Features of Partnership, Partners and Designated Partners, Incorporation Document, Incorporation by Registration, Partners and their Relations, Extent and Limitation of Liability of Partnership and Partners, Dissolution of Partnership.

SUGGESTED READINGS:

- Sharma J. P, Sunaina Kanojia: Business Laws, Ane Books Pvt Ltd.
- Kucchal, M.C: Business Law, Vikas Publishing, House (P) Ltd.
- Singh, Avtar: The Principles of Mercantile Law, Eastern Book Company.

- Maheshwari & Maheshwari: Business Law, National Publishing House.
- Chadha, P. R: Business Law, Galgotia Publishing Company

INTERNSHIP

Internship Requirements:

The Student shall be required to undergo an internship in any business organization in or outside state for a period of 4 weeks. He / She shall work for the period under a supervisor to be nominated by the company and shall prepare a brief report about the work and experience he / she has obtained and shall submit the same to the concerned Head of the Department of the College / Institution.

Evaluation & Grading:

Evaluation shall be exclusively done by the company supervisor on a 5 point scale- A, B, C, D & E on a proper proforma to be designed by the college/ institutions with regard to his / her learning, work responsibilities shared, behaviour, conduct, etc during the internship. Evaluation report shall be sent by the supervisor to Head of the Department of the concerned College/ Institutions who shall forward it directly to the Controller of Examination. Candidate obtaining grade E shall be declared as failed in the course and has to repeat the internship in the same or some other business organization. The grade shall be reflected in the marks sheet but shall not count in the total marks obtained by the candidate in the BBA programme.

21. STRATEGIC MANAGEMENT

To integrate the knowledge gained in functional areas of management and helping the students to learn about the process of strategic management, strategy formulation and implementation.

Semester	Course Code	Course Title	Credit
V	BBA 501	Strategic Management	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

- Learners of the course can practice the strategic management principles in the organizations and take decisions effectively.
- Students would be able to deal with issues related to strategy formulation and their implementation in organization

STRATEGIC MANAGEMENT

UNIT-1

Introduction to Strategic management: Importance of Strategic management. Strategic management process: strategy and tactics, strategic vision and mission, strategists in Strategic Management.

UNIT-II

Strategic analysis: Introduction, need for strategic analysis, Internal Analysis and External Environmental Analysis, SWOT Analysis.

UNIT-III

Strategic formulation: Nature and Significance, Different types of Strategies, Strategic Choice.

UNIT-IV

Strategic implementation and control: interrelationship among formulation and implementation of strategy; issues in strategy implementation; project and procedural implementation and resource allocation. Strategic evaluation and control.

SUGGESTED READINGS:

- Kazmi, A: Business policy and Strategic management, Tata McGraw Hill.
- Dess and Miller, Strategic Management, Tata McGraw Hill.
- Cherunilam, F: Strategic Management, Himalaya Publishing House.
- Budhiraja, S.B. and Athreya, M.B: Cases in Strategic Management, Tata McGraw Hill.
- Thomson and Strickland: Strategic Management, McGraw Hill.

22. INDUSTRIAL RELATIONS

The objective of this course is to sensitize the students to the tasks of industrial relations, and to familiarize them with the current IR practices.

Semester	Course Code	Course Title	Credit
V	BBA 502	Industrial Relations	Theory: 04; Internal: 02 Total: 06

Course Specific Outcomes:

1. Learners of the course understand the basics of international relations.
2. Students would be able to deal with issues related to industrial relations and management.

INDUSTRIAL RELATIONS

UNIT I

Industrial relations perspectives; IR and the emerging socio-economic scenario- IR and the state-legal framework of IR; Industrial conflict and disputes. Salient features of Industrial Employment (Standing Orders) Act, 1946.

UNIT II

IR and Trade Unions; Role and future of trade unions; Trade union and the employee; Industrial unrest; Trade union and the management; Plant level labor relations; Works committees; Joint management committees.

UNIT III

Discipline and grievance management: Grievance Redressal mechanism model: Negotiation and collective settlements; Participative management and co-ownership.

UNIT IV

Employee empowerment and quality management; Quality circles; Employee suggestion schemes; Industrial relations and technology management. Role of state in IR; Labor office, labor courts and industrial tribunals; Conciliation and mediation.

SUGGESTED READINGS:

- Niland J.R. et al: The Future of Industrial Relations, Sage Publications.
- Mamkootam, K: Trade Unionism-Myth and Reality, Oxford University Press.

- C.B. Memoria: Dynamics of Industrial Relations, Himalaya Publishing House.
- Ramaswamy, E.A: The Strategic Management of Industrial Relations, Oxford University Press.

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23. E- COMMERCE

The objective of this course is to understand the importance of database systems for business management and to gain a practical orientation to database development and maintenance.

Semester	Course Code	Course Title	Credit
V	BBA 503	E-Commerce	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

- This course entails the practical knowledge about business operation in e- marketplace setups.
- Students can find convenient to manage banking related issues at the end of this course.

E- COMMERCE

UNIT-I

Introduction to E- commerce: Meaning and concept - E- commerce v/s Traditional Commerce- E- Business & E- Commerce - History of E- Commerce - EDI - Importance, features & benefits of E- Commerce - Impacts, Challenges & Limitations of E- Commerce - Supply chain management & E - Commerce, E-Commerce infrastructure.

UNIT-II

Business models of E -Commerce : Business to Business - Business to customers - customers to customers - Business to Government - Business to employee - E - Commerce strategy - Influencing factors of successful E- Commerce.

UNIT - III

Marketing strategies & E - Commerce: Website - components of website - Concept & Designing website for E- Commerce - Corporate Website -Portal - Search Engine - Internet Advertising - Emergence of the internet as a competitive advertising media- Models of internet advertising - Weakness in Internet advertising - Mobile Commerce.

UNIT - IV

Electronic Payment system: Introduction - Online payment systems -prepaid and postpaid payment systems - e- cash, e- cheque, Smart Card, Credit Card, Debit Card, Electronic purse - Security issues on electronic payment system - Solutions to security issues - Biometrics - Types of biometrics.

SUGGESTED READINGS:

- Turban, Efraim, David King et al.: Electronic Commerce: A Managerial Perspective, Pearson Education Asia.
- Kalakota, Ravi: Frontiers of Electronic Commerce, Addison - Wesley.

- Rayport, Jeffrey F and Jaworksi, Bernard J: Introduction to E-Commerce, Tata McGraw Hill.
- Smantha Shurety: E-Business with Net Commerce, Addison - Wesley.
- Rich, Jason R: Starting an E-Commerce Business, IDG Books.

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24. OPERATIONS RESEARCH

The objective of this course is to provide a basic knowledge about Operations research and to acquaint the students some common operations Research Tools for various Business decision marketing situations.

Semester	Course Code	Course Title	Credit
V	BBA 504	Operations Research	Theory: 04; Internal: 02 Total: 06

Course specific outcomes:

- Learners of this course can add credibility to business decisions with the application of operations research.
- The subject can equip the students with various financial operations.

OPERATIONS RESEARCH

UNIT-I

Operations Research- Concept, significance and development of Operations Research, characteristics and Scientific Methodology of Operations Research.

Queuing Theory: Basic concepts and characteristics, Arrival Process and Service System Mechanism, Operating characteristics of M/M/1 Queue Model, Applications of Poisson-Exponential-single server-infinite population model, Service vs Waiting Cost Tradeoff.

UNIT-II

Sequencing Problem: Johnson's Algorithms for n Job-two machines, n Job-three machines and two job-m machine problems.

Linear Programming Problem: Basic Concept, significance and formulation of Linear Programming problem (LPP) Models for product-mix problems; Graphical solution of LPP, Simplex Method for LPP involving slack variables only

UNIT-III

Transportation Problem: Basic Concepts and significance, Initial Basic feasible solution methods; Modified Approximation Method (MODI) for finding optimal solution. Assignment Problem-Basic Concept and significance, Optimal Cost Assignment Model- Hungarian Assignment Algorithm.

UNIT-IV

Network Analysis- Concept and objectives, construction of network diagrams; PERT- CPM: Difference and applications of PERT and CPM techniques in project planning and control;

Calculation of Earliest and Latest times for activity(s) and floats/slacks of activities; Calculation of Estimated time and Critical Path, Time-Cost Tradeoff in CPM network, Crashing of activities for optimal solutions.

SUGGESTED READINGS:

- Kapoor V.K: Operation research Techniques for management, Sulthan Chand & Sons.
- Taha: Operations Research an Introduction, Prentice hall.
- Peter C Bell: Operations Research, Vikas Pulishers.
- Sharma J.K.: Operations Research Problems and solutions, Macmillan.
- Paneersevam: Operations Research, Prentice Hall of India.

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25. PROJECT MANAGEMENT

The course is designed to develop an understanding among students about project management, project reports, its preparation and analysis

Semester	Course Code	Course Title	Credit
V	BBA 505	Project Management	Theory: 04; Internal: 02 Total: 06

Course Specific Objective:

1. This course aims at providing the general understanding of business research and the methods of business research.
2. The course will impart learning about how to collect, analyze, present and interpret data.

PROJECT MANAGEMENT

UNIT - I

Project Management - Project concept, Classification, Importance of project management, Dimensions and attributes of projects, Identification of projects, Generation and Screening of Project Ideas, Phases of projects; Project life cycle.

UNIT - II

Project feasibility study, preparation of project report, Contents of project report; Project evaluation - Technical Analysis, material and inputs, , plant location, selection of plant and equipment; Project network analysis; Market analysis, market survey, product mix, demand forecasting; social cost benefit analysis, Management analysis, environmental analysis.

UNIT - III

Estimation and components of project Cost; sources of finance and capital structure; Estimation of sales and production, Cost of production, profitability Projections; Projected Cash Flow statements and Balance Sheet; Project Appraisal Techniques; project evaluation under risk and uncertainty.

UNIT - IV

Project Organization -Need and Forms of Project organization; Project Implementation - Pre-requisites for successful project implementation; Monitoring and Controlling - Parameters and Process; Post Project Evaluation and Post Completion audits

SUGGESTED READINGS:

- Chandra P: Projects- Planning, Analysis, Financing, Implementation and Review, Tata McGraw Hill.
- Gopalakrishnan P and Rama Moorthy V E: Project Management, Mac Millan India Ltd.

- Gordon L A and George EP: Improving Capital Budgeting- A Decision Support System Approach, Addison-Wesley Publishing Co.
- Desai V: Project Management, Himalaya Publishing House.

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26. BUSINESS TAXATION

This course has been designed to make students conversant with the basic concepts of Income Tax Law and Practice.

Semester	Course Code	Course Title	Credit
VI	BBA 601	Business Taxation	Theory: 04; Internal: 02 Total: 06

Course Specific Objective:

- The course will help develop knowledge of tax planning and its impact on decision-making.
- Students can become tax consultants at the local level and can address the critical tax issues of the small and medium corporate houses.

BUSINESS TAXATION

UNIT-I

Income Tax Law; Scheme of Taxation; Important concepts necessary for understanding the frame work of the Income Tax Act,1961; Concept of Income; Exempted and partially exempted incomes. Scope of Total Income and Residential Status: Concept of Total Income; Meaning and Treatment of Agricultural Income; Incidence of Tax; Residential Status of an Individual, a Firm/Association of Persons and a Company; Deduction from Gross Total Income.

UNIT-II

Income from Salaries: Conditions for Chargeability of Salary; Basis of Charge; Meaning, Types and Taxability of Allowances, Perquisites and Provident Funds; Treatment of Retirement Benefits; Deduction from Salaries and Computation of Taxable Salary. Income from Capital Gains: Chargeability; Meaning and Types of Capital Assets; Concept of Transfer of Capital Asset; Cost of Acquisition; Computation of Capital Gain/Loss; Exemptions.

UNIT-III

Income from House Property: Chargeability; Determination of Annual Value; Treatment of Unrealized and Arrears of Rent; Computation of Income from Let Out and Self Occupied House Properties; Deductions from Income from House Property. Income under the Head Profits and Gains of Business and Profession: Chargeability; Treatment of Business Incomes: Deduction and Allowances for Expenses, Expenditures and Losses; Provisions for Depreciation on Assets; Computation of Taxable Business and Profession Income. Income from other Sources: Chargeability; Meaning, Types and Taxability of Specific and General Incomes; Computation of Income from Other Sources.

UNIT-IV

Assessment of Partnership Firms: Computation of Total Income and Tax Liability of Partnership Firms. Provisions regarding Set-off and Carry Forward of Losses used while making Assessment of Individuals, and Partnership Firms.

SUGGESTED READINGS:

- Income Tax Act, BARE Act, Taxman Publications.
- Singhania, V. K.: Direct Tax Law and Practice, Taxman Publications.
- Singhania V.K.: Students Guide to Income Tax, Taxman Publications.
- Gaur, V.P. et.al., Income Tax Law and Practice, Kalyani Publisher.

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27. SERVICES MARKETING

The basic aim of this course is to expose the student to the unique challenges of marketing and managing services and delivering quality service to customers in a complex and dynamic.

Semester	Course Code	Course Title	Credit
VI	BBA 602	Services Marketing	Theory: 04; Internal: 02 Total: 06

Course Specific Objective:

- The course will impart basic understanding of service marketing to students.
- The students can help retain the customer and make sales consistent to enhance the graph of business profitability.

SERVICES MARKETING

UNIT-I

Foundation of Services Marketing and its significance Concept of services, Service Marketing Mix; Emergence and Reasons for growth of service sector at national and global level, Characteristics of services, Classifications of services, Challenges to Service Marketing.

UNIT-II

Service Quality Gaps Model, Gronross Model of Service Quality, Services Design and Development; Service Process; Physical Evidence and Servicescape; Issues in Marketing of Services- Extended Services, Marketing Mix-7 P's of Service Marketing

UNIT-III

Services Distribution Management: Strategies and Challenges; Managing the Integrated Services Communication Mix; Personnel Selling and Sales Promotion in Service Industry; Managing Service Personnel; Employee and Customer Role in Service Delivery.

Services Market Segmentation-Positioning and Differentiation of Services.

UNIT-IV

Relationship Marketing: Creating and maintaining valued relationship with Customers; Service recovery -role of Internal Marketing in service delivery; Customer Satisfaction and Service Quality in Service Marketing, Monitoring and Measuring Service Quality and Customer Satisfaction through SERVQUAL.

SUGGESTED READINGS:

- Christian Gronroos, Service Management and Marketing, John Wiley & Sons Ltd.
- Valarie A. Zeithaml, et al, Service Marketing, Tata McGraw-Hill.
- Christopher Love Lock, Service Marketing, Pearson Education Asia.
- Kruse, Service Marketing, John Wiley & Sons Ltd.
- Tom Powers, Marketing Hospitality, John Wiley & Sons Inc.

28. INTERNATIONAL BUSINESS

The aim of the paper is to give the learner an insight into the structure and functioning of world business and its relevance in the Indian scenario.

Semester	Course Code	Course Title	Credit
VI	BBA 603	International business	Theory: 04; Internal: 02 Total: 06

Course Specific Outcomes

- The objective of the course is to familiarise the students with the concepts, importance and dynamics of international business and India's involvement with global business.
- The course also seeks to provide theoretical foundations of international business to the extent these are relevant to the global business operations and developments.

INTERNATIONAL BUSINESS

UNIT-I

The LPG model; Liberalization, Privatization & Globalization. Globalisation, its effects. MNC's; concept, benefits and costs. Environment of international business, The socio-cultural & politico-legal environment, Growth of international business.

UNIT-II

International organizational structure & control. Role of Subsidiaries. Location of decision making. Ghoshal & Nitin Matrix. Modes of international investment. FDI in india; concept. Barriers to international trade.

UNIT-III

International trade theories; Merchantalism, Absolute advantage theory, Comparative advantage theory, Raymond Vernon's international PLC theory. Balance of trade & Balance of payment; concept and constituents.

UNIT-IV

Foreign exchange; Concept & theories. Role of world bodies like World bank, IMF, IBRD in international trade. India and the international business environment - prospects and challenges, SAARC and its scope in south Asian business.

SUGGESTED READINGS:

- Rakesh Mohan Joshi, International business, Oxford University press.
- Subba Rao, International business, Himalaya publishing house.

- Daniel Raedbaugh, International Business, Pearson publications.
- Aswathappa: International Business, Tata McGraw-Hill.
- Daniels: International Business, Pearson Education.

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29. PUBLIC ADMINISTRATION

The key objective of this course is to acquaint the students with planning, executions, monitoring and controlling of activities in the public administration to train them in public administration decisions.

Semester	Course Code	Course Title	Credit
VI	BBA 604	Public Administration	Theory: 04; Internal: 02 Total: 06

Course Specific Outcomes:

- The students will be able to monitor and control of activities in the public administration to train them in public administration decisions.
- The candidates are also expected to appreciate the role public servants play in the welfare and development of public and nation building.

PUBLIC ADMINISTRATION

UNIT - I

Public Administration- Evolution and significance; Wilson's vision of Public Administration; Weber's bureaucratic model and post-Weberian Developments; Participative Management (R. Likert, C. Argyris, D. McGregor); Riggsian models; Evolution of Indian Administration: Kautilya's Arthashastra; Mughal administration; Legacy of British rule in politics and administration.

UNIT - II

Administrative Law, Delegated legislation; Administrative Tribunals; Right to Information; Development administration; 'Antidevelopment thesis'; Bureaucracy, democracy and development; Models of policy-making; State theories and public policy formulation; Public borrowings and public debt; Budgets - types and forms; Budgetary process; Financial accountability.

UNIT - III

Union Government and Administration (Indian): Executive, Parliament, Judiciary- Functions; Cabinet Secretariat; Prime Minister's Office; Central Secretariat; Ministries and Departments; Boards; Planning Commission, National Development Council; Process of plan formulation at Union and State levels; Union-State administrative, legislative and financial relations; Finance Commission.

UNIT - IV

Administrative Reforms Important Committees and Commissions; Rural Development: Institutions, agencies and programmes; Panchayati Raj; 73rd Constitutional amendment; Urban Local Government: Municipal governance; 74th Constitutional Amendment; National Police Commission; Investigative agencies; Reforms in Police. National Human Rights Commission.

SUGGESTED READINGS:

- Avasthi A: Central Administration, Tata Mc Graw Hill.
- Basu, D. D: Introduction to the Constitution of India, Prentice Hall.
- Khera, S.S: The Central Executive, Orient Longman.

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30. TOURISM MANAGEMENT

The aim of the course is to help students in understanding the nature of tourism phenomenon, role of international and national tourism organisation, travel agency and tour operation business and basic of hospitality operations.

Semester	Course Code	Course Title	Credit
VI	BBA 605	Tourism Management	Theory: 04; Internal: 02 Total: 06

Course Specific Outcomes:

- The students will be acquainted with the fundamentals of tourism industry and its functioning
- The students will also be able to understand the roles played by international and national tourism organisation and travel agencies

TOURISM MANAGEMENT

UNIT - I

Tourism Fundamentals: Concept & Significance, Components and Types of Tourism. International and Domestic Tourism, Outbound Tourism & Inbound Tourism, Types of Mobility - Visitor, Excursionist and Tourist.

UNIT - II

Tourism Organizations: World Tourism Organization(WTO), International Air Transport Association(IATA), Pacific Area Travel Association(PATA), International Civil Aviation Organization(ICAO), Travel Agents Association of India (TAAI), Ministry of Tourism, Govt. of India, Department of Tourism, Govt. of J&K, Jammu and Kashmir Tourism Development Corporation(JKTDC).

UNIT - III

Growth of Travel Agency, Functions of Travel Agency -ticketing, facilitation, special services, bookings and cancellations, Package tour and its types. Packaging a Tour, Tour Brochure, Approval procedure for Travel Agents & Tour operators.

UNIT - IV

Hospitality Management - Concept of Hospitality and its role in the development of tourism, Type of accommodations available, Different categories of hotels, Different departments of hotel, Different types of Catering establishments.

SUGGESTED READINGS:

- Aggrawal, Surinder: Travel Agency Management: Communication India,.
- Burkart & Madlik: Tourism- Past, present and future, Heinemann, London.

- Christopher J. Holloway: The Business of Tourism: Macconald and Evans,.
- Cooper, Fletcher et al, Tourism Principles & Practices, Pitman.
- Mill & Morrisson, The Tourism System: An introductory Text, Prentice Hall,.
- Mill. R.C, Tourism: The International Business, Prentice Hall.

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**Structure and distribution of Ability Enhancement Course (Environmental Studies)
with credits for BA/BSc/BBA/BCA and BCom. Programmes**

S.No.	Semester	Course Title	Course Type	Total Credits
1.	I & II	Environmental Studies	Core Course	4 credits 4(T)

Course outcomes

The Environmental Studies prepares students for careers as leaders in understanding and addressing complex environmental issues from a problem-oriented, interdisciplinary perspective.

Students will be able to critically evaluate all sides of environmental issues and apply knowledge from different disciplines to form well-informed opinions about how to interact with the environment on a personal and social level.

Students will be able to recognize the physical, chemical and biological components of the earth's system's and how they function.

Through field experiences, students will be able to apply learning from numerous courses. Students will have a greater understanding of not only individual creatures, but also the systems in which they live, as a result of these experiences.

Students will also see how natural processes and human-designed systems interact, both positively and negatively.

Students will be able to conduct independent research on human-environment interactions.

Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

Demonstrate proficiency in quantitative methods, qualitative analysis, critical thinking, and written and oral communication needed to conduct high-level work as interdisciplinary scholars and/or practitioners

1. Environmental Studies (Core Course-I)

Semester	Ability Enhancement Course	Course Title	Credit
I	AEC-I	Environmental Studies	Theory: 04; Total: 04

Course specific outcomes

- Understanding of complex environmental issues from a problem-oriented, interdisciplinary perspective.
- Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

ENVIRONMENTAL STUDIES**THEORY****(CREDITS 4)****Unit 1 Understanding Environment**

Environment: Concepts and importance; Component of environment: Physical, biological and social; Eco-system definition, structure and function: producers, consumers and decomposers, food chains, food webs and ecological pyramids, energy flow in an ecosystem; Eco-system services: ecological, economic, social, aesthetic and informational value.

Unit 2 Natural Resources

Land resources: global land use patterns, concept land degradation and desertification; Forest resources: use and consequences of over-exploitation; Water resources: use and consequences of over-utilization, concept of water harvesting and water shed management, water conflicts; energy resources; Renewable and non-renewable energy sources, growing energy needs and alternate energy sources.

Unit 3 Biodiversity and its Conservation

Bio Diversity: definition, levels and values (commercial, ecological, social and aesthetic); Threats to bio diversity: habitat loss, poaching of wild life, man-wildlife conflicts,

biological invasions; Concept of endemism and hot-spots of bio-diversity; Conservation of Bio-diversity: In-Situ and Ex-Situ concepts.

Unit 4 Environmental Issues, Policies and Practices

Causes, effects and control measures of: air, water, soil, noise and solid waste pollution; Concept of natural disasters and global environmental issues: increase in greenhouse gases, climate change, acid rain and stratospheric ozone layer depletion; salient features of: water (prevention and control of pollution) Act, 1974, air (prevention and control of pollution) Act, 1981, environment protection Act, 1986; Environmental education, environmental movements (Chipko, silent valley) and environmental ethics.

SUGGESTED READINGS

- Bharucha, Erach, 2005. Text Book of Environmental Studies, Universities Press (India), Hyderabad.
- Joseph, Benny, 2005. Environmental Studies, McGraw Hill companies.
- De, Anil Kumar and De, Arnab Kumar, 2nd edition. New Age International Publishers.
- Kanagasabai, S. 2010. Text Book on Environmental Studies. PHI Learning.
- Sharma, P. D. 2015. Ecology and Environment.
- Chauhan, B. S. 2008, Environmental Studies. University Science Press.
- Kaushak and Kaushak. 2016. Perspectives in Environmental Studies.
- Jaiswal, P.S.2007.Environmental Law. Pioneer Publications, Delhi.
- Ghosh, G.K.1992. Environmental Pollution. Ashiah Publication, Delhi.